

119TH CONGRESS
1ST SESSION

H. R. 3816

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

IN THE HOUSE OF REPRESENTATIVES

JUNE 6, 2025

Mr. LUCAS (for himself, Ms. LOFGREN, Mr. SCOTT FRANKLIN of Florida, Ms. BONAMICI, Mr. WEBER of Texas, Ms. STEVENS, Mr. MILLER of Ohio, Ms. ROSS, Mrs. BICE, Ms. LEE of Pennsylvania, Mr. FLEISCHMANN, Mr. FROST, Ms. TENNEY, Mr. FEENSTRA, Mr. CRAWFORD, and Mr. FLOOD) introduced the following bill; which was referred to the Committee on Science, Space, and Technology, and in addition to the Committees on Natural Resources, Energy and Commerce, and Foreign Affairs, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

A BILL

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

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

1 **SECTION 1. SHORT TITLE; TABLE OF CONTENTS.**

2 (a) SHORT TITLE.—This Act may be cited as the
 3 “Weather Research and Forecasting Innovation Reauthor-
 4 ization Act of 2025” or the “Weather Act Reauthorization
 5 Act of 2025”.

6 (b) TABLE OF CONTENTS.—The table of contents for
 7 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. Weather innovation for the next generation.
 Sec. 202. Radar Next Program.
 Sec. 203. Data voids in highly vulnerable areas of the United States.
 Sec. 204. Atmospheric rivers forecast improvement program.
 Sec. 205. Coastal flooding and storm surge forecast improvement program.
 Sec. 206. Aviation weather and data innovation.
 Sec. 207. NESDIS partnership program, transition program, and operational
 planning.
 Sec. 208. Advanced Weather Interactive Processing System.
 Sec. 209. Reanalysis and reforecasting.
 Sec. 210. National Weather Service workforce.
 Sec. 211. Artificial intelligence for weather forecasting.
 Sec. 212. Composition of the atmosphere and atmospheric observations.
 Sec. 213. Project to improve forecasts of coastal marine fog.

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. National Weather Service communications improvement.
- Sec. 405. NOAA Weather Radio modernization.
- 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 and climate information in 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.
- Sec. 506. Satellite transfers briefing.

TITLE VI—HARMFUL ALGAL BLOOM AND HYPOXIA RESEARCH AND CONTROL

- Sec. 601. Short title.
- Sec. 602. Amendments to the Harmful Algal Blooms and Hypoxia Research and Control Act of 1998.
- Sec. 603. Other harmful algal bloom matters.

TITLE VII—PREVENTING HEALTH EMERGENCIES AND TEMPERATURE-RELATED ILLNESS AND DEATHS

- Sec. 701. Short title.
- Sec. 702. Definitions.
- Sec. 703. National Integrated Heat Health Information System Interagency Committee.
- Sec. 704. National Integrated Heat Health Information System.
- Sec. 705. Authorization of appropriations.

TITLE VIII—NATIONAL LANDSLIDE PREPAREDNESS ACT REAUTHORIZATION

- Sec. 801. Short title.
- Sec. 802. Certain definitions under Flood Level Observation, Operations, and Decision Support Act.
- Sec. 803. Reauthorization of National Landslide Preparedness Act.

TITLE IX—OTHER AUTHORITIES

Sec. 901. Meteorological observations in the Arctic region.

Sec. 902. Unfunded priorities list, reports, and plans.

Sec. 903. Miscellaneous authorities.

1 **SEC. 2. DEFINITIONS.**

2 (a) IN GENERAL.—In this Act, the terms “seasonal”,
3 “State”, “subseasonal”, “Under Secretary”, “weather en-
4 terprise”, “weather data”, and “weather industry” have
5 the meanings given such terms in section 2 of the Weather
6 Research and Forecasting Innovation Act of 2017 (15
7 U.S.C. 8501).

8 (b) WEATHER DATA DEFINED.—Section 2 of the
9 Weather Research and Forecasting Innovation Act of
10 2017 (15 U.S.C. 8501) is amended—

11 (1) by redesignating paragraph (5) as para-
12 graph (6); and

13 (2) by inserting after paragraph (4) the fol-
14 lowing new paragraph:

15 “(5) WEATHER DATA.—The term ‘weather
16 data’ means information used to track and predict
17 weather conditions and patterns, including forecasts,
18 observations, and derivative products from such in-
19 formation.”.

1 **TITLE I—REAUTHORIZATION OF**
2 **THE WEATHER RESEARCH**
3 **AND FORECASTING INNOVA-**
4 **TION ACT OF 2017**

5 **SEC. 101. PUBLIC SAFETY PRIORITY.**

6 Section 101 of the Weather Research and Fore-
7 casting Innovation Act of 2017 (15 U.S.C. 8511) is
8 amended to read as follows:

9 **“SEC. 101. PUBLIC SAFETY PRIORITY.**

10 “(a) IN GENERAL.—The Under Secretary shall—

11 “(1) ensure the National Oceanic and Atmos-
12 pheric Administration focuses on providing accurate
13 and timely weather forecasts that protect lives and
14 property and enhance the national economy;

15 “(2) through the Director of the National
16 Weather Service, coordinate and implement observa-
17 tional infrastructure, weather forecasting, commu-
18 nications, and impact-based decision support serv-
19 ices; and

20 “(3) work to improve operation weather fore-
21 casts, products, and services through nimble, flexi-
22 ble, and mobile methods.

23 “(b) RESEARCH.—In conducting research, the Under
24 Secretary shall prioritize improving weather data, mod-
25 eling, computing, forecasting, and warnings for the protec-

tion 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) \$163,794,000 for fiscal year 2026, of which—

“(A) \$91,058,000 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.

1 “(2) \$165,432,000 for fiscal year 2027, of
2 which—

3 “(A) \$91,968,000 is authorized for weath-
4 er laboratories and cooperative institutes;

5 “(B) \$39,886,000 is authorized for the
6 United States Weather Research Program;

7 “(C) \$21,336,000 is authorized for tor-
8 nado, severe storm, and next generation radar
9 research; and

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

13 “(3) \$167,086,000 for fiscal year 2028, of
14 which—

15 “(A) \$92,888,000 is authorized for weath-
16 er laboratories and cooperative institutes;

17 “(B) \$40,285,000 is authorized for the
18 United States Weather Research Program;

19 “(C) \$21,550,000 is authorized for tor-
20 nado, severe storm, and next generation radar
21 research; and

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

1 “(4) \$168,757,000 for fiscal year 2029, of
2 which—

3 “(A) \$93,817,000 is authorized for weath-
4 er laboratories and cooperative institutes;

5 “(B) \$40,688,000 is authorized for the
6 United States Weather Research Program;

7 “(C) \$21,765,000 is authorized for tor-
8 nado, severe storm, and next generation radar
9 research; and

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

13 “(5) \$170,444,000 for fiscal year 2030, of
14 which—

15 “(A) \$94,755,000 is authorized for weath-
16 er laboratories and cooperative institutes;

17 “(B) \$41,094,000 is authorized for the
18 United States Weather Research Program;

19 “(C) \$21,983,000 is authorized for tor-
20 nado, severe storm, and next generation radar
21 research; and

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

1 “(b) LIMITATION.—No additional funds are author-
2 ized to carry out this title or the amendments made by
3 this title.”.

4 **SEC. 103. VERIFICATION OF THE ORIGINS OF ROTATION IN**
5 **TORNADOES EXPERIMENT-UNITED STATES**
6 **OF AMERICA (VORTEX-USA).**

7 (a) IN GENERAL.—Section 103 of the Weather Re-
8 search and Forecasting Innovation Act of 2017 (15 U.S.C.
9 8513) is amended to read as follows:

10 **“SEC. 103. VERIFICATION OF THE ORIGINS OF ROTATION IN**
11 **TORNADOES EXPERIMENT-UNITED STATES**
12 **OF AMERICA (VORTEX-USA).**

13 “(a) IN GENERAL.—The Under Secretary, in collabo-
14 ration with the United States weather industry and aca-
15 demic partners, shall maintain a program for rapidly im-
16 proving tornado forecasts, predictions, and warnings, in-
17 cluding forecaster training in radar interpretation and in-
18 formation integration from new sources.

19 “(b) GOAL.—The goal of the program under sub-
20 section (a) shall be to develop and extend accurate tornado
21 forecasts, predictions, and warnings in order to reduce the
22 loss of life or property related to tornadoes, with a focus
23 on the following:

24 “(1) Improving the effectiveness and timeliness
25 of tornado forecasts, predictions, and warnings.

1 “(2) Optimizing lead time and providing action-
2 able information beyond one hour in advance.

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

5 “(c) INNOVATIVE OBSERVATIONS.—The Under Sec-
6 retary shall ensure the program under subsection (a) peri-
7 odically examines, tests, and evaluates the value of incor-
8 porating innovative observations, such as novel sensor
9 technologies, observation tools or networks, crewed or
10 uncrewed systems, and hosted instruments on commercial
11 aircrafts, vessels, and satellites, with respect to the im-
12 provement of tornado forecasts, predictions, and warnings.

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

15 “(1) Implementing key goals and achieving pro-
16 gram milestones to the maximum extent practicable
17 as outlined by the National Oceanic and Atmos-
18 pheric Administration’s 2019 report, ‘Tornado
19 Warning Improvement and Extension Program
20 Plan’.

21 “(2) In coordination with the National Science
22 and Technology Council’s Social and Behavioral
23 Sciences Subcommittee, improving the social, behav-
24 ioral, risk, communication, and economic sciences re-
25 garding vulnerabilities, risk communication, and de-

1 livery of information critical for reducing the loss of
2 life or property related to tornadoes.

3 “(3) Improving the physical sciences, computer
4 modeling, and tools related to tornado formation, the
5 impacts of tornadoes on the built and natural envi-
6 ronment, and the interaction of tornadoes and hurri-
7 canes.

8 “(e) PRIORITY INSTITUTIONS.—

9 “(1) IN GENERAL.—In awarding grants under
10 subsection (d), the Under Secretary may prioritize
11 awarding grants to minority-serving institutions.

12 “(2) DEFINITION OF MINORITY-SERVING INSTI-
13 TUTION.—In this subsection, the term ‘minority-
14 serving institution’ means—

15 “(A) a part B institution (as defined in
16 section 322 of the Higher Education Act of
17 1965 (20 U.S.C. 1061));

18 “(B) a Hispanic-serving institution (as de-
19 fined in section 502(a) of such Act (20 U.S.C.
20 1101a(a)));

21 “(C) a Tribal College or University (as de-
22 fined in section 316(b) of such Act (20 U.S.C.
23 1059c(b)));

1 “(D) an Alaska Native-serving institution
2 (as defined in section 317(b) of such Act (20
3 U.S.C. 1059d(b)));

4 “(E) a Native Hawaiian-serving institution
5 (as defined in section 317(b) of such Act (20
6 U.S.C. 1059d(b)));

7 “(F) a Predominantly Black Institution
8 (as defined in section 318(b) of such Act (20
9 U.S.C. 1059e(b)));

10 “(G) an Asian American and Native Amer-
11 ican Pacific Islander-serving institution (as de-
12 fined in section 320(b) of such Act (20 U.S.C.
13 1059g(b))); or

14 “(H) a Native American-serving, nontribal
15 institution (as defined in section 319(b) of such
16 Act (20 U.S.C. 1059f(b))).

17 “(f) WARNINGS.—In carrying out subsection (a), the
18 Under Secretary, in coordination with the program estab-
19 lished under section 403(a) of the Weather Act Reauthor-
20 ization Act of 2025, shall—

21 “(1) conduct and transition to operations the
22 research necessary to develop and deploy prob-
23 abilistic weather forecast guidance technology for
24 tornadoes and related weather phenomena;

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

4 “(3) enhance workforce training on radar inter-
5 pretation and use of tornado warning systems; and

6 “(4) expand computational resources, including
7 cloud computing, to support higher-resolution mod-
8 eling to advance the capability for warn-on-forecast.

9 “(g) TORNADO RATING SYSTEM.—The Under Sec-
10 retary, in collaboration with local communities and emer-
11 gency managers, shall—

12 “(1) evaluate the system used as of the date of
13 the enactment of this section to rate the severity of
14 tornadoes;

15 “(2) determine whether updates to such system
16 are required to ensure such ratings accurately reflect
17 the severity of tornados; and

18 “(3) if determined necessary, update such sys-
19 tem.

20 “(h) ANNUAL BUDGET.—The Under Secretary shall,
21 not less frequently than annually, submit to Congress a
22 proposed budget corresponding with carrying out this sec-
23 tion.

24 “(i) AUTHORIZATION OF APPROPRIATIONS.—There is
25 authorized to be appropriated to the Under Secretary to

1 carry out this section \$11,000,000 for each of fiscal years
 2 2026 through 2030, of which not less than \$2,000,000
 3 each fiscal year shall be used for prioritized grants award-
 4 ed under subsection (e).”.

5 (b) CLERICAL AMENDMENT.—The table of contents
 6 in section 1(b) of the Weather Research and Forecasting
 7 Innovation Act of 2017 is amended by amending the item
 8 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).”.

9 **SEC. 104. HURRICANE FORECAST IMPROVEMENT PRO-**
 10 **GRAM.**

11 Section 104 of the Weather Research and Fore-
 12 casting Innovation Act of 2017 (15 U.S.C. 8514) is
 13 amended to read as follows:

14 **“SEC. 104. HURRICANE FORECAST IMPROVEMENT PRO-**
 15 **GRAM.**

16 “(a) IN GENERAL.—The Under Secretary, in collabo-
 17 ration with the United States weather industry and aca-
 18 demic partners, shall maintain a program to improve hur-
 19 ricane forecasting, predictions, and warnings.

20 “(b) GOAL.—The goal of the program under sub-
 21 section (a) shall be to develop and extend accurate hurri-
 22 cane forecasts, predictions, and warnings in order to re-
 23 duce the loss of life or property related to hurricanes, with
 24 a focus on the following:

1 “(1) Improving the understanding, prediction,
2 and communication of rapid intensity change and
3 projected path of hurricanes, including probabilistic
4 methods for hurricane hazard mapping.

5 “(2) Improving the forecast and impact-based
6 communication of inland flooding, compound flood-
7 ing, and storm surges from hurricanes, in coordina-
8 tion with the program established under section 205
9 of the Weather Act Reauthorization Act of 2025.

10 “(3) Incorporating social, behavioral, risk, com-
11 munication, and economic sciences to clearly inform
12 response to prevent the loss of life or property.

13 “(4) Evaluating and incorporating, as appro-
14 priate, innovative observations, including acoustic or
15 infrasonic measurements, novel sensor technologies,
16 observation tools or networks, crewed or uncrewed
17 systems, and hosted instruments on commercial air-
18 crafts, vessels, and satellites.

19 “(c) ACTIVITIES.—In carrying out subsection (a), the
20 Under Secretary shall award grants for research, includ-
21 ing relating to the following:

22 “(1) Implementing key strategies and following
23 priorities and objectives outlined by the National
24 Oceanic and Atmospheric Administration’s 2019 re-
25 port ‘Hurricane Forecast Improvement Program’.

1 “(2) In coordination with the National Science
2 and Technology Council’s Social and Behavioral
3 Sciences Subcommittee and other relevant inter-
4 agency committees, improving the social, behavioral,
5 risk, communications, and economic sciences related
6 to vulnerabilities, risk communication, and delivery
7 of information critical for reducing the loss of life or
8 property related to hurricanes.

9 “(3) Improving the physical sciences, oper-
10 ational modeling, and tools related to hurricane for-
11 mation, the impacts of wind and water-based hurri-
12 cane hazards on the built and natural environment,
13 and the interaction of hurricanes and tornadoes.

14 “(d) WARNINGS.—In carrying out subsection (a), the
15 Under Secretary, in coordination with the program estab-
16 lished under section 403(a) of the Weather Act Reauthor-
17 ization Act of 2025, shall—

18 “(1) conduct and transition to operations the
19 research necessary to develop and deploy prob-
20 abilistic weather forecast guidance technology relat-
21 ing to hurricanes and related weather phenomena;

22 “(2) incorporate into hurricane modeling and
23 forecasting, as appropriate, social, behavioral, risk,
24 communication, and economic sciences research; and

1 “(3) expand computational resources, including
2 cloud computing, to support and improve higher-res-
3 olution operational modeling of hurricanes and re-
4 lated weather phenomena.

5 “(e) ANNUAL REPORT.—Not later than June 1 of
6 each year until 2030, the Under Secretary, in consultation
7 with the Secretary of Defense, shall submit to the Com-
8 mittee on Commerce, Science, and Transportation of the
9 Senate and the Committee on Science, Space, and Tech-
10 nology of the House of Representatives a report that in-
11 cludes the following:

12 “(1) The number and causes of missed mission
13 requirements for the National Hurricane Operations
14 Plan and the National Winter Season Operations
15 Plan, including those related to equipment malfunc-
16 tion, aircraft availability, aircraft maintenance, flight
17 hour limits, and availability of pilots or other air and
18 maintenance crew members.

19 “(2) Requirements related to the plans de-
20 scribed in paragraph (1) that were requested by
21 forecasters but not tasked, and the reasons why
22 those were not tasked.

23 “(3) A workforce management plan addressing
24 any shortfalls in human capital resources that are

1 necessary for hurricane observational data collection
2 aboard aircraft or uncrewed systems.

3 “(4) A summary of the following:

4 “(A) Hurricane technology that is under
5 research and development to improve confidence
6 in hurricane track and intensity predictions.

7 “(B) Hurricane technology that is at the
8 prototype demonstration stage or beyond.

9 “(C) Plans for transitioning the hurricane
10 technology described in subparagraph (B) into
11 operations.”.

12 **SEC. 105. TSUNAMI WARNING AND EDUCATION ACT REAU-**
13 **THORIZATION.**

14 (a) **TITLE HEADING.**—The Magnuson-Stevens Fish-
15 ery Conservation and Management Reauthorization Act of
16 2006 (Public Law 109–479) is amended—

17 (1) in title VIII, in the title heading (relating
18 to the Tsunami Warning and Education Act; 33
19 U.S.C. 3201 et seq.), by inserting “, **RESEARCH,**”
20 after “**WARNING**”; and

21 (2) in the table of contents in section 1(b), by
22 amending the item relating to the title heading for
23 title VIII to read as follows:

“TITLE VIII—TSUNAMI WARNING, RESEARCH, AND EDUCATION.”.

24 (b) **SHORT TITLE.**—Section 801 of the Tsunami
25 Warning and Education Act (enacted as title VIII of the

1 Magnuson-Stevens Fishery Conservation and Manage-
2 ment Reauthorization Act of 2006 (Public Law 109–479;
3 33 U.S.C. 3201 note)) is amended by inserting “, Re-
4 search,” after “Warning”.

5 (c) PURPOSES.—Section 803 of the Tsunami Warn-
6 ing, Research, and Education Act (enacted as title VIII
7 of the Magnuson-Stevens Fishery Conservation and Man-
8 agement Reauthorization Act of 2006 (Public Law 109–
9 479; 33 U.S.C. 3202)) is amended—

10 (1) in paragraph (2), by inserting “timeliness
11 and” before “accuracy”;

12 (2) in paragraph (7), by striking “and” after
13 the semicolon;

14 (3) in paragraph (8), by striking the period and
15 inserting “; and”; and

16 (4) by adding at the end the following new
17 paragraph:

18 “(9) to ensure data and metadata are managed,
19 archived, and made available for operations, re-
20 search, education, and mitigation activities in ac-
21 cordance with section 305 of the Weather Research
22 and Forecasting Innovation Act of 2017.”.

23 (d) TSUNAMI FORECASTING AND WARNING PRO-
24 GRAM.—Section 804 of the Tsunami Warning, Research,
25 and Education Act (33 U.S.C. 3203) is amended—

1 (1) in subsection (b)—

2 (A) in paragraph (4), by inserting “, using
3 industry and scientific best practices,” after
4 “operational condition”;

5 (B) in paragraph (5)—

6 (i) in subparagraph (C), by striking
7 “global seismic network” and inserting
8 “Global Seismic Network”;

9 (ii) by redesignating subparagraphs
10 (D), (E), (F), and (G), as subparagraphs
11 (E), (F), (G), and (H), respectively; and

12 (iii) by inserting after subparagraph
13 (C) the following new subparagraph:

14 “(D) the global navigation satellite system
15 (GNSS) network;”;

16 (C) by amending paragraph (6) to read as
17 follows:

18 “(6) ensure data quality and management sys-
19 tems, support data and metadata access and
20 archiving, and support the requirements of the pro-
21 gram pursuant to the Foundations for Evidence-
22 Based Policymaking Act of 2018 (Public Law 115–
23 435) and chapter 31 of title 44, United States
24 Code;”;

25 (D) in paragraph (7)—

1 (i) by amending the matter preceding
2 subparagraph (A) to read as follows: “in-
3 clude a cooperative effort among the Ad-
4 ministration, the United States Geological
5 Survey (USGS), the National Aeronautics
6 and Space Administration (NASA), and
7 the National Science Foundation (NSF)
8 under which the Director of USGS, the Di-
9 rector of the NSF, and the Administrator
10 of NASA shall—”;

11 (ii) in subparagraph (A), by striking
12 “and” at the end; and

13 (iii) by adding at the end the fol-
14 lowing new subparagraphs:

15 “(C) provide reliable and real-time support
16 for the GNSS network data streams from NSF,
17 NASA, and USGS maintained networks, and
18 supplement instrumentation coverage for rapid
19 earthquake assessment;

20 “(D) assess the data and information re-
21 lating to warning systems of collaborating agen-
22 cies for potential utilization in NOAA’s warning
23 system, taking into consideration advancement
24 in research and technology;

1 “(E) incorporate, as practicable, tsunami
2 notifications and warnings in the USGS Earth-
3 quake Early Warning System; and

4 “(F) incorporate, as practicable, prelimi-
5 nary analysis or data from the National Earth-
6 quake Information Center regarding the source
7 and magnitude of an offshore earthquake with-
8 in five minutes of detection;”;

9 (E) in paragraph (8)—

10 (i) by inserting “and decision support
11 aides” after “graphical warning prod-
12 ucts,”; and

13 (ii) by inserting “-prone” after “tsu-
14 nami”;

15 (F) in paragraph (9), by striking “and”
16 after the semicolon;

17 (G) in paragraph (10), by striking the pe-
18 riod and inserting “; and”; and

19 (H) by adding at the end the following new
20 paragraph:

21 “(11) update tsunami inundation maps, models,
22 or other geographic products, in order to best sup-
23 port, as appropriate, relevant agencies with tsunami
24 mitigation and recovery activities.”;

25 (2) in subsection (c)—

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

4 (B) in paragraph (1), as so redesignated—

5 (i) by striking “the Atlantic Ocean, including the Caribbean Sea and Gulf of Mexico, that are determined—” and inserting “the Pacific, Arctic, and Atlantic Oceans, including the Caribbean Sea and Gulf of Mexico, that are determined to pose significant risks of tsunami for States and United States territories along the coastal areas of such regions; and”; and

14 (ii) by striking subparagraphs (A) and (B);

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

19 (4) by inserting after subsection (c) the following new subsection:

21 “(d) TSUNAMI WARNING ALERT LEVEL EVALUATION.—The Administrator, in collaboration with social scientists, emergency personnel, and high-risk communities, shall—

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

3 “(2) determine if such alerts produce the de-
4 sired response and understanding from possible tsu-
5 nami-prone communities; and

6 “(3) if necessary, update the alert level system
7 for increased effectiveness.”;

8 (5) in subsection (e), as so redesignated—

9 (A) in paragraph (1)—

10 (i) in the matter preceding subpara-
11 graph (A), by inserting “responsible for
12 Alaska, the continental United States, Ha-
13 waii, United States territories, and inter-
14 national entities the Administrator deter-
15 mines appropriate” before the period;

16 (ii) in subparagraph (A), by striking
17 “which is primarily responsible for Alaska
18 and the continental United States”; and

19 (iii) in subparagraph (B), by striking
20 “, which is primarily responsible for Ha-
21 waii, the Caribbean, and other areas of the
22 Pacific not covered by the National Cen-
23 ter”;

24 (B) in paragraph (2)—

1 (i) in subparagraph (A), by inserting
2 “current,” after “sea level,”;

3 (ii) in subparagraph (B), by striking
4 “and volcanic eruptions” and inserting
5 “volcanic eruptions, or other sources”;

6 (iii) in subparagraph (C), by striking
7 “buoy data and tidal” and inserting “and
8 coastal”;

9 (iv) in subparagraph (E), by striking
10 “Integrated Ocean Observing System of
11 the Administration” and inserting “United
12 States and global ocean and coastal observ-
13 ing system”;

14 (v) in subparagraph (H), by inserting
15 “monitoring needs,” after “response,”; and

16 (vi) by amending subparagraph (I) to
17 read as follows:

18 “(I) Providing a Tsunami Warn-
19 ing Coordinator to coordinate with
20 partners and stakeholders products
21 and services of the centers supported
22 or maintained under paragraph (1).”;

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

1 “(3) FAIL-SAFE WARNING CAPABILITY.—The
2 Administrator shall support and maintain fail-safe
3 warning capability for the tsunami warning centers
4 supported or maintained under paragraph (1), and
5 such centers shall conduct at least one service back
6 up drill biannually.”;

7 (D) in paragraph (4)—

8 (i) by amending the matter preceding
9 subparagraph (A) to read as follows: “The
10 Administrator shall coordinate with the
11 weather forecast offices of the National
12 Weather Service, the centers supported or
13 maintained under paragraph (1), and such
14 national and regional program offices of
15 the Administration as the Administrator or
16 the coordinating committee, as established
17 in section 805(b), consider appropriate to
18 ensure that regional and local weather
19 forecast offices—”;

20 (ii) in subparagraph (B), by striking
21 “and” after the semicolon;

22 (iii) in subparagraph (C), by striking
23 the period and inserting “; and”; and

24 (iv) by adding at the end the following
25 new subparagraph:

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

(E) in paragraph (5)—

(i) in the heading, by striking “UNIFORM” and inserting “STANDARDIZED”;

(ii) in subparagraph (A), by striking “uniform” and inserting “standardized”;

(iii) in subparagraph (C)(ii), by striking “uniform” and inserting “standardized”;

(iv) in subparagraph (D), by striking “and” after the semicolon;

(v) in subparagraph (E), by striking the period and inserting “; and”; and

(vi) by adding at the end the following new subparagraph:

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

“(i) replacing end of life equipment;

“(ii) ensuring product consistency;

1 “(iii) enabling consistent operational
2 process for backup capabilities;

3 “(iv) mitigating existing operational
4 security risks; and

5 “(v) meeting information security re-
6 quirements specified in chapter 35 of title
7 44, United States Code.”; and

8 (F) by adding at the end the following new
9 paragraph:

10 “(7) REPORTING.—Not later than 180 days
11 after the date of the enactment of this paragraph
12 and annually thereafter until such time as all rel-
13 evant requirements have been satisfied, the Adminis-
14 trator shall provide to the Committee on Science,
15 Space, and Technology of the House of Representa-
16 tives and the Committee on Commerce, Science, and
17 Transportation of the Senate an update briefing on
18 the progress of the following:

19 “(A) Standardizing products and proce-
20 dures under paragraph (5), including tsunami
21 assessments, forecast guidance, and related
22 products.

23 “(B) Migrating the message generation
24 systems of the centers supported or maintained
25 under paragraph (1) to the Advanced Weather

1 Information Processing Systems, or successor
2 systems.

3 “(C) The structural reorganization effort,
4 if necessary, to align such centers’ organiza-
5 tional charts.

6 “(D) The expected timeline for the full
7 completion of standardizing such centers’ prod-
8 ucts and procedures.”;

9 (6) in subsection (f), as so redesignated—

10 (A) in paragraph (1)—

11 (i) in the matter preceding subpara-
12 graph (A), by inserting “detect, measure,
13 and” after “used to”;

14 (ii) in subparagraph (B), by striking
15 “and” after the semicolon;

16 (iii) in subparagraph (C), by striking
17 “and the Advanced National Seismic Sys-
18 tem;” and inserting “the Advanced Na-
19 tional Seismic System, and the global navi-
20 gation satellite system (GNSS); and”;

21 (iv) by adding at the end the following
22 new subparagraph:

23 “(D) ensure research is coordinated with
24 tsunami warning operations;”;

1 (B) in paragraph (3), by inserting “accord-
2 ing to industry best practices” before the pe-
3 riod; and

4 (7) in subsection (h)(2)(A), as so redesignated,
5 by striking “accuracy of the tsunami model used”
6 and inserting “timeliness and accuracy of the fore-
7 cast used to issue the warning”.

8 (e) NATIONAL TSUNAMI HAZARD MITIGATION PRO-
9 GRAM.—Section 805(c) of the Tsunami Warning, Re-
10 search, and Education Act (33 U.S.C. 3204(c)) is amend-
11 ed—

12 (1) in paragraph (5)—

13 (A) by redesignating subparagraphs (B),
14 (C), (D), (E), (F), and (G) as subparagraphs
15 (C), (D), (E), (F), (G), and (H), respectively;

16 (B) by inserting after subparagraph (A)
17 the following new subparagraph:

18 “(B) Coastal digital elevation models
19 (DEMs) to support the development of inunda-
20 tion maps.”; and

21 (C) by adding at the end the following new
22 subparagraphs:

23 “(I) Evaluation of the variation of inunda-
24 tion impact resulting from tsunami-driven sedi-
25 ment transport.

1 “(J) Evaluation of tsunami debris impact
 2 on critical infrastructure (as such term is de-
 3 fined in section 1016(e) of Public Law 107–56
 4 (42 U.S.C. 5195c(e))) and lifelines.

5 “(K) High-resolution and high-quality dig-
 6 ital elevation models needed for at-risk coast-
 7 lines, ports, and harbors, particularly for re-
 8 gions not covered by existing inundation
 9 maps.”; and

10 (2) in paragraph (7)(C), by inserting “and be-
 11 havioral” after “social”.

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

15 (1) in subsection (a)—

16 (A) by striking “section 805(d)” and in-
 17 serting “section 805(b)”;

18 (B) by inserting “and management” after
 19 “data collection”;

20 (2) in subsection (b)—

21 (A) in paragraph (1), by inserting “deploy-
 22 ment and” after “may include”;

23 (B) in paragraph (3), by striking “social
 24 science research” and inserting “social and be-

1 havioral science research, including data collec-
2 tion,”;

3 (C) in paragraph (4), by striking “and”
4 after the semicolon;

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

7 (E) by inserting after paragraph (4) the
8 following new paragraphs:

9 “(5) develop decision support tools;

10 “(6) leverage and prioritize research opportuni-
11 ties; and”; and

12 (3) by adding at the end the following new sub-
13 section:

14 “(c) RESEARCH AND DEVELOPMENT PLAN.—Not
15 later than 12 months after the date of the enactment of
16 this subsection and not less frequently than every 36
17 months thereafter, the Administrator, in consultation with
18 the Interagency Council for Advancing Meteorological
19 Services, shall develop a research and development and re-
20 search to operations plan to improve tsunami detection
21 and forecasting capabilities that—

22 “(1) identifies and prioritizes research and de-
23 velopment priorities to satisfy section 804;

24 “(2) identifies key research needs for better de-
25 tecting tsunamis that may occur in open ocean and

1 along the coastlines of the United States and its ter-
 2 ritories, improve forecasting of tsunamis that are
 3 not seismically driven, and other opportunities deter-
 4 mined appropriate;

5 “(3) develops plans for transitioning research to
 6 operations; and

7 “(4) identifies collaboration opportunities that
 8 may further and align tsunami research, develop-
 9 ment, warnings, and operations between the centers
 10 supported or maintained under section 804, the Na-
 11 tional Tsunami Hazard Mitigation Program, the Na-
 12 tional Oceanic and Atmospheric Administration Cen-
 13 ter for Tsunami Research, the National Science
 14 Foundation, the United States Geological Survey,
 15 the Federal Emergency Management Agency, insti-
 16 tutions of higher education, private entities, stake-
 17 holders, and others determined appropriate.”.

18 (g) ASSESSMENT OF TSUNAMI WATCHES AND WARN-
 19 INGS.—

20 (1) IN GENERAL.—The Tsunami Warning, Re-
 21 search, and Education Act (enacted as title VIII of
 22 the Magnuson-Stevens Fishery Conservation and
 23 Management Reauthorization Act of 2006 (Public
 24 Law 109–479)) is amended by inserting after sec-
 25 tion 804 (33 U.S.C. 3203) the following new section:

1 **“SEC. 804A. ASSESSMENT OF TSUNAMI WATCHES AND**
2 **WARNINGS.**

3 “(a) ASSESSMENT OF TSUNAMI WATCHES AND
4 WARNINGS.—

5 “(1) IN GENERAL.—Not later than two years
6 after the date of the enactment of this section, the
7 Under Secretary shall—

8 “(A) conduct an assessment of—

9 “(i) the tsunami watches and warn-
10 ings of the National Weather Service; and

11 “(ii) the information delivery to sup-
12 port preparation and responses to
13 tsunamis; and

14 “(B) submit to Congress a report on the
15 findings of the Under Secretary with respect to
16 the assessment required by subparagraph (A).

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

19 “(A) An evaluation of whether the watch-
20 es, warnings, and information described in
21 paragraph (1)(A) effectively—

22 “(i) communicate risk to the general
23 public;

24 “(ii) inform action to prevent loss of
25 life and property;

1 “(iii) inform action to support tsu-
2 nami preparation and response; and

3 “(iv) deliver information in a manner
4 designed to lead to appropriate action.

5 “(B) Subject to subsection (b)(2), such
6 recommendations as the Under Secretary may
7 have for—

8 “(i) legislative and administrative ac-
9 tion to improve the watches and warnings
10 described in paragraph (1)(A)(i); and

11 “(ii) such research as the Under Sec-
12 retary considers necessary to address the
13 focus areas described in paragraph (3).

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

17 “(A) Ways to communicate the risks posed
18 by hazardous tsunami events to the public that
19 are most likely to result in informed decision-
20 making regarding the mitigation of such risks.

21 “(B) Ways to provide actionable geo-
22 graphic information to the recipient of a watch
23 or warning for tsunami, including partnering
24 with emergency response agencies, as appro-
25 priate.

1 “(C) Evaluation of information delivery to
2 support the preparation for and response to
3 tsunamis.

4 “(4) CONSULTATION.—In conducting the as-
5 sessment required by paragraph (1)(A), the Under
6 Secretary shall consult with the following:

7 “(A) Individuals in the academic sector, in-
8 cluding individuals in the field of social and be-
9 havioral sciences.

10 “(B) Other weather services.

11 “(C) Media outlets and other entities that
12 distribute the watches and warnings described
13 in paragraph (1)(A)(i).

14 “(D) Emergency planners and responders,
15 including State, local, and Tribal emergency
16 management agencies.

17 “(E) Other government users of the watch-
18 es and warnings described in paragraph
19 (1)(A)(i), including the Federal Highway Ad-
20 ministration.

21 “(F) Such other Federal agencies as the
22 Under Secretary determines rely on watches
23 and warnings regarding tsunamis for oper-
24 ational decisions.

1 “(5) METHODOLOGIES.—In conducting the as-
2 sessment required by paragraph (1)(A), the Under
3 Secretary shall use such methodologies as the Under
4 Secretary considers generally accepted by the weath-
5 er enterprise (as such term is defined in section 2
6 of the Weather Research and Forecasting Innovation
7 Act of 2017 (15 U.S.C. 8501)), including social and
8 behavioral sciences.

9 “(b) IMPROVEMENTS TO TSUNAMI WATCHES AND
10 WARNINGS.—

11 “(1) IN GENERAL.—Based on the assessment
12 required by subsection (a)(1)(A), the Under Sec-
13 retary shall make such improvements to the watches
14 and warnings described in such subsection as the
15 Under Secretary considers necessary to—

16 “(A) improve the communication of the
17 risks posed by tsunami events; and

18 “(B) provide actionable geographic infor-
19 mation to the recipient of a watch or warning
20 for a tsunami.

21 “(2) REQUIREMENTS REGARDING REC-
22 COMMENDATIONS.—In conducting the assessment re-
23 quired by subsection (a)(1)(A), the Under Secretary
24 shall ensure that any recommendation under sub-

1 section (a)(2)(B) that the Under Secretary considers
 2 a major change—

3 “(A) is validated by social and behavioral
 4 science using a generalizable sample;

5 “(B) accounts for the needs of various de-
 6 mographics, vulnerable populations, and geo-
 7 graphic regions;

8 “(C) responds to the needs of Federal,
 9 State, local, and Tribal government partners
 10 and media partners; and

11 “(D) accounts for necessary changes to
 12 Federally operated watch and warning propaga-
 13 tion and dissemination infrastructure and pro-
 14 tocols.”.

15 (2) CLERICAL AMENDMENT.—The table of con-
 16 tents for the Tsunami Warning, Research, and Edu-
 17 cation Act (enacted as title VIII of the Magnuson-
 18 Stevens Fishery Conservation and Management Re-
 19 authorization Act of 2006 (Public Law 109–479)) is
 20 amended by inserting after the item relating to sec-
 21 tion 804 the following new item:

“Sec. 804A. Assessment of tsunami watches and warnings.”.

22 (h) GLOBAL TSUNAMI WARNING AND MITIGATION
 23 NETWORK.—Section 807(d) of the Tsunami Warning, Re-
 24 search, and Education Act (33 U.S.C. 3206(d)) is amend-
 25 ed by inserting “and management” after “data sharing”.

1 (i) TSUNAMI SCIENCE AND TECHNOLOGY ADVISORY
 2 PANEL.—Section 808 of the Tsunami Warning, Research,
 3 and Education Act (33 U.S.C. 3206a) is amended—

4 (1) in subsection (b)(1), by inserting “and be-
 5 havioral” after “social”; and

6 (2) by adding at the end the following new sub-
 7 section:

8 “(e) SUNSET.—The Panel shall terminate not later
 9 than six years after the date of the enactment of the
 10 Weather Act Reauthorization Act of 2025.”.

11 (j) AUTHORIZATION OF APPROPRIATIONS.—Section
 12 809 of the Tsunami Warning, Research, and Education
 13 Act (33 U.S.C. 3207) is amended to read as follows:

14 **“SEC. 809. AUTHORIZATION OF APPROPRIATIONS.**

15 “There are authorized to be appropriated to the Ad-
 16 ministrator to carry out this title \$30,000,000 for each
 17 of fiscal years 2026 through 2030, of which—

18 “(1) not less than 27 percent of the amount ap-
 19 propriated for each such fiscal year shall be for ac-
 20 tivities conducted at the State level under the na-
 21 tional tsunami hazard mitigation program under sec-
 22 tion 805; and

23 “(2) not less than eight percent of the amount
 24 appropriated shall be for the tsunami research pro-
 25 gram under section 806.”.

1 **SEC. 106. OBSERVING SYSTEM PLANNING.**

2 Section 106 of the Weather Research and Fore-
3 casting Innovation Act of 2017 (15 U.S.C. 8516) is
4 amended—

5 (1) in paragraph (3)—

6 (A) by inserting “Federal” before “observ-
7 ing capabilities”; and

8 (B) by striking “and” after the semicolon;

9 (2) in paragraph (4)—

10 (A) by inserting “, including private sector
11 partnerships or commercial acquisition,” after
12 “options”; and

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

15 (3) by adding at the end the following new
16 paragraphs:

17 “(5) compare costs and schedule, including
18 cost-benefit analysis, of Federal and private sector
19 supplemental options to fill the observation data re-
20 quirements under paragraph (1) and gaps identified
21 pursuant to paragraph (3); and

22 “(6) not later than one year after the date of
23 the enactment of the Weather Act Reauthorization
24 Act of 2025, submit to Congress a report that pro-
25 vides an analysis of the technical, schedule, cost, and
26 cost benefit analyses to place an operational polar-

1 orbiting environmental satellite capability in the
2 early morning orbit to support the weather enter-
3 prise and the Administration’s mission.”.

4 **SEC. 107. OBSERVING SYSTEM SIMULATION EXPERIMENTS.**

5 Section 107 of the Weather Research and Fore-
6 casting Innovation Act of 2017 (15 U.S.C. 8517) is
7 amended—

8 (1) in subsection (b)(3), by striking “providing
9 data” and inserting “comparison to current or ex-
10 perimental commercial system capabilities that pro-
11 vide data”;

12 (2) in subsection (c)(1), by striking “, including
13 polar-orbiting and geostationary satellite systems,”;

14 (3) by striking subsection (d); and

15 (4) by redesignating subsection (e) as sub-
16 section (d).

17 **SEC. 108. COMPUTING RESOURCES PRIORITIZATION.**

18 (a) COMPUTING RESEARCH INITIATIVE.—Section
19 108 of the Weather Research and Forecasting Innovation
20 Act of 2017 (15 U.S.C. 8518) is amended by striking sub-
21 section (a)(3)(C) and all that follows through subsection
22 (b)(7) and inserting the following:

23 “(b) ARTIFICIAL INTELLIGENCE INVESTMENTS.—
24 The Under Secretary shall leverage artificial intelligence
25 and machine learning technologies to facilitate, optimize,

1 and further leverage advanced computing to accomplish
2 critical missions of the National Oceanic and Atmospheric
3 Administration.

4 “(c) CENTERS OF EXCELLENCE.—The Under Sec-
5 retary may expand, and where applicable establish, centers
6 of excellence to aid the adoption of next-generation artifi-
7 cial intelligence and machine learning enabled advanced
8 computing capabilities. Each such center may carry out
9 activities that include the following:

10 “(1) Leveraging robust public-private partner-
11 ship models to provide access to training, experience,
12 and long-term development of workforce and infra-
13 structure.

14 “(2) Developing and optimizing tools, libraries,
15 algorithms, data structures, and other supporting
16 software necessary for specific applications on high-
17 performance computing systems.

18 “(3) Applying modern artificial intelligence,
19 deep machine-learning, and advanced data analysis
20 technologies to address current and future mission
21 challenges.

22 “(4) To the maximum extent practicable, ex-
23 ploring quantum computing and related application
24 partnerships with public, private, and academic enti-

1 ties to improve the accuracy and resolution of weath-
2 er predictions.

3 “(d) MULTI-YEAR CONTRACTS.—The Under Sec-
4 retary may enter into multi-year contracts in accordance
5 with section 3903 of title 41, United States Code, and
6 shall ensure compliance with all contract clauses provided
7 in such section to support operations, research, and devel-
8 opment related to high performance and cloud computing
9 infrastructure or systems with an unfunded contingent li-
10 ability in the event of cancellation.

11 “(e) REPORT.—Not later than two years after the
12 date of the enactment of the Weather Act Reauthorization
13 Act of 2025, the Under Secretary, in collaboration with
14 the Secretary of Energy shall submit to the Committee
15 on Science, Space, and Technology of the House of Rep-
16 resentatives and the Committee on Commerce, Science,
17 and Transportation and the Committee on Energy and
18 Natural Resources of the Senate a report evaluating the
19 following:

20 “(1) A best estimate of the overall value of
21 high-resolution probabilistic forecast guidance for
22 hazardous weather or water events (as such term is
23 defined in section 401 of the Weather Act Reauthor-
24 ization Act of 2025) using a next-generation weather
25 forecast and warning framework.

1 “(2) The needs for cloud computing, quantum
2 computing, or high-performance computing, visual-
3 ization, and dissemination collaboration between the
4 Department of Energy and the National Oceanic
5 and Atmospheric Administration.

6 “(3) A timeline and guidance for implementa-
7 tion of the following:

8 “(A) High-resolution numerical weather
9 prediction models.

10 “(B) Methods for meeting the cloud com-
11 puting, quantum computing, or high-perform-
12 ance computing, visualization, and dissemina-
13 tion needs identified under paragraph (2).”.

14 (b) STRATEGIC PLAN ON HIGH-PERFORMANCE COM-
15 PUTING AND DATA MANAGEMENT NEEDS.—

16 (1) IN GENERAL.—The Under Secretary shall
17 make publicly available not later than one year after
18 the date of the enactment of this Act, and update
19 every five years thereafter until 2035, a 10-year
20 strategic plan that outlines the high-performance
21 computing and data management requirements and
22 needs of the National Oceanic and Atmospheric Ad-
23 ministration and actions and strategies to address
24 such requirements and needs.

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

4 (A) A 10-year prospective outlook of com-
5 puting resources and upgrades needed to meet
6 the mission needs of the National Oceanic and
7 Atmospheric Administration for fisheries man-
8 agement, oceanographic forecasting, and eco-
9 logical forecasting missions.

10 (B) A discussion of the following:

11 (i) Computing and processing re-
12 sources of the Administration and a 10-
13 year projected need for such resources,
14 disaggregated by line office of the Admin-
15 istration.

16 (ii) Facilities, commercial contracts,
17 and partnerships (with other Federal agen-
18 cies or other institutions or entities) of the
19 Administration that are providing com-
20 puting and data management support or
21 capacity as of such date.

22 (iii) The use by the Administration of
23 cloud computing and other emerging tech-
24 nologies, such as artificial intelligence and
25 machine learning.

1 (iv) Additional technologies that have
2 the potential to increase effectiveness and
3 efficiency for data storage and processing
4 power, including challenges to access and
5 use of such technologies.

6 (v) The distribution of computing re-
7 sources among the operations and research
8 functions of the Administration.

9 (vi) Products and services of the Ad-
10 ministration that have not become avail-
11 able to the public because of a lack of com-
12 puting resources.

13 (vii) Current and future workforce de-
14 velopment needs, such as information tech-
15 nology and software engineering, of the
16 Administration.

17 (viii) The high-performance computing
18 requirements of the Administration, with a
19 special focus on requirements that are
20 common across line offices of the Adminis-
21 tration.

22 (C) Timelines, and performance measures
23 for assessing progress toward attaining goals
24 for the following:

1 (i) Computing infrastructure and ar-
2 chitecture of the Administration (including
3 facilities, hardware, and software).

4 (ii) Use by the Administration of tech-
5 nologies that will increase effectiveness and
6 efficiency for data storage and processing
7 power, including challenges to access and
8 use of such technologies.

9 (D) A 10-year life cycle analysis of the
10 management of facilities, hardware, and engi-
11 neering involved in the strategic plan that in-
12 cludes the following:

13 (i) Program formulation for project
14 conception, implementation, and closure.

15 (ii) Technical infrastructure, products,
16 processes, data, and personnel resources
17 required to achieve defined cost, schedule,
18 and performance objectives.

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

21 (3) PUBLIC INVOLVEMENT.—In developing the
22 strategic plan required by paragraph (1), the Under
23 Secretary shall invite comments and other feedback
24 from the public to inform the strategic plan.

25 (4) ANNUAL BRIEFINGS.—

1 (A) IN GENERAL.—Not later than one year
 2 after the date of the enactment of this Act and
 3 annually thereafter until 2030, the Under Sec-
 4 retary shall brief Congress on the progress
 5 made toward the objectives of the strategic plan
 6 required by paragraph (1).

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

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

11 (ii) Such updates to the strategic plan
 12 as the Under Secretary considers appro-
 13 priate.

14 **SEC. 109. EARTH PREDICTION INNOVATION CENTER.**

15 Paragraph (5) of section 102(b) of the Weather Re-
 16 search and Forecasting Innovation Act of 2017 (15 U.S.C.
 17 8512(b)) is amended—

18 (1) in subparagraph (D), by striking “and”
 19 after the semicolon; and

20 (2) by striking subparagraph (E) and inserting
 21 the following new subparagraphs:

22 “(E) developing community weather re-
 23 search modeling systems that—

24 “(i) are accessible by the public in ac-
 25 cordance with section 10601 of the James

1 M. Inhofe National Defense Authorization
2 Act for Fiscal Year 2023 (15 U.S.C.
3 8512a) and available for archive and long-
4 term study;

5 “(ii) meet basic end-user requirements
6 for running on public computers and net-
7 works located outside of secure National
8 Oceanic and Atmospheric Administration
9 information and technology systems;

10 “(iii) use, whenever appropriate and
11 cost-effective, innovative strategies and
12 methods, including cloud-based computing
13 capabilities, for hosting and management
14 of part or all of the system described in
15 this subparagraph;

16 “(iv) use modeling systems that allow
17 for interoperability with new model compo-
18 nents, modules, and next-generation soft-
19 ware and coding languages;

20 “(v) allow for open testing and inte-
21 gration of promising operational model im-
22 provements from the broader community;

23 “(vi) access as close to a real-time
24 basis as possible operational data and
25 metadata, including commercially pur-

1 chased data for use in the model testing
2 conducted by the Earth Prediction Innova-
3 tion Center pursuant to redistribution re-
4 strictions, licensing agreements, and appli-
5 cable existing laws and regulations; and

6 “(vii) provide supported and portable
7 versions of the unified forecast system, in-
8 cluding applications for fire weather, sub-
9 seasonal to seasonal forecasting, hurricane,
10 space weather, ocean, cryosphere, air qual-
11 ity, and coastal models, that can reproduce
12 current operational global and regional
13 model prediction; and

14 “(F) establishing a National Oceanic and
15 Atmospheric Administration Data Lake, to be
16 maintained by the Administration, a commercial
17 partner, or non-profit entity, that consolidates
18 and maintains a publicly available and continu-
19 ously updated collection of data and metadata
20 used in numerical weather prediction for use in
21 the Earth Prediction Innovation Center’s model
22 testing, pursuant to redistribution restrictions,
23 licensing agreements, and applicable existing
24 laws and regulations.”.

1 **SEC. 110. SATELLITE ARCHITECTURE PLANNING.**

2 Section 301 of the Weather Research and Fore-
3 casting Innovation Act of 2017 (15 U.S.C. 8531) is
4 amended—

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

8 (2) by amending subsection (b) to read as fol-
9 lows:

10 “(b) NATIONAL OCEANIC AND ATMOSPHERIC ADMIN-
11 ISTRATION SATELLITE SYSTEMS AND DATA.—

12 “(1) IN GENERAL.—The Under Secretary shall
13 maintain a fleet of National Oceanic and Atmos-
14 pheric Administration space-based observation plat-
15 forms that provide critical operations-focused data
16 and information to support the mission of the Ad-
17 ministration to monitor the global environment in
18 order to protect lives and property from extreme
19 weather and other natural phenomena.

20 “(2) COLLABORATION.—The Under Secretary
21 shall implement recommendations from the National
22 Oceanic and Atmospheric Administration Observing
23 Systems Council to ensure an appropriate mix of
24 government, academic, commercial sector, and inter-
25 national partnerships in the provision of data and
26 information, including a broadened effort on data

1 acquisition through the Commercial Data Program
 2 under section 302 when cost-effective and beneficial
 3 to the Administration.

4 “(3) PRIORITY.—The Under Secretary shall en-
 5 sure that platforms maintained under paragraph (1)
 6 prioritize the development of products and services
 7 that are tailored to meet the National Oceanic and
 8 Atmospheric Administration’s mission.

9 “(4) NATIONAL CENTERS FOR ENVIRONMENTAL
 10 INFORMATION.—The Under Secretary shall maintain
 11 the National Centers for Environmental Information
 12 to provide a long-term archive and access to the na-
 13 tional and global data and metadata of the National
 14 Oceanic and Atmospheric Administration.”; and

15 (3) in subsection (f)(1), by striking “2023” and
 16 inserting “2030”.

17 **SEC. 111. IMPROVING UNCREWED ACTIVITIES.**

18 (a) RESEARCH AND DEVELOPMENT.—Section
 19 102(b)(3) of the Weather Research and Forecasting Inno-
 20 vation Act of 2017 (15 U.S.C. 8512(b)(3)) is amended—

21 (1) in subparagraph (B), by striking “aerial”
 22 and inserting “crewed and uncrewed aerial and sur-
 23 face”; and

24 (2) in subparagraph (G), by striking “, includ-
 25 ing commercial observing systems” and inserting “,

1 including stationary and mobile commercial observ-
2 ing systems, such as uncrewed aircraft and marine
3 systems, to provide observations of the atmosphere
4 and ocean, and other observations, in cooperation
5 with the Office of Marine and Aviation Operations”.

6 (b) USE OF UNCREWED AERIAL SYSTEMS.—Section
7 102 of the Weather Research and Forecasting Innovation
8 Act of 2017 (15 U.S.C. 8512) is amended by—

9 (1) redesignating subsections (c) and (d) as
10 subsections (d) and (e), respectively; and

11 (2) by inserting after subsection (b) the fol-
12 lowing new subsection:

13 “(c) USE OF UNCREWED AERIAL SYSTEMS.—

14 “(1) IN GENERAL.—The Assistant Adminis-
15 trator for Oceanic and Atmospheric Research and
16 the Assistant Administrator for the Office of Marine
17 and Aviation Operations, whenever practical, shall
18 use uncrewed aerial systems to assess damage and
19 assist recovery after an extreme weather or water
20 event.

21 “(2) USE OF SYSTEMS.—The Assistant Admin-
22 istrator for Oceanic and Atmospheric Research and
23 the Assistant Administrator for the Office of Marine
24 and Aviation Operations may acquire uncrewed aer-
25 ial systems and training resources for the regional

1 offices and partners of the National Oceanic and At-
 2 mospheric Administration for the use and deploy-
 3 ment of such systems in storm assessments and re-
 4 sponse.”.

5 **SEC. 112. INTERAGENCY COUNCIL FOR ADVANCING METE-**
 6 **OROLOGICAL SERVICES.**

7 (a) IN GENERAL.—Section 402 of the Weather Re-
 8 search and Forecasting Innovation Act of 2017 (15 U.S.C.
 9 8542) is amended—

10 (1) in subsection (a), in the matter preceding
 11 paragraph (1), by—

12 (A) striking “Advancing Weather Services”
 13 and inserting “Advancing Meteorological Serv-
 14 ices (in this section referred to as the ‘Inter-
 15 agency Council’)”; and

16 (B) striking “Committee” each place it ap-
 17 pears and inserting “Council”;

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

20 “(b) CO-CHAIRS.—The Director of the Office of
 21 Science and Technology Policy and the Under Secretary
 22 shall serve as co-chairs of the Interagency Council. The
 23 Under Secretary shall serve as the Federal Coordinator
 24 for Meteorology.

1 “(c) FURTHER COORDINATION.—The Director of the
2 Office of Science and Technology Policy shall take such
3 steps as are necessary to coordinate the activities of the
4 Federal Government with stakeholders in the United
5 States weather industry, academic partners, State govern-
6 ments, and emergency managers, including by imple-
7 menting mechanisms to encourage and enable the partici-
8 pation of non-Federal employees in the functions of the
9 Interagency Council.”; and

10 (3) by adding at the end the following new sub-
11 sections:

12 “(d) FUNCTIONS.—The Interagency Council shall be
13 the formal mechanism by which all relevant Federal de-
14 partments and agencies coordinate implementation of pol-
15 icy and practices to ensure United States global leadership
16 in meteorological services. In doing so, the Interagency
17 Council shall review programs and support relevant weath-
18 er research and forecast innovation activities, as well as
19 other related implementation activities, related to Federal
20 meteorological services, including by carrying out the fol-
21 lowing:

22 “(1) Identifying and helping prioritize meteorolo-
23 gical research and service delivery needs, including
24 relating to observations, operational systems, com-
25 munications, and infrastructure.

1 “(2) Providing recommendations to streamline
2 or consolidate activities and develop greater effi-
3 ciencies in cross-agency activities.

4 “(3) Leveraging Earth system science research
5 outcomes of the National Oceanic and Atmospheric
6 Administration, the National Aeronautics and Space
7 Administration, and other relevant Federal depart-
8 ments and agencies, including research outcomes re-
9 lated to the relevant recommended key science and
10 applications questions and priorities in the National
11 Academies of Sciences, Engineering, and Medicine’s
12 2018 report ‘Thriving on Our Changing Planet: A
13 Decadal Strategy for Earth Observation from
14 Space’, to understand and predict high-impact
15 weather phenomena.

16 “(4) Facilitating the expansion and strength-
17 ening of partnerships with private sector entities to
18 advance meteorological research, communications,
19 and computing in collaboration with the Earth sys-
20 tem science, service, and stakeholder communities.

21 “(5) Sharing information regarding meteorolog-
22 ical research improvement needs and science oppor-
23 tunities across relevant Federal departments and
24 agencies.

1 “(6) Providing advice to all relevant Federal de-
2 partments and agencies regarding potential collabo-
3 rations and expected level of resources needed to
4 maintain and operate the Interagency Council.

5 “(7) Enhancing communication and coordina-
6 tion and promoting sharing within relevant Federal
7 departments and agencies and across the Inter-
8 agency Council.

9 “(8) Developing, recruiting, and sustaining a
10 professional and diverse workforce for meteorological
11 research and services.

12 “(e) DATA INVENTORY.—The Interagency Council, in
13 coordination and avoidance of duplication with the United
14 States Group on Earth Observations, shall promote data
15 and metadata access and archive activities to increase ac-
16 cessibility, interoperability, and reusability by maintaining
17 a data inventory of meteorological observations. Not less
18 frequently than every two years for a period of 10 years
19 beginning on the date of the enactment of this subsection,
20 the Interagency Council shall solicit updated information
21 from private sector entities identifying current and near
22 future sources of such data. Such data shall be made
23 available to member departments and agencies under sub-
24 section (a).

1 “(f) COORDINATION OFFICE.—The Interagency Me-
2 teorological Coordination Office shall provide to the Inter-
3 agency Council such administrative and logistical support
4 as the Interagency Council may require, as determined by
5 the co-chairs.

6 “(g) COST SHARE.—Member departments and agen-
7 cies specified in subsection (a) may provide reimbursable
8 financial support to the Interagency Meteorological Co-
9 ordinating Office to enhance cost-sharing and collabora-
10 tion related to weather research and forecast innovation
11 activities.

12 “(h) REPORT.—Not later than one year after the
13 date of the enactment of this subsection and annually
14 thereafter until 2030, the Interagency Council shall pub-
15 lish a report which identifies among member departments
16 and agencies specified in subsection (a) the following:

17 “(1) Federal programs that use meteorological
18 observations, data sources, and capabilities.

19 “(2) Federal programs that acquire such obser-
20 vations, data, and capabilities from private sector
21 entities.

22 “(3) Advancements in meteorological data col-
23 lection, assimilation, and forecasting that could im-
24 prove Federal programmatic operational capabilities.

1 “(4) Barriers to acquiring meteorological obser-
2 vations, data sources, and capabilities that could be
3 used to better meet Federal programmatic needs.”.

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

10 **SEC. 113. OCEAN OBSERVATIONS.**

11 Subsection (b) of section 12304 of the Integrated
12 Coastal and Ocean Observation System Act of 2009 (33
13 U.S.C. 3603) is amended by adding at the end the fol-
14 lowing new paragraph:

15 “(5) SHIPS OF OPPORTUNITY PILOT PRO-
16 GRAM.—

17 “(A) IN GENERAL.—The Administrator, in
18 coordination with the heads of relevant Federal
19 departments and agencies, shall, subject to rel-
20 evant regulations and certifications, maintain
21 pilot programs or projects to contract with re-
22 search or commercial ship operators for data
23 collection and assess the potential costs, bene-
24 fits, and viability of a network of ocean and at-
25 mospheric observing instruments operating on

1 research or commercial ocean vessels, including
2 in the Arctic, in order to supplement the Inte-
3 grated Coastal, Great Lakes, and Ocean Obser-
4 vation System in improving understanding of
5 coastal and ocean systems and their relation-
6 ships to human activities.

7 “(B) STANDARDS AND SPECIFICATIONS.—

8 The Administrator shall ensure that data ac-
9 quired through the pilot program or projects
10 under subparagraph (A) meets the most recent
11 standards and specifications required for obser-
12 vation services and data as published pursuant
13 to subsection (c) of section 302 of the Weather
14 Research and Forecasting Innovation Act of
15 2017.

16 “(C) REPORT.—Not later than five years

17 after the date of the enactment of this para-
18 graph, the Administrator, in consultation with
19 the Secretary of Transportation, shall submit to
20 Congress a report on the requirements for a
21 global network of ocean and atmospheric instru-
22 ments operating on research or commercial
23 ocean vessels for measurement and data trans-
24 mission.

1 “(D) SUNSET.—This paragraph shall ter-
 2minate on the earlier of—

3 “(i) September 30, 2030; or

4 “(ii) one year after the date on which
 5 the report required under subparagraph
 6 (B) is submitted by the Administrator.”.

7 **SEC. 114. CONSOLIDATION OF REPORTS.**

8 (a) WEATHER RESEARCH AND FORECASTING INNO-
 9 VATION ACT OF 2017.—

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

12 (A) in section 102 (15 U.S.C. 8512), by
 13 striking subsection (e) (as redesignated pursu-
 14 ant to section 111(b));

15 (B) by amending section 105 (15 U.S.C.
 16 8515) to read as follows:

17 **“SEC. 105. WEATHER RESEARCH AND DEVELOPMENT PLAN-**
 18 **NING.**

19 “Not later than two years after the date of the enact-
 20 ment of this section and not less frequently than every
 21 two years thereafter, the Under Secretary, acting through
 22 the Assistant Administrator for Oceanic and Atmospheric
 23 Research, and in coordination with the Director of the Na-
 24 tional Weather Service and the Assistant Administrator
 25 for Satellite and Information Services, shall issue a re-

1 search and development and research to operations plan
2 to maintain United States leadership in numerical weather
3 prediction and forecasting that—

4 “(1) describes the forecasting skill and tech-
5 nology goals, technology transfer plan, and progress
6 of the National Oceanic and Atmospheric Adminis-
7 tration in carrying out the program conducted under
8 section 102;

9 “(2) identifies and prioritizes specific research
10 and development activities, data collection and anal-
11 ysis, predictive modeling, demonstration of potential
12 operational forecast application, education, training,
13 and performance metrics, weighted to meet the oper-
14 ational weather and flood-event mission of the Na-
15 tional Weather Service to achieve a weather-ready
16 Nation;

17 “(3) describes how the program conducted
18 under section 102 will collaborate with Federal
19 agencies and departments, international partners,
20 and stakeholders, including the United States weath-
21 er industry and academic partners, and the role of
22 each in advancing weather forecasting and commu-
23 nication;

24 “(4) identifies, through consultation with the
25 National Science Foundation, the United States

1 weather industry, and academic partners, research
2 necessary to advance the scientific understanding of
3 weather processes and provide information to im-
4 prove weather warning and forecast systems in the
5 United States most effectively;

6 “(5) describes the ongoing research projects of
7 the United States Weather Research Program, the
8 goals of such projects, and projects related to weath-
9 er observations, short-term weather, or subseasonal
10 forecasts within the Office of Oceanic and Atmos-
11 pheric Research that are closest to
12 operationalization; and

13 “(6) describes how the National Oceanic and
14 Atmospheric Administration is advancing community
15 weather modeling.”;

16 (C) in section 403 (15 U.S.C. 8543)—

17 (i) in subsection (a), by inserting
18 “the” after “Director of”; and

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

21 “(d) ANNUAL BRIEFING.—Not less frequently than
22 once each year, the Under Secretary shall brief the Com-
23 mittee on Commerce, Science, and Transportation of the
24 Senate and the Committee on Science, Space, and Tech-
25 nology of the House of Representatives on participation

1 in the program under subsection (a) and shall highlight
 2 any innovations that come from the interaction described
 3 in subsection (b).”; and

4 (D) by striking sections 408 through 411
 5 and section 414 and redesignating sections 412
 6 and 413 as sections 408 and 409, respectively.

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

“Sec. 408. Weather enterprise outreach.

“Sec. 409. Hurricane hunter aircraft.”.

12 (b) NATIONAL OCEANIC AND ATMOSPHERIC ADMIN-
 13 ISTRATION AUTHORIZATION ACT OF 1992.—The National
 14 Oceanic and Atmospheric Administration Authorization
 15 Act of 1992 (Public Law 102–567) is amended—

16 (1) in section 106, by striking subsection (c)
 17 (15 U.S.C. 1537); and

18 (2) in section 108 (15 U.S.C. 8520)—

19 (A) in subsection (a)—

20 (i) by striking paragraph (5); and

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

24 (B) by striking subsection (b); and

1 (C) by redesignating subsection (c) as sub-
2 section (b).

3 **SEC. 115. PRECIPITATION FORECAST IMPROVEMENT PRO-**
4 **GRAM.**

5 (a) IN GENERAL.—Title VI of the Weather Research
6 and Forecasting Innovation Act of 2017 (15 U.S.C. 8501
7 et seq.) is amended—

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

10 (2) by inserting after section 602 the following
11 new section:

12 **“SEC. 603. PRECIPITATION FORECAST IMPROVEMENT PRO-**
13 **GRAM.**

14 “(a) IN GENERAL.—The Under Secretary, in collabo-
15 ration with the United States weather industry, other Fed-
16 eral agencies, and academic partners, shall maintain a
17 program to improve precipitation forecasting across
18 timescales.

19 “(b) GOAL.—The goal of the program under sub-
20 section (a) shall be to provide more accurate, reliable, and
21 timely precipitation forecasts across timescales through
22 the development and application of a fully coupled Earth
23 system prediction model in order to reduce the loss of life
24 or property related to precipitation extremes, with a focus
25 on the following:

1 “(1) Improving the understanding and pre-
2 diction of precipitation extremes from a variety of
3 weather systems, including atmospheric rivers.

4 “(2) Evaluating and incorporating, as appro-
5 priate, innovative observations into operational moni-
6 toring and forecast systems to improve precipitation
7 forecasts.

8 “(3) Improving Earth system model predictions
9 of precipitation extremes from atmospheric rivers,
10 tropical cyclones, summer-time thunderstorms, win-
11 ter storms, and other phenomena, in coordination
12 with relevant programs.

13 “(4) Enhancing research transition to oper-
14 ations through testbeds, including the evaluation of
15 physical and social science, technology, and other re-
16 search to develop products and services for imple-
17 mentation and use by relevant stakeholders.

18 “(5) Incorporating social, behavioral, and eco-
19 nomic sciences best practices into operations for
20 more effective and actionable watch and warning
21 products that help drive public safety and damage
22 mitigation decisions in coordination with the pro-
23 grams established in accordance with this Act.

24 “(6) Ensuring data and metadata management
25 processes are in place to support data access and ar-

1 chive for long-term research and operations among
2 multiple partners.

3 “(c) ACTIVITIES.—In carrying out the program
4 under subsection (a), the Under Secretary shall support
5 research-to-operations work, including relating to the fol-
6 lowing:

7 “(1) Implementing key strategies and following
8 priorities and objectives outlined by the National
9 Oceanic and Atmospheric Administration’s ‘Precipi-
10 tation Prediction Grand Challenge Strategy’.

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

14 “(3) Improving the social, behavioral, risk, com-
15 munications, and economic sciences related to
16 vulnerabilities, risk communication, and delivery of
17 information critical for reducing the loss of life or
18 property related to extreme precipitation.

19 “(4) Conducting the research necessary to de-
20 velop and deploy probabilistic weather forecast guid-
21 ance technology relating to precipitation extremes in
22 operational practice.

23 “(5) Enhancing the operational capacity of the
24 National Weather Service to deliver decision support
25 for increasing precipitation extremes.

1 “(6) Expanding computational resources to im-
2 prove precipitation modeling.

3 “(d) ANNUAL BUDGET.—The Under Secretary shall,
4 not less frequently than annually, submit to Congress a
5 proposed budget corresponding with carrying out this sec-
6 tion.

7 “(e) SENSE OF CONGRESS.—It is the sense of Con-
8 gress that improved precipitation forecasts should support
9 improved water resource management and resilience to ex-
10 treme water-related events, such as floods and drought,
11 which may include the use of enhanced streamflow pre-
12 diction.”.

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

“Sec. 603. Precipitation forecast improvement program.

“Sec. 604. Definitions.”.

18 **TITLE II—ENHANCING FEDERAL** 19 **WEATHER FORECASTING AND** 20 **INNOVATION**

21 **SEC. 201. WEATHER INNOVATION FOR THE NEXT GENERA-** 22 **TION.**

23 (a) IN GENERAL.—Not later than 180 days after the
24 date of the enactment of this Act, the Under Secretary

1 shall establish a Research, Development, Test, and Eval-
2 uation Program (in this section referred to as the “Pro-
3 gram”) to ensure the continued performance of weather
4 radar capabilities based on defined use needs and require-
5 ments, including capabilities currently being developed.

6 (b) REQUIREMENTS.—In carrying out the Program,
7 the Under Secretary, in consultation with the Interagency
8 Council for Advancing Meteorological Services, shall carry
9 out the following:

10 (1) Partner with the private sector, academia,
11 Federal, State, and local government entities, and
12 any other entity the Under Secretary considers ap-
13 propriate.

14 (2) Identify, evaluate, and test existing or
15 emerging technologies and solutions that improve
16 radar coverage and performance, including by miti-
17 gating the potential impact of interferences on
18 weather radar.

19 (3) To the maximum extent practicable, re-
20 search additional solutions that could improve radar
21 coverage and performance and mitigate the effects
22 of interferences on weather radar, such as the fol-
23 lowing:

24 (A) Signal processing algorithms, including
25 the capability to merge data from multiple ra-

1 dars, including commercial radars, and other
2 supplemental data sources.

3 (B) Short-term forecasting algorithms to
4 improve weather and water-related forecasts
5 and warnings.

6 (C) Gap filling radars to improve radar
7 coverage and provide supplemental or replace-
8 ment observations in areas impacted by inter-
9 ferences on weather radar.

10 (D) Solutions to replace or mitigate the ef-
11 fects of data contaminated by interferences on
12 weather radar.

13 (E) Solutions from electromagnetic
14 sources.

15 (4) Develop, support, or partner with developers
16 to provide commercially viable technical mitigation
17 solutions for interferences to weather radar capabili-
18 ties that are compatible with the operational require-
19 ments of the weather radar system.

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

23 (1) Phased array weather radar systems.

24 (2) Supplementing or replacing contaminated
25 data with commercial radar data.

1 (3) The use of data from meteorological towers
2 associated with the private sector, or similar capa-
3 bilities.

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

6 (5) Any other technology-based mitigation solu-
7 tion the Under Secretary determines could improve
8 radar coverage by overcoming interferences, beam
9 blockage, or ghost echoes.

10 (d) REPORT; RECOMMENDATION.—

11 (1) IN GENERAL.—Not later than two years
12 after the date of the enactment of this section and
13 annually thereafter until the Program terminates
14 pursuant to subsection (e), the Under Secretary
15 shall submit to Congress a report on the implemen-
16 tation of the Program, including an evaluation of
17 each technology-based mitigation solution identified
18 for priority consideration pursuant to subsection (e),
19 and a recommendation regarding additional identi-
20 fication and testing of new technologies based on
21 such consideration.

22 (2) FINAL RECOMMENDATION.—Not later than
23 five years after the date of the enactment of this
24 section, the Under Secretary shall provide to Con-
25 gress a recommendation on whether additional re-

1 search, testing, and development through the Pro-
2 gram established under subsection (a) is needed, and
3 a determination of whether a cessation of field re-
4 search, testing, development and evaluation under
5 the Program is appropriate.

6 (e) TERMINATION.—The authority of the Under Sec-
7 retary to carry out the Program shall terminate on the
8 earlier of—

9 (1) September 30, 2030; or

10 (2) one year after the date on which the final
11 recommendation required under subsection (d)(2) is
12 submitted by the Under Secretary.

13 (f) DEFINITIONS.—In this section:

14 (1) GHOST ECHO.—The term “ghost echo”
15 means radar signal reflectivity or velocity return er-
16 rors in radar data due to the proximity of an inter-
17 ference.

18 (2) INTERFERENCE.—The term “interference”
19 means any natural or human-built structure that af-
20 fects a weather radar system, including any wind
21 turbine or building that could disrupt or limit the ef-
22 fectiveness of a weather radar system.

23 **SEC. 202. RADAR NEXT PROGRAM.**

24 (a) IN GENERAL.—The Under Secretary, in consulta-
25 tion with the Director of the National Weather Service,

1 shall establish a program to be known as the “Radar Next
2 Program” (in this section referred to as the “program”).

3 (b) REQUIREMENTS.—In carrying out the program,
4 the Under Secretary shall carry out the following:

5 (1) Develop performance and coverage require-
6 ments for the weather radar network of the United
7 States, including the territories of the United States.

8 (2) Collaborate with the weather enterprise to
9 determine potential solutions to update the weather
10 radar network of the United States that meets the
11 requirements developed under paragraph (1).

12 (3) Develop a plan in accordance with sub-
13 section (c).

14 (c) PLAN.—

15 (1) IN GENERAL.—The Under Secretary shall
16 develop a plan to replace the Next Generation
17 Weather Radar of the National Weather Service sys-
18 tem in existence as of the date of the enactment of
19 this Act (in this subsection referred to as the
20 “NEXRAD system”).

21 (2) ELEMENTS.—The plan developed under this
22 subsection shall seek to continue and improve weath-
23 er radar coverage in the United States and its terri-
24 tories, and include the following:

1 (A) Estimates of quantifiable improve-
2 ments in performance, coverage, and accuracy
3 to be made from potential options for replace-
4 ment of the NEXRAD system.

5 (B) Development of a proof-of-concept
6 phased array radar to test and determine the
7 specifications and requirements for such re-
8 placement.

9 (C) Expected actions needed to implement
10 the recommendations of the report published by
11 the Environmental Information Services Work-
12 ing Group of the Science Advisory Board of the
13 National Oceanic and Atmospheric Administra-
14 tion in November 2023 and entitled “A
15 NESDIS Observing System Backbone Frame-
16 work” to assist in defining a radar backbone
17 architecture that will best serve the United
18 States.

19 (D) Establishment of a weather surveil-
20 lance radar testbed for the following:

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

24 (ii) Providing technical assistance for
25 the use of small, gap-filling radars with

1 private and local partners in regions where
2 geographical topography prevents the full
3 use of large systems or in locations where
4 such systems may not be commercially via-
5 ble.

6 (E) Consultation and input solicited from
7 academia, meteorologists, emergency managers,
8 and public safety or utility officials regarding
9 the specifications and requirements for replace-
10 ment of the NEXRAD system.

11 (F) Prioritized locations for initial deploy-
12 ment of the system that will replace the
13 NEXRAD system.

14 (G) Expected locations of the system that
15 will replace the NEXRAD system, including
16 sites located more than 75 miles away from an
17 existing NEXRAD system station and addi-
18 tional appropriate locations.

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

23 (3) PROCUREMENT DEADLINE.—The Under
24 Secretary shall take such actions as may be nec-
25 essary to ensure the plan developed under this sub-

1 section is fully implemented and executed by not
2 later than September 30, 2040.

3 (d) RADAR-AS-A-SERVICE.—

4 (1) IN GENERAL.—The Under Secretary may
5 partner or contract with entities outside of the Na-
6 tional Oceanic and Atmospheric Administration to
7 fill data gaps in weather radar coverage using di-
8 verse weather radars and data assimilation tech-
9 nologies in order to accomplish the following:

10 (A) Supplement data gaps in weather
11 radar coverage, including at low levels and wide
12 areas, in existence as of the date of the enact-
13 ment of this Act.

14 (B) Ensure the continued performance of
15 the United States weather radar network.

16 (C) Better detect significant precipitation
17 and severe weather over a greater area across
18 a population.

19 (2) CONSIDERATIONS.—In carrying out para-
20 graph (1), the Under Secretary may consider the fol-
21 lowing:

22 (A) Partnering or contracting with entities
23 that have participated in the testbed described
24 in subsection (c)(2)(D), the National Mesonet

1 Program, or Cooperative Research and Develop-
2 ment Agreements.

3 (B) Weather camera systems and services,
4 including in consultation with the Federal Avia-
5 tion Administration, as viable technologies to
6 supplement weather forecasting and prediction
7 needs.

8 (e) UPDATES TO CONGRESS.—The Under Secretary
9 shall provide to the Committee on Science, Space, and
10 Technology of the House of Representatives and the Com-
11 mittee on Commerce, Science, and Transportation of the
12 Senate periodic updates on the implementation of this sec-
13 tion.

14 **SEC. 203. DATA VOIDS IN HIGHLY VULNERABLE AREAS OF**
15 **THE UNITED STATES.**

16 (a) IN GENERAL.—The Under Secretary, in coordi-
17 nation with the Director of the National Weather Service
18 and the Administrator of the Federal Emergency Manage-
19 ment Agency, in consultation with the United States
20 weather industry, academic partners, and in accordance
21 with activities implemented through existing regional at-
22 mospheric, coastal, ocean, and Great Lakes observing sys-
23 tems, shall carry out activities to ensure equitable and
24 comprehensive weather observation coverage, impact-

1 based decision support services, and emergency informa-
2 tion sharing in the United States, including the following:

3 (1) Identifying regions in the United States and
4 the territories of the United States that are under-
5 observed or highly vulnerable to weather impacts
6 that threaten human life, health, and the economy.

7 (2) Identifying any challenges that contribute to
8 the lack of operations under paragraph (1).

9 (3) Increasing weather observations and devel-
10 oping new weather observational capabilities, such as
11 urban heat island mapping campaigns, with respect
12 to the regions identified under paragraph (1).

13 (4) Establishing or supporting testbeds and de-
14 ployments of decision-support services to Federal,
15 State, and local emergency operations centers to de-
16 velop and integrate new weather, water, and climate
17 observation or emergency information sharing tools,
18 with respect to the regions identified under para-
19 graph (1).

20 (5) To the maximum extent practicable, ad-
21 vancing weather and water forecasting and climate
22 modeling capabilities for the regions identified under
23 paragraph (1).

1 (6) Undertaking workforce development efforts
2 for emergency management officials and meteorolo-
3 gists in the regions identified under paragraph (1).

4 (7) Using data-void-filling observations to bet-
5 ter resolve extreme rainfall in complex topography.

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

8 (b) INTERAGENCY PARTNERSHIP TO SUPPORT PILOT
9 PROJECTS.—In carrying out this section, the Under Sec-
10 retary, acting through the Director of the National Weath-
11 er Service and in collaboration with the Administrator of
12 the Federal Emergency Management Agency, shall estab-
13 lish an interagency partnership to support pilot projects
14 that accelerate coordination and use of localized weather,
15 water, and climate data and impact-based communications
16 in infrastructure and emergency management decisions by
17 Federal, State, and local officials.

18 (c) PRIORITY.—At least one pilot project under sub-
19 section (b) shall address key science challenges to using
20 mesonet data in local decisionmaking and development of
21 new tools and training for owners and operators of critical
22 infrastructure (as such term is defined in section 1016(e)
23 of Public Law 107–56 (42 U.S.C. 5195c(e))), such as
24 dams, energy generation and distribution facilities, nu-
25 clear power plants, and transportation networks.

1 **SEC. 204. ATMOSPHERIC RIVERS FORECAST IMPROVEMENT**
2 **PROGRAM.**

3 (a) IN GENERAL.—The Under Secretary, in collabo-
4 ration with the United States weather industry and aca-
5 demic partners and in coordination with the precipitation
6 forecast improvement program under section 603 of the
7 Weather Research and Forecasting Innovation Act of
8 2017, as added by section 115 of this Act, shall establish
9 an atmospheric river forecast improvement program (in
10 this section referred to as the “program”).

11 (b) GOAL.—The goal of the program shall be to re-
12 duce the loss of life and property and economic losses from
13 atmospheric rivers through the research, development, and
14 extension of accurate, effective, and actionable forecasts
15 and warnings, including by carrying out the following:

16 (1) Establishing atmospheric river forecast skill
17 metrics that include assessing the benefits of dynam-
18 ical modeling, data assimilation, and machine learn-
19 ing improvements in the probabilistic forecasts of
20 landfall location, extreme wind and precipitation,
21 and cascading impacts.

22 (2) Developing an atmospheric river forecast
23 system within a unified forecast system, and advanc-
24 ing next-generation coupled modeling systems, with
25 the capability of providing seasonal to short-range
26 atmospheric river forecasts that include forecast of

1 snow accumulation and other hydrologic compo-
2 nents.

3 (3) Advancing scientific understanding of the
4 roles of atmospheric rivers in subseasonal to sea-
5 sonal precipitation and probabilistic predictions at
6 subseasonal and seasonal scales.

7 (4) Developing tools and improved forecast
8 products to predict periods of active or inactive at-
9 mospheric river landfalls and inland penetration over
10 the United States with a focus on addressing stake-
11 holder and public needs related to perceiving, com-
12 prehending, and responding to atmospheric river
13 forecast improvements.

14 (5) Enhancing the transition of research to op-
15 erations through the National Oceanic and Atmos-
16 pheric Administration's testbeds, including the eval-
17 uation of physical and social science, technology, and
18 other research to develop products and services for
19 implementation and use by relevant stakeholders.

20 (6) Incorporating into atmospheric river mod-
21 eling and forecasting, as appropriate, social, behav-
22 ioral, risk, communication, and economic sciences.

23 (c) INNOVATIVE OBSERVATIONS, DATA ASSIMILA-
24 TION, AND MODELING.—The Under Secretary shall en-
25 sure the program periodically examines, tests, and evalu-

1 ates the value of incorporating innovative observations,
2 data, and measurements with respect to the improvement
3 of atmospheric river analysis, modeling, forecasts, pre-
4 dictions, and warnings.

5 (d) PROGRAM PLAN.—Not later than 270 days after
6 the date of the enactment of this Act, the Under Sec-
7 retary, in consultation with the Secretary of the Air Force
8 or the Commander of the 53rd Weather Reconnaissance
9 Squadron of the Air Force Reserve Command, shall de-
10 velop a plan that details the specific research, develop-
11 ment, data acquisition, partnerships with the weather in-
12 dustry and academic partners, and technology transfer ac-
13 tivities, as well as corresponding resources, and timelines,
14 necessary to achieve the goal of the program under sub-
15 section (b). Such plan shall be made available to the public
16 on release.

17 (e) ANNUAL BUDGET FOR PLAN SUBMITTAL.—After
18 the development of the plan pursuant to subsection (d),
19 the Under Secretary shall, not less frequently than annu-
20 ally, submit to Congress a proposed budget corresponding
21 with the activities identified in such plan.

22 (f) IMPROVED MODELING.—In carrying out the pro-
23 gram, the Under Secretary may carry out the following:

24 (1) Develop, test, and operationalize prototype
25 high-resolution Atmospheric River Analysis and

1 Forecasting System models through research and
2 operations partnerships with institutions of higher
3 education and other partners outside the National
4 Oceanic and Atmospheric Administration.

5 (2) Enhance data assimilation of current and
6 new satellite and ocean observations that is useful
7 for atmospheric river analysis and forecasting pre-
8 dictions.

9 (3) Improve data processing techniques related
10 to atmospheric river analysis and forecasting pre-
11 dictions.

12 (4) Use artificial intelligence and machine
13 learning methods as applicable to atmospheric river
14 analysis and forecasting predictions.

15 (5) Ensure the surface and subsurface observa-
16 tions of the ocean meet the needs of atmospheric
17 river analysis and forecasting predictions on dif-
18 ferent time scales.

19 (6) To the maximum extent practicable, im-
20 prove or establish baseline weather monitoring serv-
21 ices in areas that have historically experienced, or
22 are predicted to experience, atmospheric rivers.

23 (g) CONDUCT OF RECONNAISSANCE.—The Under
24 Secretary shall acquire and sustain adequate aircraft, sci-
25 entific equipment, and personnel to meet mission require-

1 ments of the National Hurricane Operations Plan and the
2 National Winter Seasons Operation plan, and to carry out
3 the following:

4 (1) Ensure atmospheric river air reconnaissance
5 observations are available throughout the expected
6 seasons of tropical cyclones and atmospheric rivers.

7 (2) To the maximum extent practicable and in
8 accordance with paragraph (4), ensure data and in-
9 formation collected are made available for research
10 and operations purposes.

11 (3) Participate in research and operations part-
12 nerships that guide flight planning and use research
13 methods to improve and expand the capabilities and
14 effectiveness of atmospheric river reconnaissance
15 over time.

16 (4) Develop data management strategies to en-
17 sure that data and metadata are adequately
18 stewarded, maintained, and archived.

19 (5) Undertake such other additional activities
20 as the Under Secretary, in consultation with the
21 Secretary of the Air Force, considers appropriate to
22 improve and grow the hurricane hunter and atmos-
23 pheric river reconnaissance mission.

24 (h) IMPROVED ATMOSPHERIC RIVER HAZARD COM-
25 MUNICATION.—The Under Secretary may conduct re-

1 search and development activities in coordination with the
2 program established under section 403(a) to carry out the
3 following:

4 (1) As appropriate, develop and refine methods
5 to categorize the intensity of weather and oceans
6 hazards, including tropical cyclones and atmospheric
7 rivers, on a quantitative scale and the effectiveness
8 of such scale in hazard communication.

9 (2) Develop best practices for communication of
10 atmospheric river events and hazards across regions
11 of the United States.

12 (3) Gather information from areas prone to
13 hurricanes and atmospheric rivers regarding levels of
14 knowledge and preparedness, including responses to
15 early forecasts and warnings by the National Oce-
16 anic and Atmospheric Administration.

17 (4) Explore strategies and effectiveness of com-
18 municating that hurricane and atmospheric river
19 events are beneficial at lower intensities versus haz-
20 ardous at higher intensities.

21 **SEC. 205. COASTAL FLOODING AND STORM SURGE FORE-**
22 **CAST IMPROVEMENT PROGRAM.**

23 (a) IN GENERAL.—The Under Secretary, in collabo-
24 ration with the United States weather industry and aca-
25 demic partners, shall establish a coastal flooding and

1 storm surge forecast improvement program (in this section
2 referred to as the “program”).

3 (b) GOAL.—The goal of the program shall be to re-
4 duce the loss of life or property from coastal flooding, in-
5 cluding high tide flooding, and storm surge events through
6 the development and extension of accurate, effective, ac-
7 tionable, and probable forecasts and warnings.

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

11 (1) Improving understanding and capacity for
12 real-time operational prediction of the ocean’s role in
13 coastal flooding, including high tide flooding, and
14 storm surge events.

15 (2) Improving the capacity to mitigate, adapt
16 to, or prevent the impacts of coastal flooding, includ-
17 ing high tide flooding, and storm surge events, in-
18 cluding by improving the understanding and capac-
19 ity of coastal communities to perceive, comprehend,
20 and respond to forecast information.

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

23 (4) Developing probabilistic coastal flooding, in-
24 cluding high tide flooding, and storm surge esti-
25 mates to complement worst-case scenario estimates,

1 including for use in long-term planning and risk
2 management by States, Tribal governments, local-
3 ities, and emergency managers in coordination with
4 the Federal Emergency Management Agency, as ap-
5 propriate.

6 (5) Establishing skill metrics for coastal inun-
7 dation forecasting that quantify the benefits of dy-
8 namical modeling, data assimilation, and machine
9 learning improvements in the probabilistic forecast
10 of coastal flooding, including high tide flooding, and
11 storm surge risk and impacts.

12 (6) Improving operational regional storm surge
13 models and, in collaboration with the United States
14 Geological Survey, wave prediction models to en-
15 hance probabilistic guidance and messaging.

16 (d) INNOVATIVE OBSERVATIONS AND MODELING.—
17 The Under Secretary shall ensure the program periodically
18 examines, tests, and evaluates the value of incorporating
19 enhanced model physics, hybrid dynamical or machine
20 learning based prediction systems, and innovative observa-
21 tions, such as novel sensor technologies, observation net-
22 works, crewed or uncrewed systems, and hosted instru-
23 ments on commercial aircrafts, vessels, and satellites, with
24 respect to the improvement of coastal flooding, including

1 high tide flooding, and storm surge forecasts, predictions,
2 and warnings.

3 (e) PROGRAM PLAN.—Not later than 180 days after
4 the date of the enactment of this Act, the Under Secretary
5 shall develop a plan that details the specific research, de-
6 velopment, data acquisition, and technology transfer ac-
7 tivities, as well as corresponding resources and timelines,
8 necessary to achieve the goal of the program under sub-
9 section (b).

10 (f) ANNUAL BUDGET FOR PLAN SUBMISSION.—After
11 the development of the plan pursuant to subsection (e),
12 the Under Secretary shall, not less frequently than annu-
13 ally, submit to Congress a proposed budget corresponding
14 with the activities identified in such plan.

15 **SEC. 206. AVIATION WEATHER AND DATA INNOVATION.**

16 (a) PROGRAM.—The Under Secretary shall maintain
17 an airborne observation program (in this section referred
18 to as the “program”) for the acquisition of atmospheric
19 sensor data and the deployment of critical atmospheric
20 sensors, including in partnership with the weather enter-
21 prise.

22 (b) ACTIVITIES.—The program shall include activi-
23 ties that carry out the following:

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

4 (2) Acquisition of additional vertical profile ob-
5 servations that provide spatial and temporal density,
6 as determined by the Under Secretary.

7 (3) Analysis of procured data when incor-
8 porated into the National Oceanic and Atmospheric
9 Administration’s unified forecast system in order to
10 provide improved forecast information for aircraft.

11 (c) BUDGET.—The Under Secretary shall, not less
12 frequently than annually, submit to Congress a proposed
13 budget corresponding with the activities described in sub-
14 section (b), including an analysis of activities that can be
15 complemented by National Oceanic and Atmospheric Ad-
16 ministration aircraft.

17 (d) AUTHORIZATION OF APPROPRIATIONS.—From
18 amounts authorized to be appropriated for the Commercial
19 Data Program under section 302 of the Weather Research
20 and Forecasting Innovation Act of 2017, there shall be
21 available not more than \$10,000,000 for each of fiscal
22 years 2026 through 2030 to carry out the program.

23 (e) AVIATION WEATHER AND TURBULENCE FORE-
24 CASTING.—The Director of the National Weather Service
25 shall include turbulence events, icing conditions, or other

1 phenomena in the forecasting capabilities of the Aviation
2 Weather Center and the Center Weather Service Units,
3 and deliver operational forecasts with consistent, timely,
4 and accurate weather and turbulence information for the
5 airspace system and the protection of lives and property.

6 (f) COORDINATION.—In carrying out subsection (e),
7 the Director of the National Weather Service shall give
8 consideration to recommendations from the Administrator
9 of the Federal Aviation Administration in furtherance of
10 section 44720 of title 49, United States Code, and improve
11 weather and turbulence forecasting capabilities by car-
12 rying out the following:

13 (1) Designating or establishing within the Fed-
14 eral Government an interagency working group to
15 determine weather and environmental data or obser-
16 vation requirements, needs, and potential solutions
17 related to aviation weather and turbulence modeling
18 or forecasting.

19 (2) Identifying current and future potential
20 data gaps related to turbulence events or phenomena
21 that can—

22 (A) identify or inform route-specific flight
23 planning; and

24 (B) be supplemented or filled by commer-
25 cial aviation tools.

1 (3) Transitioning research initiatives and pilot
2 programs, including a pilot program of instrumenta-
3 tion for observing greenhouse gases and other at-
4 mospheric factors deployed on commercial aircraft
5 and support for the evaluation of a sustained observ-
6 ing network using such instrumentation, into oper-
7 ations that improve the forecasting capabilities of
8 the Aviation Weather Center.

9 (4) Developing and deploying improved prob-
10 abilistic aviation weather forecast guidance tech-
11 nology.

12 (5) Updating interagency agreements as appro-
13 priate, including to address reimbursable agree-
14 ments.

15 (g) NEXT GENERATION AVIATION RESEARCH.—
16 Paragraph (3) of section 102(b) of the Weather Research
17 and Forecasting Innovation Act of 2017 (15 U.S.C.
18 8512(b)), as amended by section 111(a), is further amend-
19 ed by—

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

22 (2) inserting after subparagraph (E) the fol-
23 lowing new subparagraph:

24 “(F) aviation weather phenomena, includ-
25 ing atmospheric composition and turbulence, to

1 improve scientific understanding and forecast
2 capabilities for the airspace system;”.

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

9 (i) PROVISION OF WEATHER SERVICES TO THE FED-
10 ERAL AVIATION ADMINISTRATION.—

11 (1) SENSE OF CONGRESS.—It is the sense of
12 Congress that the aviation weather services provided
13 to the Federal Aviation Administration by the Na-
14 tional Oceanic and Atmospheric Administration are
15 critical to the functions of the Federal Aviation Ad-
16 ministration and the safety of the flying public.

17 (2) INTERAGENCY AGREEMENT.—The Under
18 Secretary and the Administrator of the Federal
19 Aviation Administration shall enter into or otherwise
20 participate in an interagency agreement for a period
21 of not less than five years under which the National
22 Oceanic and Atmospheric Administration provides
23 weather services to the Federal Aviation Administra-
24 tion.

1 (3) BRIEFINGS.—Not less frequently than once
 2 per quarter through 2030, the Under Secretary and
 3 the Administrator of the Federal Aviation Adminis-
 4 tration shall provide a briefing to the Committee on
 5 Commerce, Science, and Transportation of the Sen-
 6 ate and the Committee on Science, Space, and Tech-
 7 nology of the House of Representatives on the status
 8 of the provision by the National Oceanic and Atmos-
 9 pheric Administration of weather services to the
 10 Federal Aviation Administration and the interagency
 11 agreement under paragraph (2).

12 **SEC. 207. NESDIS PARTNERSHIP PROGRAM, TRANSITION**
 13 **PROGRAM, AND OPERATIONAL PLANNING.**

14 (a) PARTNERSHIP PROGRAM.—

15 (1) IN GENERAL.—The Assistant Administrator
 16 of the National Environmental Satellite, Data, and
 17 Information Service (in this section referred to as
 18 the “Assistant Administrator”) shall maintain a
 19 partnership program to enhance engagement with
 20 the private sector, academia, and other Federal de-
 21 partments and agencies (in this section referred to
 22 as the “partnership program”).

23 (2) ADMINISTRATION.—The Assistant Adminis-
 24 trator, in consultation with the Administrator of the
 25 National Aeronautics and Space Administration,

1 shall administer broad agency announcements and
2 other transactional authority or contracting mecha-
3 nisms, on an annual or more frequent basis, to sup-
4 port the partnership program.

5 (b) TRANSITION PROGRAM.—

6 (1) IN GENERAL.—To support the development
7 of next-generation technologies, missions, data sys-
8 tems, spacecraft, and instrument design, the Assist-
9 ant Administrator, in consultation with the Adminis-
10 trator of the National Aeronautics and Space Ad-
11 ministration, shall maintain a program to transition
12 selected awards from research and study phases into
13 demonstration (in this section referred to as the
14 “transition program”).

15 (2) CONSIDERATIONS.—In selecting awardees
16 for demonstrations under the transition program,
17 the Assistant Administrator shall consider tech-
18 nologies, missions, data systems, spacecraft, and in-
19 strument design that accomplish the following:

20 (A) Improve upon the National Oceanic
21 and Atmospheric Administration’s satellite ar-
22 chitecture.

23 (B) Have a direct impact on implementing
24 the recommendations of the Administration’s
25 2018 Satellite Observing System Architecture

1 Study entitled, “Building a Plan for NOAA’s
2 21st Century Satellite Observing System”.

3 (C) Meet current or future mission re-
4 quirements.

5 (c) OPERATIONAL PLANNING.—In carrying out the
6 transition program, the Assistant Administrator shall
7 monitor demonstration phase progress and plan for prom-
8 ising results that meet mission requirements to be
9 transitioned into the operational satellite architecture of
10 the National Oceanic and Atmospheric Administration.

11 (d) ANNUAL PLAN.—Not less frequently than annu-
12 ally until 2030, the Assistant Administrator shall submit
13 to the Committee on Science, Space, and Technology of
14 the House of Representatives and the Committee on Com-
15 merce, Science, and Transportation of the Senate an an-
16 nual plan that outlines the progress made in the partner-
17 ship program under subsection (a), the transition program
18 under section (b), and operational planning under sub-
19 section (c).

20 (e) AUTHORIZATION OF APPROPRIATIONS.—From
21 amounts authorized to be appropriated to the National
22 Environmental Satellite, Data, and Information Service,
23 there shall be available \$20,000,000 for fiscal years 2026
24 through 2030 to carry out to this section.

1 **SEC. 208. ADVANCED WEATHER INTERACTIVE PROCESSING**
2 **SYSTEM.**

3 (a) IN GENERAL.—Not later than September 30,
4 2030, the Under Secretary, acting through the Director
5 of the National Weather Service, shall develop a strategy
6 to transition operations of the Advanced Weather Inter-
7 active Processing System to an operational cloud-based
8 environment in order to enable a more nimble, flexible,
9 and mobile workforce.

10 (b) SERVICES.—The Under Secretary shall ensure
11 that the Advanced Weather Interactive Processing System
12 in an operational cloud-based environment referred to in
13 subsection (a) provides impact-based decision support
14 services to emergency managers at the Federal, State,
15 local, and Tribal levels, and continues to provide the fol-
16 lowing services:

17 (1) Integrating and displaying forecast data, in-
18 cluding meteorological, hydrological, climate, ocean,
19 satellite, and radar data, for National Weather Serv-
20 ice field offices and national centers.

21 (2) Acquiring and processing observational data
22 from sensors and local sources.

23 (3) Providing an interactive communications
24 system, including any relevant capabilities of the ex-
25 isting satellite broadcast network, to connect rel-
26 evant National Weather Service employees and sites.

1 (4) Initiating the dissemination of weather,
2 water, marine, ecological, climate, aviation, and
3 space warnings and forecasts in a rapid and highly
4 reliable manner.

5 (c) ELEMENTS.—The transition of operations re-
6 quired under subsection (a) may include the following:

7 (1) Establishment or support of testbeds, pilot
8 projects, and functional testing activities to facilitate
9 remote evaluation and automated testing.

10 (2) Coordinated training efforts needed for
11 Federal and non-Federal users and operators of the
12 Advanced Weather Interactive Processing System in
13 an operational cloud-based environment referred to
14 in subsection (a).

15 (3) Evaluation of bandwidth requirements to
16 achieve a quality user experience.

17 (4) Installation of circuits to reduce lapses in
18 network operations and support backup functions.

19 (5) Establishment of a cloud-based, remotely
20 accessible repository for data referred to in sub-
21 section (b)(2).

22 (6) Development and deployment of virtualized
23 systems to replace physical hardware at operational
24 sites.

1 (7) Evaluation of commercial cloud providers,
2 including hybrid approaches, to meet mission needs.

3 (8) Development, testing, demonstration, eval-
4 uation, and operationalization of forecast and warn-
5 ing products, consistent with the mission and sci-
6 entific expertise of the National Oceanic and Atmos-
7 pheric Administration.

8 (d) UPDATES TO CONGRESS.—The Under Secretary
9 shall submit to the Committee on Science, Space, and
10 Technology of the House of Representatives and the Com-
11 mittee on Commerce, Science, and Transportation of the
12 Senate periodic updates on the implementation of this sec-
13 tion.

14 (e) CONTINUED INNOVATION.—Nothing in this sec-
15 tion may be construed as prohibiting the development of
16 new forecast capabilities, subsystems, or implementing
17 modeling advancements on the operational computing sys-
18 tems of the National Oceanic and Atmospheric Adminis-
19 tration.

20 **SEC. 209. REANALYSIS AND REFORECASTING.**

21 The Under Secretary may support reanalysis and re-
22 forecasting activities within the National Oceanic and At-
23 mospheric Administration, including through weather
24 testbeds of the Administration, for the following:

1 (1) Improving weather forecasts, extreme
2 weather predictions, and weather and climate
3 datasets.

4 (2) Serving as training data for artificial intel-
5 ligence and machine learning data-driven models.

6 **SEC. 210. NATIONAL WEATHER SERVICE WORKFORCE.**

7 (a) **HIRING.**—The Director of the National Weather
8 Service shall annually submit to the Under Secretary and
9 Congress an assessment of the milestones, timelines, and
10 service level expectations required for the expeditious hir-
11 ing and timely on-boarding of employees of the National
12 Weather Service. Each such assessment may include the
13 following:

14 (1) Recommendations to outsource hiring to
15 any entity other than the National Weather Service
16 in order to meet such milestones, timelines, and
17 service level expectations.

18 (2) Determinations of the number of staff and
19 designated positions required at each forecasting of-
20 fice to provide services to protect lives and property
21 in the geographic region of responsibility.

22 (b) **HEALTH AND MORALE ASSESSMENT.**—The Di-
23 rector of the National Weather Service shall contract or
24 continue to partner with an external entity or organization
25 to conduct an assessment of medical impacts, including

1 stress and long-term health impacts, on National Weather
2 Service employees related to required rotating shift work.
3 Such assessment may include options for mitigating such
4 impacts on employees and recommendations for improving
5 benefits related to required rotating shift work.

6 (c) ROLE OF THE DIRECTOR.—Notwithstanding the
7 results of the assessment under subsection (b), the Direc-
8 tor of the National Weather Service shall establish service
9 level standards based on staffing levels.

10 (d) DESIGNATION OF SERVICE HYDROLOGIST.—

11 (1) IN GENERAL.—The Director of the National
12 Weather Service may designate at least one service
13 coordination hydrologist at each Weather Forecast
14 Office of the National Weather Service.

15 (2) LIMITATION.—Nothing in this section may
16 be construed to authorize or require a change in the
17 authorized number of full-time equivalent employees
18 of the National Weather Service or otherwise result
19 in the employment of any additional employees.

20 (3) PERFORMANCE BY OTHER EMPLOYEES.—

21 Notwithstanding paragraphs (4) and (5), the Direc-
22 tor of the National Weather Service may assign the
23 performance of the responsibilities described in this
24 subsection to such other staff of the National

1 Weather Service as the Director considers appro-
2 priate.

3 (4) RESPONSIBILITIES.—In order to increase
4 impact-based decision support services, each service
5 coordination hydrologist designated under paragraph
6 (1) shall, with respect to hydrology, carry out the
7 following:

8 (A) Be responsible for providing service to
9 the geographic area of responsibility covered by
10 the Weather Forecast Office at which the serv-
11 ice coordination hydrologist is employed to help
12 ensure that users of products and services of
13 the National Weather Service can respond ef-
14 fectively to improve outcomes from flood events.

15 (B) Liaise with users of products and serv-
16 ices of the National Oceanic and Atmospheric
17 Administration, such as emergency managers,
18 the public, academia, media outlets, users in the
19 hydropower, transportation, recreation, and ag-
20 ricultural communities, and forestry, land, fish-
21 eries, and water management interests, to
22 evaluate the adequacy and usefulness of the
23 products and services referred to in subpara-
24 graph (A), including extended range streamflow
25 forecasts, water supply forecasts, drought out-

1 looks, flood inundation mapping, coastal inun-
2 dation, and flood warnings.

3 (C) Collaborate with the National Water
4 Center, River Forecast Centers, other Weather
5 Forecast Offices, the National Integrated
6 Drought Information System, Administration
7 offices, and Federal, State, local, and Tribal
8 government agencies, as the Director considers
9 appropriate, in developing, proposing, and im-
10 plementing plans to develop, modify, or tailor
11 such products and services to improve the use-
12 fulness of such products and services.

13 (D) Engage in interagency partnerships
14 with Federal, State, local, and Tribal govern-
15 ment agencies to explore the use of forecast-in-
16 formed reservoir operations to reduce flood risk
17 and inform decisions related to water resources
18 management.

19 (E) Ensure the maintenance and accuracy
20 of flooding and water resource management
21 partner call lists, appropriate office hydrologic
22 service policy or procedures, and other hydro-
23 logic information or dissemination methodolo-
24 gies or strategies.

1 (F) Work closely with Federal, State, local,
2 and Tribal emergency and floodplain manage-
3 ment agencies, and other agencies relating to
4 disaster management, to ensure a planned, co-
5 ordinated, and effective preparedness and re-
6 sponse effort.

7 (5) ADDITIONAL RESPONSIBILITIES.—A service
8 coordination hydrologist designated under this sub-
9 section may, with respect to hydrology, carry out the
10 following:

11 (A) Work with a State agency to develop
12 plans for promoting more effective use of prod-
13 ucts and services of the National Weather Serv-
14 ice throughout the State concerned.

15 (B) Identify priority community prepared-
16 ness objectives.

17 (C) Develop plans to carry out the respon-
18 sibilities described in paragraph (4).

19 (D) Conduct flooding event preparedness
20 planning and citizen education efforts with and
21 through various State, local, and Tribal govern-
22 ment agencies and other disaster management-
23 related organizations.

24 (e) PILOT PROJECTS.—

1 (1) IN GENERAL.—The Director of the National
2 Weather Service shall carry out the following:

3 (A) Perform pilot projects for trans-
4 formational services related to decision support
5 services and technology, transitioning data and
6 services to the cloud, provision of on-site deci-
7 sion support for emergency management oper-
8 ations, and transition to and communication of
9 probabilistic models, forecasts, and hazard in-
10 formation.

11 (B) Conduct a study to assess the capabili-
12 ties needed to scale such pilot projects toward
13 a new, more efficient and effective operations
14 model.

15 (2) SUNSET.—The authority under paragraph
16 (1) shall terminate two years after the date of the
17 enactment of this Act.

18 **SEC. 211. ARTIFICIAL INTELLIGENCE FOR WEATHER FORE-**
19 **CASTING.**

20 (a) DEFINITIONS.—In this section:

21 (1) ARTIFICIAL INTELLIGENCE.—The term “ar-
22 tificial intelligence”—

23 (A) has the meaning given that term in
24 section 5002 of the National Artificial Intel-

1 ligence Initiative Act of 2020 (15 U.S.C. 9401);
2 and

3 (B) includes machine learning, neural net-
4 works, and natural language processing.

5 (2) ARTIFICIAL INTELLIGENCE WEATHER
6 MODEL.—The term “artificial intelligence weather
7 model” means a weather model based primarily on
8 artificial intelligence technology to project future
9 Earth system conditions based on machine learning
10 using weather forecasting training datasets.

11 (3) CURATE.—The term “curate”, with respect
12 to a dataset, means the following:

13 (A) To collect and maintain the dataset to
14 accomplish the following:

15 (i) Ensure and document its quality.

16 (ii) Provide metadata on its prove-
17 nance.

18 (B) To update the dataset periodically, as
19 appropriate and practicable.

20 (4) NUMERICAL WEATHER MODEL.—The term
21 “numerical weather model” means a weather model
22 based primarily on coupled Earth system processes
23 that uses numerical computation to forecast future
24 Earth system conditions.

1 (5) OBSERVATIONAL DATA.—The term “obser-
2 vational data” means data and metadata from ac-
3 tual observations of environmental conditions, in-
4 cluding remote sensing and in situ platforms.

5 (6) SYNTHETIC DATA.—The term “synthetic
6 data” means data produced from a model or statis-
7 tical method in order to fill gaps in observational
8 data.

9 (7) WEATHER FORECASTING TRAINING
10 DATASET.—The term “weather forecasting training
11 dataset”—

12 (A) means a dataset that contains contin-
13 uous global observational data and synthetic
14 data for Earth system variables relevant to
15 weather forecasting, aviation weather, marine
16 weather, and hydrology and water management;
17 and

18 (B) may include model reanalysis and fore-
19 casts initialized through a data assimilation sys-
20 tem.

21 (b) PURPOSE.—The purpose of this section is to
22 carry out the following:

23 (1) Improve accuracy and timeliness of weather,
24 water, and space weather forecasts and effective dis-
25 semination of critical information.

1 (2) Strengthen analytic capacity to inform re-
2 source deployments in response to and to mitigate
3 harm from weather, water, and space weather haz-
4 ards through the mandated exploration and use of
5 artificial intelligence by Federal agencies.

6 (3) Strengthen public-private partnerships to
7 accelerate adoption and outcomes of the use of arti-
8 ficial intelligence in response to and to mitigate such
9 harm.

10 (4) Strengthen public-private partnerships in
11 highly technical, high-risk, and high-reward fields re-
12 lated to weather, water, and space weather forecasts.

13 (c) EARTH SYSTEM FORECASTING AND INFORMA-
14 TION DELIVERY.—

15 (1) TRAINING DATASETS.—Not later than four
16 years after the date of the enactment of this Act, the
17 Under Secretary, in consultation with the Secretary
18 of Energy, the Administrator of the National Aero-
19 nautics and Space Administration, the Director of
20 the National Science Foundation, the Director of the
21 National Center for Atmospheric Research, the
22 Interagency Council on Advancing Meteorological
23 Services, other appropriate Federal advisory commit-
24 tees as determined by the Under Secretary, and such
25 other technical experts as the Under Secretary con-

1 siders appropriate, shall develop and curate com-
2 prehensive weather forecasting training datasets
3 with relevant Earth system data, quality informa-
4 tion, and metadata necessary for weather fore-
5 casting.

6 (2) USE OF EXISTING DATASETS.—In order to
7 speed the development of the weather forecasting
8 training datasets required under paragraph (1), the
9 Under Secretary shall assess, and to the greatest ex-
10 tent practicable build on, existing Earth system rea-
11 nalysis datasets of the Federal Government.

12 (3) ARTIFICIAL INTELLIGENCE WEATHER
13 MODEL.—

14 (A) GLOBAL MODEL.—In carrying out this
15 subsection, the Under Secretary, in consultation
16 with appropriate Federal advisory committees
17 as determined by the Under Secretary, may de-
18 velop and test a global weather model based on
19 artificial intelligence technologies utilizing data
20 of the National Oceanic and Atmospheric Ad-
21 ministration to the extent possible.

22 (B) REGIONAL AND LOCAL MODELS.—In
23 addition to a global weather model under sub-
24 paragraph (A), the Under Secretary may exper-

1 iment with regional and local weather models
2 based on artificial intelligence technologies.

3 (4) USE OF ARTIFICIAL INTELLIGENCE TO DIS-
4 SEMINATE INFORMATION.—In coordination with an
5 artificial intelligence weather model or models devel-
6 oped under paragraph (3), the Under Secretary may
7 explore the use of artificial intelligence to enhance
8 the dissemination of information with respect to
9 weather and evaluate the effectiveness of commu-
10 nication for improved public understanding and pre-
11 paredness.

12 (5) CONTINUED SUPPORT FOR OBSERVATIONS,
13 BASIC RESEARCH, AND NUMERICAL WEATHER MOD-
14 ELS.—Notwithstanding the requirements of this sub-
15 section, the Under Secretary shall continue to sup-
16 port and advance the activities of the National Oce-
17 anic and Atmospheric Administration to carry out
18 the following:

19 (A) Collect and acquire traditional and
20 novel observational data relevant for artificial
21 intelligence and numerical weather, water, and
22 space weather forecasting.

23 (B) Advance research on the Earth system
24 and numerical weather model forecasting.

1 (C) Develop and advance numerical Earth
2 system modeling for predictions.

3 (D) Develop weather model data post-proc-
4 essing techniques.

5 (E) Improve data assimilation techniques.

6 (6) OBSERVING SYSTEM COVERAGE.—In car-
7 rying out this subsection, the Under Secretary may
8 evaluate the use of cost functions in data-driven ma-
9 chine learning model training to balance inequities
10 in observing system coverage and data poor areas.

11 (7) UNCERTAINTY QUANTIFICATION RE-
12 SEARCH.—In carrying out this subsection, the Under
13 Secretary may develop uncertainty quantification re-
14 search for the purpose of accurate environmental
15 risk and hazard communications of probabilistic pre-
16 dictions and forecasts.

17 (8) REPORT.—Not later than two years after
18 the date of the enactment of this Act and not less
19 frequently than every two years thereafter through
20 2035, the Under Secretary shall submit to the Com-
21 mittee on Commerce, Science, and Transportation of
22 the Senate and the Committee on Science, Space,
23 and Technology of the House of Representatives a
24 report on the activities conducted under this sub-
25 section.

1 (d) ADVANCED ARTIFICIAL INTELLIGENCE APPLICA-
2 TIONS FOR WEATHER AND INFORMATION DELIVERY.—

3 The Under Secretary shall explore advanced applications
4 of artificial intelligence to improve weather forecasts and
5 information delivery, such as by carrying out the following:

6 (1) Improving data assimilation.

7 (2) Accounting for coupled Earth system proc-
8 esses.

9 (3) Using artificial intelligence weather models
10 to generate ensemble forecasts to more accurately
11 assess flow-dependent forecast uncertainties.

12 (4) Improving impact-based decision support to
13 diverse users and communities for greater societal
14 benefits based on those forecasts.

15 (e) TECHNICAL ASSISTANCE ON USE OF ARTIFICIAL
16 INTELLIGENCE WEATHER, WATER, AND SPACE WEATH-
17 ER MODELS.—

18 (1) IN GENERAL.—The Under Secretary shall
19 provide the following:

20 (A) Technical assistance, data access, and
21 support for forecasters, scientists, social sci-
22 entists, and engineers to test and evaluate the
23 use and effectiveness of the artificial intel-
24 ligence models of the National Oceanic and At-

1 mospheric Administration, including within the
2 testbeds of the Administration.

3 (B) Best practices on providing forecasts
4 based on outputs from artificial intelligence
5 weather models and numerical weather models,
6 or a combination thereof.

7 (C) Support for emergency managers to
8 make operational decisions based on outputs
9 from artificial intelligence weather models and
10 numerical weather models, or a combination
11 thereof.

12 (2) ASSESSMENT OF WEATHER MODELS.—

13 (A) IN GENERAL.—The Under Secretary
14 shall support the development of a common
15 framework for the assessment of numerical
16 weather models and artificial intelligence weath-
17 er models by comparing model output and ob-
18 servational data over a period of time in the
19 past through the use of such methodologies as
20 the Under Secretary considers appropriate.

21 (B) BEST PRACTICES.—In carrying out
22 this paragraph, the Under Secretary may de-
23 velop and disseminate best practices in collabo-
24 ration with the following;

1 (i) The National Institute of Stand-
2 ards and Technology, the National Aero-
3 nautics and Space Administration, the Na-
4 tional Science Foundation, and the De-
5 partment of Energy.

6 (ii) Academic and research institu-
7 tions.

8 (iii) The private sector.

9 (3) TECHNICAL ASSISTANCE.—In carrying out
10 this subsection, the Under Secretary may provide
11 technical assistance, best practices, and support re-
12 quired under paragraph (1) through the National
13 Weather Service.

14 (4) INDEPENDENT STUDY ON THE IMPACTS OF
15 ARTIFICIAL INTELLIGENCE WEATHER, WATER, AND
16 SPACE WEATHER MODELS.—The Under Secretary
17 may enter into an agreement with the National
18 Academy of Sciences or another entity as determined
19 appropriate by the Under Secretary to assess the
20 impacts of artificial intelligence weather models on
21 the weather enterprise and make recommendations
22 to improve the integration of such models in oper-
23 ational forecasting.

24 (f) PARTNERSHIPS FOR TRANSFORMATIONAL INNO-
25 VATION.—

1 (1) IN GENERAL.—The Under Secretary may
2 explore novel structures for partnerships with pri-
3 vate, academic, and international entities for re-
4 search and development of transformative innovation
5 in weather forecasting and other environmental fore-
6 casts to accomplish the following:

7 (A) Further the understanding of weather,
8 water, and space weather, and their societal im-
9 pact.

10 (B) Advance the science of weather and
11 water forecasting, including seasonal and sub-
12 seasonal forecasting.

13 (C) Develop, evaluate, and transition artifi-
14 cial intelligence weather, water, and hazard
15 forecasting applications to operations.

16 (2) CO-INVESTMENT.—Subject to applicable
17 law, the Under Secretary may consider and adopt
18 novel co-investment strategies with the private aca-
19 demic and international sectors to carry out para-
20 graph (1), including the following:

21 (A) Non-Federal Government contributions
22 to resource and support high-risk, high-return
23 research and development in environmental
24 forecasting, data science, artificial intelligence,
25 and related fields.

1 (B) Shared rights to intellectual property
2 from research and development activities under
3 this subsection.

4 (C) Other approaches to sharing resources
5 and results under this subsection.

6 (g) AVAILABILITY OF DATASET.—

7 (1) IN GENERAL.—The Under Secretary shall
8 develop and implement a plan to make available to
9 the public, at no cost and subject to applicable law
10 and policy, the following:

11 (A) Operational artificial intelligence
12 weather models developed by the National Oce-
13 anic and Atmospheric Administration.

14 (B) Artificial intelligence weather models
15 that are not operational models, including ex-
16 perimental and developmental models, as the
17 Under Secretary determines appropriate.

18 (C) Applicable information and documenta-
19 tion for artificial intelligence weather models
20 described in subparagraphs (A) and (B), includ-
21 ing a description of intended model outputs.

22 (D) Subject to subsection (i), all data
23 owned by the Federal Government and data
24 that the Under Secretary has the legal right to
25 redistribute that are associated with artificial

1 intelligence weather models made available to
2 the public pursuant to the plan and used in
3 operational forecasting by the Administration,
4 including the following:

5 (i) Relevant metadata.

6 (ii) Data used for operational artificial
7 intelligence weather models used by the
8 Administration.

9 (2) ACCOMMODATIONS.—In developing and im-
10 plementing the plan under paragraph (1), the Under
11 Secretary may make such accommodations as the
12 Under Secretary considers appropriate to ensure
13 that the public release of any artificial intelligence
14 weather model, information, documentation, or data
15 pursuant to the plan does not jeopardize the fol-
16 lowing:

17 (A) National security.

18 (B) Intellectual property or redistribution
19 rights, including under titles 17 and 35, United
20 States Code.

21 (C) Any trade secret or commercial or fi-
22 nancial information subject to section 552(b)(4)
23 of title 5, United States Code.

1 (D) Any models or data that are otherwise
2 restricted by contract or other written agree-
3 ment.

4 (E) The mission of the Administration to
5 protect lives and property.

6 (3) REPORT.—

7 (A) IN GENERAL.—Not later than one year
8 after the date of the enactment of this Act, the
9 Under Secretary shall submit to Congress a re-
10 port, in both unclassified and classified form,
11 regarding the risks to the economic and intellec-
12 tual security of the United States from foreign
13 countries of concern through access by such
14 countries to weather data in the United States.

15 (B) ELEMENTS.—The report required
16 under subparagraph (A) shall include the fol-
17 lowing:

18 (i) A full analysis of the national, in-
19 tellectual, and economic security implica-
20 tions for the United States with respect to
21 intellectual property theft or cyber or
22 human espionage through access to weath-
23 er data.

1 (ii) Conclusions of the Under Sec-
2 retary and recommendations for legislative
3 and administrative action, if any.

4 (C) FOREIGN COUNTRY OF CONCERN DE-
5 FINED.—In this paragraph, the term “foreign
6 country of concern” has the meaning given that
7 term in section 9901 of the William M. (Mac)
8 Thornberry National Defense Authorization Act
9 for Fiscal Year 2021 (15 U.S.C. 4651).

10 (h) RETENTION OF FEDERAL GOVERNMENT EXPER-
11 TISE.—Subject to applicable law, the Under Secretary
12 may consider novel methods to recruit, retrain, and retain
13 expert personnel to support activities under this section,
14 including by carrying out the following:

15 (1) Using methods to be competitive with sala-
16 ries outside the Federal Government.

17 (2) Developing staff exchange programs and
18 training programs.

19 (3) Leveraging diverse hiring strategies.

20 (i) PROTECTION OF NATIONAL SECURITY INTER-
21 ESTS.—

22 (1) IN GENERAL.—Notwithstanding any other
23 provision of this section, the Under Secretary, in
24 consultation with the Secretary of Defense, as ap-
25 propriate, may withhold models or data used under

1 this section if the Under Secretary determines doing
2 so to be necessary to protect the national security
3 interests of the United States.

4 (2) RULE OF CONSTRUCTION.—Nothing in this
5 section may be construed to supersede any other
6 provision of law governing the protection of the na-
7 tional security interests of the United States.

8 **SEC. 212. COMPOSITION OF THE ATMOSPHERE AND ATMOS-**
9 **PHERIC OBSERVATIONS.**

10 (a) ASSESSMENTS.—Not later than two years after
11 the date of the enactment of this Act, the Under Secretary
12 shall submit to the appropriate committees of Congress
13 a report that includes the following:

14 (1) An identification of Federal observation ca-
15 pabilities and data gaps related to the composition
16 of Earth’s atmosphere, including the troposphere
17 and stratosphere.

18 (2) An analysis of Federal efforts that advance
19 scientific understanding of the effects on the Earth’s
20 radiation budget of direct or indirect actions that
21 may change the composition of Earth’s atmosphere.

22 (3) The current and projected use of ground-
23 based, space-based, and maritime-based remote and
24 in situ sensing capabilities, autonomous and manned
25 aerial platforms, and other commercially available

1 technologies and platforms of opportunity to accel-
2 erate research and increase observations and moni-
3 toring of Earth's atmosphere.

4 (4) Recommendations for the adaptation or ex-
5 pansion of technologies and platforms identified
6 under paragraph (3).

7 (5) An identification and prioritization of addi-
8 tional observation and analysis capabilities needed to
9 ensure comprehensive monitoring that detects future
10 changes in atmospheric composition.

11 (b) CONSIDERATIONS.—In preparing an assessment
12 required under subsection (a), the Under Secretary shall
13 consider and use, as appropriate, reports and studies con-
14 ducted by Federal agencies, the National Research Coun-
15 cil, or other entities.

16 (c) PILOT PROJECTS.—

17 (1) PILOT PROJECTS.—The Under Secretary
18 may conduct pilot projects of atmospheric composi-
19 tion observational systems and platforms, including
20 the following:

21 (A) The use of atmospheric observing in-
22 struments on commercial and uncrewed air-
23 craft.

24 (B) The use of atmospheric and oceanic
25 observing instruments on uncrewed ocean sur-

1 face platforms or deployed on commercial or
2 other nondedicated ocean vessels.

3 (C) In-situ observation capability to con-
4 duct regular atmospheric observations of the
5 troposphere and stratosphere.

6 (2) CONSULTATION AND COORDINATION.—The
7 Under Secretary shall consult and coordinate with
8 relevant Federal agencies to develop processes for
9 the appropriate deployment of systems and plat-
10 forms pursuant to pilot projects required under
11 paragraph (1).

12 (d) AUTHORITY TO ENTER INTO AGREEMENTS.—
13 Notwithstanding any other provision of law, the Under
14 Secretary may enter into agreements, to the extent nec-
15 essary to carry out this section, with governmental and
16 nongovernmental entities for the following purposes:

17 (1) Purchase of atmospheric composition data
18 from commercial providers,

19 (2) Hosting of observational instruments on
20 government or private platforms, and

21 (3) Leveraging data from international plat-
22 forms, as appropriate.

23 (e) DEFINITION OF APPROPRIATE COMMITTEES OF
24 CONGRESS.—In this section, the term “appropriate com-
25 mittees of Congress” means—

1 (1) the Committee on Commerce, Science, and
2 Transportation of the Senate; and

3 (2) the Committee on Science, Space, and
4 Technology of the House of Representatives.

5 **SEC. 213. PROJECT TO IMPROVE FORECASTS OF COASTAL**
6 **MARINE FOG.**

7 (a) IN GENERAL.—The Under Secretary shall con-
8 duct a project to improve forecasts of coastal marine fog.

9 (b) GOAL.—The goal of the project under subsection
10 (a) is to enhance vessel safety and reduce the economic
11 impact of coastal marine fog events, with a focus on the
12 following:

13 (1) Increasing the number of marine-based ob-
14 servations through additional Federal platforms and
15 commercially acquired observations in locations
16 where impacts from marine fog and reduced visi-
17 bility have major safety and economic impacts, in-
18 cluding through the use of the following:

19 (A) Buoys.

20 (B) Meteorological stations measuring visi-
21 bility, temperature, dewpoint, and wind speed
22 and direction as a stand-alone or co-located
23 with water level sensors, such as those that are
24 part of the physical oceanographic observation

1 system program of the National Oceanic and
2 Atmospheric Administration.

3 (C) Stationary platforms or drifting instru-
4 ments.

5 (D) Vessels.

6 (E) Unmanned systems.

7 (F) Remote sensing technologies, including
8 rapid refresh hyperspectral satellite imagery.

9 (G) Advanced algorithms that extract ac-
10 tionable information from observational data,
11 including early detection and regular moni-
12 toring of marine fog.

13 (2) Advancing geographic coverage, resolution,
14 skill, and accuracy of marine fog modeling, includ-
15 ing, when feasible, additional locations and advance-
16 ments in marine channel forecast capability.

17 (3) Improving communication of marine fog
18 advisories by the National Oceanic and Atmospheric
19 Administration.

20 (4) Communicating risks posed by hazardous
21 marine fog events in a way that maximizes informed
22 decisionmaking by the public.

23 (5) Providing decision support services based on
24 environmental information that is actionable to the
25 recipient of a marine fog advisory.

1 (c) STAKEHOLDER ENGAGEMENT.—In implementing
 2 the project under subsection (a), the Under Secretary
 3 shall meet with public and private stakeholders regarding
 4 the planning, development, and implementation of the
 5 project.

6 (d) TRIBAL ENGAGEMENT.—The Under Secretary
 7 shall meet with Indian tribes (as such term is defined in
 8 section 4 of the Indian Self-Determination and Education
 9 Assistance Act (25 U.S.C. 5304)) regarding the planning,
 10 development, and implementation of the project required
 11 under subsection (a).

12 (e) PROJECT PLAN.—Not later than one year after
 13 the date of the enactment of this Act, the Under Secretary
 14 shall develop a plan for the project required subsection (a)
 15 that details the specific research, development, and tech-
 16 nology transfer activities, as well as corresponding re-
 17 sources and timelines, necessary to achieve the goal speci-
 18 fied in subsection (b).

19 **TITLE III—COMMERCIAL WEATH-** 20 **ER AND ENVIRONMENTAL OB-** 21 **SERVATIONS**

22 **SEC. 301. COMMERCIAL DATA PROGRAM.**

23 The Weather Research and Forecasting Innovation
 24 Act of 2017 is amended by amending section 302 (15
 25 U.S.C. 8532) to read as follows:

1 **“SEC. 302. COMMERCIAL DATA PROGRAM.**

2 “(a) PROGRAM ESTABLISHMENT.—The Under Sec-
3 retary, in coordination with the heads of appropriate of-
4 fices of the National Oceanic and Atmospheric Adminis-
5 tration, shall maintain a Commercial Data Program to co-
6 ordinate and execute acquisition of weather and environ-
7 mental data and services from private sector entities for
8 operational use.

9 “(b) PROGRAM ELEMENTS.—The Under Secretary
10 may acquire satellite, ground-based, airborne, or marine-
11 based in situ, remote sensing, or crowd-sourced data and
12 services for operational use relating to weather and envi-
13 ronmental forecasting and modeling.

14 “(c) COORDINATION AND COLLABORATION.—The
15 Under Secretary shall ensure the Commercial Data Pro-
16 gram coordinates, collaborates, and ensures access to data
17 across the Administration, including among the following:

18 “(1) The National Mesonet Program.

19 “(2) The Aircraft-Based Observation Program.

20 “(3) The National Integrated Drought Informa-
21 tion System, including the National Coordinated Soil
22 Moisture Monitoring Network.

23 “(4) The National Integrated Flood Informa-
24 tion System.

25 “(5) The Global Ocean Monitoring and Observ-
26 ing Program.

1 “(6) The National Data Buoy Center.

2 “(7) The Uncrewed Systems Operation Center.

3 “(8) The Ocean Exploration Program.

4 “(9) Any other program or office the Under
5 Secretary determines appropriate.

6 “(d) STANDARDS AND SPECIFICATIONS.—Not later
7 than 180 days after the date of the enactment of this sec-
8 tion and on a continuous basis thereafter, the Under Sec-
9 retary shall publish data, metadata, and service standards
10 and specifications required for acquired observation serv-
11 ices and data for use, licensing, and attribution to ensure
12 quality, impact, and compatibility of such services and
13 data with National Oceanic and Atmospheric Administra-
14 tion modeling capabilities, meteorological situational
15 awareness, and forecasting.

16 “(e) PRIORITIZATION.—In acquiring data and serv-
17 ices from private sector entities, the Under Secretary shall
18 prioritize obtaining surface-based, airborne-based, space-
19 based, and coastal- and ocean-based data, metadata, and
20 services for operational use from entities that participate
21 in the Commercial Data Pilot Program or other programs
22 of the National Oceanic and Atmospheric Administration
23 that acquire commercial data or observations.

24 “(f) NOAA OBSERVING SYSTEMS COUNCIL AND
25 FLEET COUNCIL.—

1 “(1) IN GENERAL.—The Under Secretary shall
2 maintain the National Oceanic and Atmospheric Ad-
3 ministration Observing Systems Council and the
4 NOAA Fleet Council (in this subsection referred to
5 as the ‘Councils’) to provide strategic recommenda-
6 tions and guidance regarding the prioritization, de-
7 sign, development, acquisition, upgrading, lifecycle,
8 performance monitoring, and retiring of major com-
9 ponents of observing systems and portfolios, includ-
10 ing related to the acquisition of commercial weather
11 and environmental data and services.

12 “(2) LINE OFFICE COORDINATION.—The Coun-
13 cils shall ensure coordination and adherence to uni-
14 form policies by providing guidance to all line offices
15 of the National Oceanic and Atmospheric Adminis-
16 tration engaged in observing systems portfolio de-
17 sign, technology, development, execution, and oper-
18 ation.

19 “(3) COMMITTEE.—The Under Secretary shall
20 maintain a Committee within the Councils to develop
21 and approve procedural directives, guides, or hand-
22 books relevant to management of data and informa-
23 tion, including commercial data, and coordinate data
24 governance and management practices across the

1 National Oceanic and Atmospheric Administration
2 to promote consistent processes.

3 “(g) AUTHORIZATION OF APPROPRIATIONS.—

4 “(1) IN GENERAL.—There are authorized to be
5 appropriated \$100,000,000 for each of fiscal years
6 2026 through 2030 to carry out this section.

7 “(2) SENSE OF CONGRESS.—It is the sense of
8 Congress that the Under Secretary should seek to
9 enter into contracts or other appropriate agreements
10 that enable the expenditure, to the maximum extent
11 practicable, of amounts authorized to be appro-
12 priated or otherwise made available in a fiscal year
13 to carry out this section.

14 “(h) DATA AND HOSTED PAYLOADS.—Notwith-
15 standing any other provision of law, the Secretary of Com-
16 merce may enter into agreements relating to the following:

17 “(1) The purchase of weather and environ-
18 mental data and services through contracts with pri-
19 vate sector commercial data and service providers.

20 “(2) The placement of weather instruments on
21 co-hosted Federal, international, or private space,
22 airborne, maritime, or ground platforms.

23 “(i) OMBUDSMAN.—The Under Secretary shall estab-
24 lish or designate at least one Ombudsman position within
25 the Commercial Data Program to implement the rec-

1 ommendations of the Observing System Council under
2 subsection (f) related to commercial weather and environ-
3 mental data and services acquisitions. Such an Ombuds-
4 man shall act as the liaison between private sector data
5 and service providers and the National Oceanic and At-
6 mospheric Administration with respect to receiving rec-
7 ommendations and resolving issues related to engagement,
8 testing, contracting, or other areas related to the Adminis-
9 tration's efforts to acquire commercial weather and envi-
10 ronmental data and services.

11 “(j) REPORT.—Not later than two years after the
12 date of the enactment of this section, the Under Secretary
13 shall submit to the Committee on Science, Space, and
14 Technology of the House of Representatives and the Com-
15 mittee on Commerce, Science, and Transportation of the
16 Senate a report evaluating the activities and needed au-
17 thorities related to data governance and management
18 practices, including acquisition, collection, documentation,
19 quality control, validation, reprocessing, storage, retrieval,
20 dissemination, and long-term preservation activities across
21 all National Oceanic and Atmospheric Administration line,
22 staff, and corporate offices.”.

1 **SEC. 302. COMMERCIAL DATA PILOT PROGRAM.**

2 The Weather Research and Forecasting Innovation
3 Act of 2017 is amended by amending section 303 (15
4 U.S.C. 8533) to read as follows:

5 **“SEC. 303. COMMERCIAL DATA PILOT PROGRAM.**

6 “(a) PROGRAM ESTABLISHMENT.—Within the Com-
7 mercial Data Program under section 302, there shall, to
8 the maximum extent practicable, be a Commercial Data
9 Pilot Program to engage with external partners and pro-
10 viders to test and develop shared standards and meth-
11 odologies for quality, use, licensing, and attribution of ob-
12 servation services and data, and to ensure quality, impact,
13 and compatibility of such services and data with National
14 Oceanic and Atmospheric Administration modeling capa-
15 bilities, meteorological situational awareness, and fore-
16 casting. The Program is authorized to test and evaluate
17 all sources and types of observation services, imagery,
18 products, and data from private sector entities, including
19 new and innovative surface-based, airborne-based, space-
20 based, and coastal- and ocean-based data, metadata, and
21 model components.

22 “(b) CRITERIA.—The Under Secretary shall ensure
23 that data acquired through the Commercial Data Pilot
24 Program described in subsection (a) meets the most recent
25 standards and specifications required for observation serv-
26 ices and data as published pursuant to section 302(d).

1 “(c) PILOT CONTRACTS.—The Under Secretary shall,
2 through an open competition, regularly enter into pilot
3 contracts with private sector entities capable of providing
4 observation services and data referred to in subsection (a)
5 that meet the standards and specifications published pur-
6 suant to section 302(d) for so providing such services and
7 data in a manner that allows the Under Secretary to cali-
8 brate and evaluate such services and data for use in Na-
9 tional Oceanic and Atmospheric Administration activities.

10 “(d) ASSESSMENT OF VIABILITY.—The Under Sec-
11 retary shall annually assess and submit to the Committee
12 on Commerce, Science, and Transportation of the Senate
13 and the Committee on Science, Space, and Technology of
14 the House of Representatives a summary of the pilot con-
15 tracts entered into pursuant to subsection (c), an assess-
16 ment of the extent to which such contracts meet the stand-
17 ards and specifications published pursuant to section
18 302(d), and any additional information determined nec-
19 essary related to the following:

20 “(1) The viability of integrating observation
21 services and data from private sector entities into
22 National Oceanic and Atmospheric Administration
23 forecasts and models.

24 “(2) The expected value added or improvements
25 from such services and data if integrated into Na-

1 tional Oceanic and Atmospheric Administration fore-
2 casts and models.

3 “(3) The accuracy, quality, timeliness, validity,
4 reliability, usability, information technology security,
5 and cost-effectiveness of obtaining observation serv-
6 ices and data from private sector entities.

7 “(4) If the Under Secretary determines it is
8 viable to integrate such services and data into the
9 forecasts and models of the National Oceanic and
10 Atmospheric Administration, the steps to integrate,
11 not later than one year after the date of such deter-
12 mination, such services and data into operational use
13 by the Administration, or any associated challenges
14 in doing so.

15 “(e) OBTAINING FUTURE DATA.—If an assessment
16 under subsection (d) demonstrates the ability of services
17 and data from private sector entities to meet the stand-
18 ards and specifications published pursuant to section
19 302(d), the Under Secretary shall carry out the following:

20 “(1) When cost-effective and feasible, obtain ob-
21 servation services and data from private sector enti-
22 ties through the Commercial Data Program under
23 section 302.

24 “(2) As early as possible in the acquisition
25 process for any future National Oceanic and Atmos-

1 pheric Administration satellite system, determine
2 whether there is a suitable, cost-effective, commer-
3 cial capability available or that will be available to
4 meet applicable instrument, spacecraft, or system re-
5 quirements before completion of the critical design
6 phase of such planned satellite system.

7 “(3) If the Under Secretary determines under
8 paragraph (2) that a suitable, cost-effective, com-
9 mercial capability is or will be available, determine
10 whether and how such capability is in the national
11 interest if developed as a solely governmental sys-
12 tem.

13 “(4) Submit to the Committee on Commerce,
14 Science, and Transportation of the Senate and the
15 Committee on Science, Space, and Technology of the
16 House of Representatives a report detailing any de-
17 terminations made under paragraphs (2) and (3).

18 “(f) AUTHORIZATION OF APPROPRIATIONS.—From
19 amounts authorized to be appropriated pursuant to sec-
20 tion 302 to carry out such section, not less than 15 per-
21 cent of such amounts each fiscal year are authorized to
22 be appropriated to carry out this section.”.

1 **SEC. 303. CONTRACTING AUTHORITY AND AVOIDANCE OF**
2 **DUPLICATION.**

3 Title III of the Weather Research and Forecasting
4 Innovation Act of 2017 is amended by adding at the end
5 the following new section:

6 **“SEC. 304. CONTRACTING AUTHORITY AND AVOIDANCE OF**
7 **DUPLICATION.**

8 “(a) IN GENERAL.—Consistent with the authorities
9 of other Federal agencies that contract and partner with
10 private sector entities, including under section 3903 of
11 title 41, United States Code, the Under Secretary is au-
12 thorized to use contracting mechanisms and enter into
13 agreements that use multiyear contract options. In car-
14 rying out sections 302 and 303, the Under Secretary shall,
15 to the greatest extent possible, carry out the following:

16 “(1) Enter into year-long or multiyear contracts
17 using contracting mechanisms that foster resiliency
18 of service and data purchased.

19 “(2) Partner and contract with multiple obser-
20 vation service and data providers simultaneously to
21 reduce risks of data gaps and improve mission
22 robustness.

23 “(3) Use authorities, such as additional forms
24 of transaction agreements under section 301, that
25 allow for innovative partnerships with private sector
26 entities.

1 “(b) SAVINGS CLAUSE.—Nothing in this title may be
2 construed as infringing on the acquisition authority or
3 strategy of Federal entities authorized under title 10,
4 United States Code.

5 “(c) UNNECESSARY DUPLICATION.—In meeting the
6 requirements under this title, the Under Secretary shall
7 avoid unnecessary duplication between the National Oce-
8 anic and Atmospheric Administration, the National Aero-
9 nautics and Space Administration, other Federal depart-
10 ments and agencies, and private sector entities, including
11 relating to corresponding expenditures of funds and em-
12 ployment of personnel by carrying out the following:

13 “(1) Coordinating existing activities with other
14 civilian Federal departments and agencies which
15 provide, contract, or partner with private sector enti-
16 ties to acquire, weather and environmental observa-
17 tions and data.

18 “(2) Coordinating and soliciting weather and
19 environmental observations and data requirements
20 and needs from other civilian Federal departments
21 and agencies to be acquired by the Commercial Data
22 Program under section 302.

23 “(d) FAIR COMPENSATION FOR INTERAGENCY
24 NEEDS.—The Under Secretary, to the maximum extent
25 practicable, shall ensure that Federal departments and

1 agencies utilizing services and data under sections 302
 2 and 303 fairly compensate the National Oceanic and At-
 3 mospheric Administration, or the non-Federal entities pro-
 4 viding such services or data, as appropriate, for use.”.

5 **SEC. 304. DATA ASSIMILATION, MANAGEMENT, AND SHAR-**
 6 **ING PRACTICES.**

7 Title III of the Weather Research and Forecasting
 8 Innovation Act of 2017, as amended by section 303 of this
 9 Act, is further amended by adding at the end the following
 10 new section:

11 **“SEC. 305. DATA ASSIMILATION, MANAGEMENT, AND SHAR-**
 12 **ING PRACTICES.**

13 “(a) DATA STANDARDS.—The Under Secretary, in
 14 collaboration with the weather enterprise, shall seek to es-
 15 tablish consistent and open data and metadata standards
 16 to support open science, including simple cloud-optimized
 17 data formats and application programming interfaces that
 18 support findability, accessibility, usability, and
 19 preservability.

20 “(b) DATA INFRASTRUCTURE.—

21 “(1) IN GENERAL.—The Under Secretary, in
 22 consultation with the Chief Information Officer and
 23 appropriate program heads, shall consolidate and ar-
 24 range data infrastructure needs to ensure efficient
 25 and effective data transfer between National Oceanic

1 and Atmospheric Administration offices by consid-
2 ering the use of commercial cloud technologies, or
3 similar hybrid structures, to host and transmit data
4 and metadata.

5 “(2) FEDERAL PARTNERSHIPS.—In carrying
6 out paragraph (1), the Under Secretary may partner
7 with the heads of other Federal departments and
8 agencies, including the National Aeronautics and
9 Space Administration, the Department of Energy,
10 the United States Space Force, the United States
11 Coast Guard, the United States Navy, the Federal
12 Aviation Administration, the United States Forest
13 Service, the Environmental Protection Agency, the
14 National Science Foundation, and the United States
15 Geological Survey, to collocate data with joint utility
16 and support a transition to cloud architectures, in-
17 cluding commercial cloud networks.

18 “(3) LONG-TERM DATA ARCHIVE.—The Under
19 Secretary shall ensure the long-term management,
20 maintenance, and stewardship of archival data and
21 metadata acquired through the Commercial Data
22 Program under section 302 is conducted within the
23 National Centers for Environmental Information.

24 “(c) DATA SHARING WITH THE WEATHER ENTER-
25 PRISE.—

1 “(1) IN GENERAL.—To the greatest extent
2 practicable, the Under Secretary shall carry out the
3 following:

4 “(A) Continue to ensure the delivery of
5 data through sound and robust infrastructure,
6 such as data sharing capabilities of the industry
7 proving grounds.

8 “(B) Make accessible to members of the
9 weather enterprise that are United States per-
10 sons data that is—

11 “(i) not subject to redistribution con-
12 tract permissions; or

13 “(ii) purchased through the Commer-
14 cial Data Program under section 302 or
15 shared through international government
16 partners.

17 “(2) DATA ASSIMILATED INTO MODELS OR
18 FORECASTS.—If data described in paragraph (1)(B)
19 must be assimilated into numerical weather pre-
20 diction models or automated forecast guidance to
21 satisfy terms of a redistribution contract, the Under
22 Secretary shall make accessible without delay to
23 members of the weather enterprise that are United
24 States persons the numerical weather prediction

1 model or automated forecast guidance output, as the
2 case may be.

3 “(d) DATA ASSIMILATION.—

4 “(1) IN GENERAL.—The Under Secretary, in
5 coordination with the Commercial Data Program
6 under section 302, the National Centers for Envi-
7 ronmental Prediction, the National Centers for Envi-
8 ronmental Information, the Office of Oceanic and
9 Atmospheric Research, and any other relevant of-
10 fices within the National Oceanic and Atmospheric
11 Administration, shall establish a program to test,
12 advance, and implement data assimilation methods,
13 which may include artificial intelligence, machine
14 learning, data pre- and post-processing, efficient
15 input and output, and next-generation algorithms.

16 “(2) DATA ASSIMILATION UNIVERSITY CONSOR-
17 TIUM.—Through the program established pursuant
18 to paragraph (1), the Under Secretary shall estab-
19 lish a consortium consisting of institutions of higher
20 education (as such term is defined in section 101 of
21 the Higher Education Act of 1965 (20 U.S.C.
22 1001)) to address critical research challenges for
23 data assimilation and foster a growing data assimi-
24 lation workforce. The consortium shall seek to ac-
25 complish the following:

1 “(A) Solve critical research issues for data
2 assimilation through innovative research.

3 “(B) Increase significantly the number of
4 students, including Ph.D. candidates and other
5 graduate level students, in data assimilation.

6 “(C) Use modern software and frame-
7 works, such as the Joint Effort for Data As-
8 similation Integration, or emerging tech-
9 nologies, such as artificial intelligence and ma-
10 chine learning techniques, to conduct data as-
11 similation research and development and facili-
12 tate research-to-operations efforts to improve
13 weather modeling and prediction.

14 “(D) Identify and prioritize critical re-
15 search areas in data assimilation and facilitate
16 operations-to-research efforts.

17 “(E) Establish and enable an effective col-
18 laboration infrastructure between National Oce-
19 anic and Atmospheric Administration facilities,
20 such as laboratories, centers, or joint agency in-
21 stitutes, and the research community, including
22 a mechanism for external partners to host Ad-
23 ministration employees.

24 “(F) Establish mechanisms to enable all
25 members of the consortium to archive and ac-

1 cess data required to support the work under
2 this subsection.

3 “(3) COORDINATION.—In carrying out this sub-
4 section, the Under Secretary shall ensure the Na-
5 tional Oceanic and Atmospheric Administration and
6 its associated activities focus on research-to-oper-
7 ations and operations-to-research efforts, including
8 by coordinating and collaborating with the Joint
9 Center for Satellite Data Assimilation.

10 “(4) DATA ASSIMILATION, MANAGEMENT, AND
11 SHARING PRACTICES SECURITY.—The activities au-
12 thorized under this subsection shall be conducted in
13 a manner consistent with subtitle D of title VI of
14 the Research and Development, Competition, and
15 Innovation Act (enacted as division B of Public Law
16 117–167; 42 U.S.C. 19231 et seq.).

17 “(e) STUDY ON DATA MANAGEMENT.—

18 “(1) IN GENERAL.—Not later than 90 days
19 after the date of the enactment of this section, the
20 Under Secretary shall seek to enter into an agree-
21 ment with a non-Federal entity to conduct a study
22 on matters concerning data practices and manage-
23 ment needs at the National Oceanic and Atmos-
24 pheric Administration. In conducting the study, the
25 outside entity shall carry out the following:

1 “(A) Assess the costs and benefits of cur-
2 rent data management needs for observational
3 and operational mission requirements.

4 “(B) Develop recommendations regarding
5 how to make more robust and cost-effective the
6 data portfolio of the Administration.

7 “(C) Identify data infrastructure tech-
8 nologies and needs that are essential to the per-
9 formance of modeling systems of the Adminis-
10 tration.

11 “(D) Assess the sharing needs and prac-
12 tices of the Administration for both internal
13 and external dissemination.

14 “(E) Develop recommendations for meth-
15 ods of data infrastructure sharing, including
16 data purchased from the commercial sector.

17 “(F) Develop recommendations for data
18 standards, formats, and protocols to support ar-
19 tificial intelligence and machine learning tech-
20 niques.

21 “(2) AUTHORIZATION OF APPROPRIATIONS.—Of
22 amounts authorized to be appropriated to the Com-
23 mercial Data Program under section 302,
24 \$1,000,000 shall be available to carry out the study

1 under paragraph (1) to remain available until ex-
 2 pended.”.

3 **SEC. 305. CLERICAL AMENDMENT.**

4 The table of contents in section 1(b) of the Weather
 5 Research and Forecasting Innovation Act of 2017 is
 6 amended by striking the items relating to sections 302 and
 7 303 and inserting the following new items:

“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.”.

8 **TITLE IV—COMMUNICATING**
 9 **WEATHER TO THE PUBLIC**

10 **SEC. 401. DEFINITIONS.**

11 In this title:

12 (1) HAZARDOUS WEATHER OR WATER
 13 EVENTS.—The term “hazardous weather or water
 14 events” means weather or water events that have a
 15 high-risk of loss of life or property, including the fol-
 16 lowing:

17 (A) Severe storms, such as hurricanes and
 18 short-fused, small-scale hazardous weather or
 19 hydrologic events produced by thunderstorms,
 20 including large hail, damaging winds, torna-
 21 does, and flash floods.

22 (B) Winter storms, such as freezing or fro-
 23 zen precipitation (including freezing rain, sleet,

1 and snow), or combined effects of freezing or
2 frozen precipitation and strong winds.

3 (C) Other weather hazards, such as ex-
4 treme heat or cold, wildfire, drought, dense fog,
5 high winds, and river, coastal, or lakeshore
6 flooding.

7 (2) INSTITUTION OF HIGHER EDUCATION.—The
8 term “institution of higher education” has the
9 meaning given such term in section 101 of the High-
10 er Education Act of 1965 (20 U.S.C. 1001).

11 (3) NOAA WEATHER RADIO.—The term
12 “NOAA Weather Radio” means the National Oce-
13 anic and Atmospheric Administration Weather Radio
14 All Hazards network.

15 (4) PUBLIC CLOUD.—The term “public cloud”
16 means an information technology model in which
17 service providers make computing services, including
18 compute and storage and develop-and-deploy envi-
19 ronments and applications, available on-demand to
20 organizations and individuals over the public inter-
21 net or other means that allows for the widest dis-
22 semination of information.

23 (5) WATCH; WARNING.—

24 (A) IN GENERAL.—The terms “watch” and
25 “warning”, with respect to a hazardous weather

1 or water event, mean products issued by the
2 National Oceanic and Atmospheric Administra-
3 tion, intended for consumption by the general
4 public, to alert the general public to the poten-
5 tial for or presence of such event and to inform
6 action to prevent loss of life or property.

7 (B) EXCEPTION.—The terms “watch” and
8 “warning” do not include technical or special-
9 ized meteorological or hydrological forecasts,
10 outlooks, or model guidance products.

11 **SEC. 402. HAZARDOUS WEATHER OR WATER EVENT RISK**
12 **COMMUNICATION.**

13 (a) IN GENERAL.—The Under Secretary shall main-
14 tain and improve the system of the National Oceanic and
15 Atmospheric Administration by which the risks of haz-
16 ardous weather and water events are communicated to the
17 general public, with the goal of informing action and en-
18 couraging response to prevent loss of life and property.

19 (b) HAZARD RISK COMMUNICATION IMPROVEMENT
20 AND SIMPLIFICATION.—

21 (1) IN GENERAL.—The Under Secretary shall
22 maintain a hazard risk communication program (in
23 this subsection referred to as the “Program”), for
24 the purposes of simplifying and improving the com-

1 munication of hazardous weather and water event
2 risks.

3 (2) TERMINOLOGY.—The Program shall iden-
4 tify, eliminate, or modify unnecessary, redundant, or
5 confusing terms for hazardous weather and water
6 event communications and add new terminology, as
7 appropriate.

8 (3) COMMUNICATIONS IMPROVEMENT.—The
9 Program shall improve the form, content, and meth-
10 ods of hazardous weather and water event commu-
11 nications to more clearly inform action and increase
12 the likelihood that the public takes such action to
13 prevent the loss of life or property.

14 (4) EVALUATIONS.—The Program shall, in co-
15 ordination with the performance branch of the Na-
16 tional Weather Service, develop metrics for such
17 branch to track and evaluate the degree to which
18 hazardous weather and water event communications
19 inform action and encourage response.

20 (5) SUPPORT PLAN.—The Program shall de-
21 velop a plan for the purpose of supporting the activi-
22 ties described in paragraph (3). The plan shall be
23 periodically updated and informed by internal and
24 extramural research and the results of the evalua-

tion of hazardous weather and water event communications conducted under paragraph (4).

(6) METHODS.—In carrying out this subsection, the Program shall develop and implement recommendations that satisfy the following:

(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, vulnerable populations, 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

1 creating and disseminating federally operated
2 watches and warnings.

3 (7) COORDINATION.—The Program shall co-
4 ordinate with the following:

5 (A) Federal partners, including National
6 Laboratories, cooperative institutes, and re-
7 gional integrated sciences and assessments pro-
8 grams.

9 (B) State and local government partners.

10 (C) Indian Tribes (as such term is defined
11 in section 4 of the Indian Self-Determination
12 and Education Assistance Act (25 U.S.C.
13 5304)).

14 (D) Institutions of higher education.

15 (E) Media partners.

16 (8) TIMELINESS AND CONSISTENCY.—The Pro-
17 gram shall develop best practices and guidance for
18 ensuring timely and consistent communication
19 across public facing platforms that disseminate haz-
20 ardous weather and water event information.

21 **SEC. 403. HAZARD COMMUNICATION RESEARCH AND EN-**
22 **GAGEMENT.**

23 (a) IN GENERAL.—The Under Secretary may main-
24 tain, as appropriate, a program to carry out the following:

1 (1) Modernize the development and communica-
2 tion of risk-based, statistically reliable, probabilistic
3 hazard information, with the goal of informing ap-
4 propriate responses to hazardous weather or water
5 events.

6 (2) Improve the fundamental social, behavioral,
7 economic, risk, and communication science relating
8 to communications, including by means of collecting
9 voluntary data, regarding hazardous weather or
10 water events.

11 (b) COORDINATION.—In carrying out the program
12 under subsection (a), the Under Secretary shall coordinate
13 and communicate with States, Tribal governments, local-
14 ities, and emergency managers regarding research prior-
15 ities and results.

16 (c) PILOT PROGRAM FOR TORNADO HAZARD COMMU-
17 NICATIONS.—

18 (1) IN GENERAL.—The Under Secretary, in co-
19 ordination with the VORTEX–USA program under
20 section 103 of the Weather Research and Fore-
21 casting Innovation Act of 2017 (15 U.S.C. 8513), as
22 amended by section 103 of this Act, and in collabo-
23 ration with one or more eligible institutions (or con-
24 sortia thereof), shall establish a pilot program for
25 tornado hazard communications to test incorporation

1 of research into operations with respect to torna-
2 does.

3 (2) ELIGIBLE INSTITUTION DEFINED.—In this
4 subsection, the term “eligible institution” means any
5 of the following:

6 (A) A historically Black college or univer-
7 sity located in an area of persistent poverty
8 that is subjected to frequent severe weather,
9 such as tornadoes, hurricanes, and floods.

10 (B) An institution of higher education in
11 proximity to a Weather Forecast Office of the
12 National Weather Service.

13 (d) PILOT STUDY FOR HURRICANE HAZARD COMMU-
14 NICATION.—

15 (1) IN GENERAL.—The Under Secretary, in co-
16 ordination with the hurricane forecast improvement
17 program under section 104 of the Weather Research
18 and Forecasting Innovation Act of 2017 (15 U.S.C.
19 8514), as amended by section 104 of this Act, and
20 in collaboration with one or more eligible institutions
21 (or consortia thereof), shall enter into an agreement
22 with an appropriate entity, as determined by the
23 Under Secretary, to conduct a pilot study using a
24 mixed methods approach, including surveys, focus
25 groups, and interviews, to gather information from

1 hurricane-prone population areas regarding the lev-
2 els of preparedness of such areas for hurricanes or
3 in response to the National Oceanic and Atmos-
4 pheric Administration's early forecasts and warn-
5 ings.

6 (2) ELEMENTS.—The pilot study under para-
7 graph (1) shall evaluate the following:

8 (A) Possession of disaster supplies.

9 (B) Evacuation decisions.

10 (C) Levels of trust of tropical cyclone in-
11 formation and hurricane path prediction from
12 various sources.

13 (D) Access to tropical cyclone and hurri-
14 cane forecasts and warnings in such study par-
15 ticipant's first language.

16 (E) Any reasoning or deliberation by the
17 individuals interviewed as part of the study that
18 may hinder the ability or willingness of the indi-
19 viduals to evacuate.

20 (3) ADDITIONAL CRITERIA.—The Under Sec-
21 retary shall publish the methodology of the pilot
22 study under paragraph (1) on a publicly accessible
23 website of the National Oceanic and Atmospheric
24 Administration.

1 (4) ELIGIBLE INSTITUTION DEFINED.—In this
2 subsection, the term “eligible institution” means any
3 of the following:

4 (A) An institution of higher education,
5 nonprofit organization, or other institution lo-
6 cated in a jurisdiction eligible to participate in
7 the program under section 113 of the National
8 Science Foundation Authorization Act of 1988
9 (42 U.S.C. 1862g).

10 (B) An institution of higher education,
11 nonprofit organization, or other institution lo-
12 cated in proximity to a Weather Forecast Office
13 of the National Weather Service.

14 (e) HURRICANE SOCIAL, BEHAVIORAL, AND ECO-
15 NOMIC SCIENCES.—

16 (1) IN GENERAL.—The Under Secretary shall
17 carry out research and development activities to im-
18 prove how the public receives, interprets, responds
19 to, and values hurricane forecasts and warnings.

20 (2) ELEMENTS.—In conducting activities under
21 paragraph (1), the Under Secretary shall carry out
22 the following:

23 (A) Conduct a comprehensive review of the
24 manner by which the public receives, interprets,
25 responds to, and makes decisions regarding

hurricane forecasts and warnings, including relating to the following:

(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 decisionmaking 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, people with disabilities, and other vulnerable populations.

1 (vii) The effect of language barriers
2 on the accessibility of hurricane forecasts
3 and warnings.

4 (viii) How understanding of and re-
5 sponse to such hurricane forecasts and
6 warnings varies across geographic areas,
7 including rural, urban, and suburban
8 areas.

9 (B) Identify communication data gaps
10 based on the review conducted pursuant to sub-
11 paragraph (A).

12 (C) Carry out research, including data col-
13 lection and baseline assessments, in coordina-
14 tion with the hurricane forecast improvement
15 program under section 104 of the Weather Re-
16 search and Forecasting Innovation Act of 2017
17 (15 U.S.C. 8514), as amended by section 104
18 of this Act, to evaluate and quantify the eco-
19 nomic value of extending lead times of tropical
20 cyclone and hurricane forecasts and warnings,
21 including identifying the most affected or vul-
22 nerable populations and potential impacts to
23 those populations of extending leads times.

24 (D) Using the post-storm surveys and as-
25 sessments conducted under section 406 of this

1 Act to conduct retrospective or ex ante assess-
2 ments of previous hurricane forecasts and
3 warnings to better understand the key compo-
4 nents of such forecasts and warnings that af-
5 fected actions or initiated behavior changes.

6 (E) Conduct cost-benefit analyses of fore-
7 casts and warnings improvement alternatives
8 developed through the hurricane forecast im-
9 provement program under section 104 of the
10 Weather Research and Forecasting Innovation
11 Act of 2017 (15 U.S.C. 8514), as amended by
12 section 104 of this Act.

13 (F) Conduct assessments of the risk to the
14 elderly for pre-, during, and post-storm periods
15 in regions and communities with significant el-
16 derly populations, including retirement commu-
17 nities.

18 **SEC. 404. NATIONAL WEATHER SERVICE COMMUNICATIONS**
19 **IMPROVEMENT.**

20 (a) **IMPROVEMENT OF NWS INSTANT MESSAGING**
21 **SERVICE.**—The Director of the National Weather Service
22 shall improve the instant messaging service used by per-
23 sonnel of the National Weather Service by implementing,
24 not later than October 1, 2027, a commercial off-the-shelf

1 communications solution that replaces the instant mes-
2 saging service commonly referred to as “NWSSchat”.

3 (b) REQUIREMENTS.—The communications solution
4 implemented under this section shall—

5 (1) be hosted on the public cloud; and

6 (2) satisfy requirements set forth by the Direc-
7 tor of the National Weather Service to ensure such
8 solution—

9 (A) best accommodates future growth;

10 (B) performs successfully with increased
11 numbers of users;

12 (C) is easy to use for the majority of users;

13 and

14 (D) is similar to systems already in com-
15 mercial use.

16 **SEC. 405. NOAA WEATHER RADIO MODERNIZATION.**

17 (a) IN GENERAL.—The Under Secretary shall, to the
18 maximum extent practicable, expand coverage of the
19 NOAA Weather Radio and ensure its reliability. In car-
20 rying out this subsection, the Under Secretary shall carry
21 out the following:

22 (1) Maintain support for existing systems serv-
23 ing areas not covered by or having poor quality cel-
24 lular service.

1 (2) Ensure consistent maintenance and oper-
2 ations monitoring, with timely repairs to broadcast
3 transmitter site equipment and antennas.

4 (3) Enhance the ability to amplify Non-Weather
5 Emergency Messages via NOAA Weather Radio, as
6 necessary.

7 (4) Acquire additional transmitters as required
8 to expand coverage to rural and underserved com-
9 munities, units of the National Park System, and
10 National Recreation Areas.

11 (b) MODERNIZATION INITIATIVE.—To the maximum
12 extent practicable, the Under Secretary shall modernize
13 NOAA Weather Radio to ensure its capabilities and cov-
14 erage remain valuable to the public. In carrying out this
15 subsection, the Under Secretary shall carry out the fol-
16 lowing:

17 (1) Upgrade telecommunications infrastructure
18 of NOAA Weather Radio to accelerate the transition
19 of broadcasts to internet protocol-based communica-
20 tions over non-copper media.

21 (2) Accelerate software upgrades to the Ad-
22 vanced Weather Interactive Processing System, or
23 any relevant system successors, in order to imple-
24 ment partial county notifications and alerts.

1 (3) Enhance accessibility and usability of
2 NOAA Weather Radio data and feeds with feedback
3 from relevant stakeholders, including the private sec-
4 tor.

5 (4) Develop options, including satellite backup
6 capability and commercial provider partnerships, for
7 NOAA Weather Radio continuity of service in the
8 event of Weather Forecast Office outages.

9 (5) Research and develop alternative options,
10 including microwave capabilities, to transmit NOAA
11 Weather Radio signals to transmitters that are re-
12 mote or do not have internet protocol capability.

13 (6) Transition critical applications to the Inte-
14 grated Dissemination Program, or any relevant pro-
15 gram successors.

16 (c) PRIORITY.—In carrying out subsection (b), the
17 Under Secretary shall prioritize practices, capabilities, and
18 technologies recommended in accordance with the assess-
19 ment under subsection (d) to maximize the accessibility
20 of NOAA Weather Radio, particularly in remote and un-
21 derserved areas of the United States.

22 (d) ASSESSMENT FOR MANAGEMENT AND DISTRIBUTION.—Not later than one year after the date of the enact-
23 ment of this Act, the Under Secretary shall complete an
24 assessment of access to NOAA Weather Radio. In con-
25

1 ducting such assessment, the Under Secretary shall take
2 into consideration and provide recommendations regarding
3 the following:

4 (1) The need for continuous, adequate, and
5 operational real-time broadcasts of the NOAA
6 Weather Radio in both urban and rural areas.

7 (2) Input from relevant stakeholders on the
8 compatibility of NOAA Weather Radio data with
9 third-party platforms that provide online services,
10 such as websites and mobile device applications, or
11 provide NOAA Weather Radio access.

12 (3) The manner by which existing or new man-
13 agement systems may promote consistent, efficient,
14 and compatible access to NOAA Weather Radio.

15 (4) The ability of the National Oceanic and At-
16 mospheric Administration to aggregate real-time
17 broadcast feeds at one or more central locations.

18 (5) Effective coordination between agencies
19 with responsibilities relating to emergencies and nat-
20 ural disasters.

21 (6) The potential effects of an electromagnetic
22 pulse or geomagnetic disturbance on NOAA Weather
23 Radio.

24 (7) Any other function or element the Under
25 Secretary considers appropriate.

1 **SEC. 406. POST-STORM SURVEYS AND ASSESSMENTS.**

2 (a) IN GENERAL.—The Under Secretary shall per-
3 form one or more post-storm surveys and assessments fol-
4 lowing every hazardous weather or water event determined
5 by the Under Secretary to be of sufficient societal impor-
6 tance to warrant a post-storm survey and assessment.

7 (b) COORDINATION.—The Under Secretary shall co-
8 ordinate with Federal, State, and local governments, pri-
9 vate entities, and relevant institutions of higher education
10 (or a consortia thereof) when conducting post-storm sur-
11 veys and assessments under this section to optimize data
12 collection, sharing, integration, archiving, and access, as
13 appropriate for research needs.

14 (c) DATA AVAILABILITY.—The Under Secretary shall
15 make the appropriate data obtained from each post-storm
16 survey or assessment conducted under this section avail-
17 able to the public as soon as practicable after conducting
18 each such survey or assessment.

19 (d) IMPROVEMENT.—In carrying out this section, the
20 Under Secretary shall carry out the following:

21 (1) Examine the role of uncrewed aerial and
22 marine systems in data collection during post-storm
23 surveys and assessments conducted under this sec-
24 tion.

25 (2) Identify gaps in tactics and procedures and
26 update such tactics and procedures to enhance the

1 efficiency and reliability of data obtained from post-
2 storm surveys and assessments.

3 (3) To the maximum extent practicable, in-
4 crease the number of post-storm community impact
5 studies, particularly among underobserved, under-
6 served, or highly vulnerable populations, including
7 by carrying out the following:

8 (A) Surveying individual responses.

9 (B) Conducting reviews of the accuracy of
10 prior risk evaluations.

11 (C) Evaluating the efficacy of prior mitiga-
12 tion activity.

13 (D) Gathering survivability statistics.

14 (4) As appropriate, integrate community-based,
15 social, behavioral, risk, communication, and eco-
16 nomic sciences elements into existing post-storm sur-
17 veys and assessments, including elements related to
18 the efficacy of forecast and warning information that
19 was shared with the public, barriers that affected
20 the ability of the public to take action, and any chal-
21 lenges with respect to messaging about the haz-
22 ardous weather or water event at issue.

23 (e) SUPPORT FOR EMPLOYEES.—The Under Sec-
24 retary shall provide training, resources, and access to pro-
25 fessional counseling to support the emotional and mental

1 health and well-being of employees conducting post-storm
2 surveys and assessments under this section.

3 (f) EXEMPTION.—Subchapter I of chapter 35 of title
4 44, United States Code, shall not apply to the collection
5 of information during a survey or assessment conducted
6 under subsection (a).

7 **SEC. 407. GOVERNMENT ACCOUNTABILITY OFFICE REPORT**
8 **ON ALERT DISSEMINATION FOR HAZARDOUS**
9 **WEATHER OR WATER EVENTS.**

10 (a) IN GENERAL.—Not later than 18 months after
11 the date of the enactment of this Act, the Comptroller
12 General of the United States shall submit to the Com-
13 mittee on Commerce, Science, and Transportation of the
14 Senate and the Committee on Science, Space, and Tech-
15 nology of the House of Representatives a report that ex-
16 amines the information technology infrastructure of the
17 National Weather Service, specifically regarding the sys-
18 tem for timely public notification via alerts and updates
19 regarding hazardous weather or water events.

20 (b) ELEMENTS.—The report required by subsection
21 (a) shall include the following:

22 (1) An analysis of the information technology
23 infrastructure of the National Weather Service, in-
24 cluding software and hardware capabilities and limi-
25 tations, including an examination of server and data

1 storage methods, broadband, data management, and
2 data sharing.

3 (2) An identification of secondary and tertiary
4 fail-safes for the timely distribution to the public of
5 notifications via alerts and updates regarding haz-
6 ardous weather or water events.

7 (3) A determination of the extent to which pub-
8 lic notifications via alerts and updates regarding
9 hazardous weather or water events have been de-
10 layed and an identification of possible improvements
11 or corrective measures to address latency in the noti-
12 fication process.

13 (4) An assessment of whether collaboration with
14 other Federal departments and agencies, States, or
15 private entities could reduce delays in notifications
16 to the public.

17 (5) A description of actions being undertaken to
18 better identify critical steps in public notification via
19 alerts and updates for hazardous weather or water
20 events that may be vulnerable to disruption or fail-
21 ure in the event of communication, technologic, or
22 computational failure.

23 (6) The geographical differences in availability
24 and effectiveness of rural systems, including an esti-
25 mated number of rural areas affected by unreliable

1 or unavailable systems and barriers to obtain or up-
2 grade such systems.

3 **SEC. 408. DATA COLLECTION MANAGEMENT AND PROTEC-**
4 **TION.**

5 (a) DATA COLLECTION.—The Under Secretary may
6 collect social, behavioral, and economic data, including
7 data relating to Federal communication of hazardous
8 weather or water events and the public response to such
9 communications. Where appropriate, the Under Secretary
10 shall encourage the collection of secondary data, purchase
11 data, or partner with the private sector to obtain data.

12 (b) DATA MANAGEMENT.—The Under Secretary
13 shall establish and maintain a central repository system
14 for the National Oceanic and Atmospheric Administration
15 for data related to the communication of and related pub-
16 lic response to hazardous weather or water events, includ-
17 ing data developed or received pursuant to this title.

18 (c) PROTECTION OF DATA.—The Under Secretary
19 shall ensure that data is collected, managed, and used by
20 the National Oceanic and Atmospheric Administration in
21 accordance with legal, regulatory, and contractual obliga-
22 tions, including chapter 31 of title 44, United States Code,
23 and the Foundations for Evidence-Based Policymaking
24 Act of 2018 (Public Law 115–435).

1 (d) DIGITAL WATERMARKING.—The Under Secretary
 2 shall develop methods to reduce the likelihood of unauthor-
 3 ized tampering with online public notifications of haz-
 4 ardous weather or water events, such as developing digital
 5 watermarks.

6 (e) POLICIES AND PROCEDURES.—The Under Sec-
 7 retary shall establish policies and procedures for the collec-
 8 tion, archiving, and managing of data related to commu-
 9 nity response, including the response of effected or vulner-
 10 able populations, to hazardous weather or water events.

11 **TITLE V—IMPROVING WEATHER**
 12 **INFORMATION FOR AGRICULTURE AND WATER MAN-**
 13 **AGEMENT**
 14

15 **SEC. 501. WEATHER AND CLIMATE INFORMATION IN AGRICULTURE AND WATER MANAGEMENT.**
 16

17 Section 1762 of the Food Security Act of 1985 (15
 18 U.S.C. 8521) is amended—

19 (1) by amending subsection (c) to read as fol-
 20 lows:

21 “(c) FUNCTIONS.—

22 “(1) IN GENERAL.—The Under Secretary shall
 23 carry out the following:

24 “(A) Conduct and support research to im-
 25 prove understanding of subseasonal-to-seasonal

1 predictability for temperature, precipitation,
2 and other Earth system variables and applica-
3 tions.

4 “(B) Collect and use data to make usable,
5 reliable, and timely foundational forecasts of
6 subseasonal-to-seasonal temperature and pre-
7 cipitation.

8 “(C) Support the advancement of multi-
9 model ensemble forecast systems and forecast
10 verification and evaluation capacity, including
11 by carrying out the following:

12 “(i) Developing advanced coupled data
13 assimilation methods using robust Earth
14 system observational data.

15 “(ii) Developing improved coupled
16 subseasonal-to-seasonal ensemble pre-
17 diction systems.

18 “(iii) Improving exchanges and inter-
19 actions between datasets across different
20 models and Earth system observations to
21 increase model accuracy of local relation-
22 ships between and drivers of ocean, land,
23 snow, and ice observations.

1 “(iv) Developing data management
2 strategies to support operations and re-
3 search activities.

4 “(D) Leverage existing research and mod-
5 els from the weather and Earth system enter-
6 prises to improve the forecasts under subpara-
7 graph (B).

8 “(E) Accelerate the operationalization of
9 emerging modeling technologies developed to
10 support and assist the cross-development of
11 fully coupled subseasonal-to-seasonal forecast
12 systems, including during collaborations with
13 other agencies and entities.

14 “(F) Determine and provide information
15 on how subseasonal-to-seasonal temperature
16 and precipitation may relate to the following:

17 “(i) Droughts.

18 “(ii) Fires.

19 “(iii) Tornadoes.

20 “(iv) Hurricanes.

21 “(v) Floods, storm surges, and coastal
22 inundation.

23 “(vi) Heat waves and marine heat
24 waves.

1 “(vii) Winter storms, snowpack, and
2 permafrost thaw.

3 “(viii) Sea ice conditions.

4 “(ix) Other high-impact weather or
5 relevant weather disasters.”;

6 (2) by amending subsection (h) to read as fol-
7 lows:

8 “(h) SUBSEASONAL-TO-SEASONAL FORECASTING
9 PILOT PROJECTS.—

10 “(1) ESTABLISHMENT.—The Under Secretary
11 shall establish within the United States Weather Re-
12 search Program of the Office of Oceanic and Atmos-
13 pheric Research of the National Oceanic and Atmos-
14 pheric Administration not fewer than two pilot
15 projects, in accordance with paragraph (2), to sup-
16 port improved subseasonal-to-seasonal precipitation
17 forecasts for the following:

18 “(A) Water management in areas of the
19 United States in which there is—

20 “(i) a high level of drought; and

21 “(ii) a reliance on reservoirs for water
22 storage.

23 “(B) Agriculture in the central United
24 States.

1 “(2) OBJECTIVES.—In carrying out this sub-
2 section, the Under Secretary shall ensure the fol-
3 lowing:

4 “(A) A pilot project under subparagraph
5 (A) of paragraph (1) addresses key science
6 challenges to improving forecasts and devel-
7 oping related products for water management,
8 including the following:

9 “(i) Improving operational model reso-
10 lution, both horizontal and vertical, to re-
11 solve issues associated with mountainous
12 terrain, such as intensity of precipitation
13 and relative fraction of rain versus snow
14 precipitation.

15 “(ii) Improving modeling of interstate
16 or cross-boundary water movement and
17 storage through rivers, tributaries, and
18 aquifers with relation to water availability.

19 “(iii) Improving fidelity in the oper-
20 ational modeling of the atmospheric bound-
21 ary layer in mountainous regions.

22 “(iv) Resolving challenges in pre-
23 dicting winter atmospheric circulation and
24 storm tracks, including periods of blocked
25 versus unblocked flow over the eastern

1 North Pacific Ocean and western United
2 States.

3 “(v) Utilizing outcomes from the at-
4 mospheric rivers forecast improvement pro-
5 gram under section 204 of the Weather
6 Act Reauthorization Act of 2025 and the
7 precipitation forecast improvement pro-
8 gram under section 603 of the Weather
9 Research and Forecasting Innovation Act
10 of 2017 to produce operational tools and
11 services.

12 “(vi) Improving the quality and tem-
13 poral and spatial resolution of observations
14 and accurate operational modeling of air-
15 sea interactions, and the influence of
16 oceans on subseasonal and seasonal fore-
17 casting.

18 “(B) A pilot project under subparagraph
19 (B) of paragraph (1) addresses key science
20 challenges to improving forecasts and devel-
21 oping related products for agriculture in the
22 central United States, including the following:

23 “(i) Improving the quality and tem-
24 poral and spatial resolution of observations
25 and accurate operational modeling of the

1 land surface and hydrologic cycle, includ-
2 ing soil moisture and flash drought proc-
3 esses.

4 “(ii) Improving fidelity in the oper-
5 ational modeling of warm season precipita-
6 tion processes.

7 “(iii) Understanding and predicting
8 large-scale upper-level dynamical flow
9 anomalies that occur in spring and sum-
10 mer.

11 “(iv) Improving modeling of interstate
12 or cross-boundary water movement and
13 storage through rivers, tributaries, and
14 aquifers with relation to water availability
15 for agriculture.

16 “(3) ACTIVITIES.—A pilot project under this
17 subsection shall include activities that carry out the
18 following:

19 “(A) Best implement recommendations of
20 the 2020 Report of the National Weather Serv-
21 ice, entitled ‘Subseasonal and Seasonal Fore-
22 casting Innovation: Plans for the Twenty-First
23 Century’.

24 “(B) Achieve measurable objectives for
25 operational forecast improvement.

1 “(C) Engage with, and leverage the re-
2 sources of the following:

3 “(i) Institutions of higher education
4 (as such term is defined in section 101 of
5 the Higher Education Act of 1965 (20
6 U.S.C. 1001)).

7 “(ii) A consortia of institutions as de-
8 scribed under clause (i).

9 “(iii) Entities within the National
10 Oceanic and Atmospheric Administration
11 in existence as of the date of the enact-
12 ment of this subsection, including Regional
13 Climate Centers and the National Centers
14 for Environmental Information.

15 “(iv) Other Federal agencies, as ap-
16 propriate.

17 “(D) Are carried out in coordination with
18 the Assistant Administrator for the Office of
19 Oceanic and Atmospheric Research and the Di-
20 rector of the National Weather Service.

21 “(4) SUNSET.—The authority under this sub-
22 section shall terminate on the date that is five years
23 after the date of the enactment of this subsection.”;
24 and

1 (3) by amending subsection (j) to read as fol-
2 lows:

3 “(j) AUTHORIZATION OF APPROPRIATIONS.—There
4 are authorized to be appropriated \$50,300,000 for each
5 of fiscal years 2026 through 2030 to carry out the activi-
6 ties under this section.”.

7 **SEC. 502. NATIONAL INTEGRATED DROUGHT INFORMATION**
8 **SYSTEM.**

9 (a) IN GENERAL.—Section 3 of the National Inte-
10 grated Drought Information System Act of 2006 (15
11 U.S.C. 313d) is amended—

12 (1) in subsection (a), by striking “, through the
13 National Weather Service and other appropriate
14 weather and climate programs in the National Oce-
15 anic and Atmospheric Administration,”;

16 (2) in subsection (b)—

17 (A) in paragraph (1)—

18 (i) in subparagraph (A), by striking
19 “and” after the semicolon;

20 (ii) in subparagraph (B), by inserting
21 “and” after the semicolon; and

22 (iii) by adding at the end the fol-
23 lowing new subparagraph:

24 “(C) incorporates flash drought research
25 and tools to enhance timely response;”;

1 (B) in paragraph (5), by striking “im-
2 provements in seasonal precipitation and tem-
3 perature, subseasonal precipitation and tem-
4 perature, and low flow water prediction; and”
5 and inserting “support improvements in subsea-
6 sonal to seasonal precipitation and temperature,
7 and low flow water prediction;”;

8 (C) in paragraph (6), by striking the pe-
9 riod and inserting a semicolon; and

10 (D) by adding at the end the following new
11 paragraphs:

12 “(7) advance and deploy next-generation tech-
13 nologies related to drought, such as monitoring, pre-
14 paredness, and forecasting capabilities utilizing arti-
15 ficial intelligence, machine learning, and cloud tech-
16 nologies;

17 “(8) use observational networks, including the
18 National Weather Service cooperative observer pro-
19 gram and State or regional hydrological monitoring
20 projects;

21 “(9) refine drought indicators across multiple
22 spatial and temporal scales;

23 “(10) improve decision-support products;

24 “(11) optimize data and resources from across
25 the Federal Government;

1 “(12) investigate and address data gaps, includ-
2 ing snowpack monitoring, space-based or in situ soil
3 moisture monitoring, groundwater data, and data re-
4 lated to rapid intensification events; and

5 “(13) engage with, and leverage the resources
6 of, entities within the National Oceanic and Atmos-
7 pheric Administration in existence as of the date of
8 the enactment of the Weather Act Reauthorization
9 Act of 2025 to improve coordination of water moni-
10 toring, forecasting, and management.”;

11 (3) in subsection (c)—

12 (A) in paragraph (2), by striking “and”
13 after the semicolon;

14 (B) in paragraph (3), by striking the pe-
15 riod and inserting “; and”; and

16 (C) by adding at the end the following new
17 paragraph:

18 “(4) in partnership with the National Mesonet
19 Program, establish memoranda of understanding to
20 provide coordinated, high-quality data.”; and

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

22 “(g) MODELING UPDATE.—Not later than one year
23 after the date of the enactment of this subsection, the
24 Under Secretary, acting through the National Integrated
25 Drought Information System and the Climate Prediction

1 Center of the National Weather Service, shall develop a
2 plan to incorporate existing drought products of the Na-
3 tional Oceanic and Atmospheric Administration and im-
4 proved dynamical and statistical forecast modeling tools
5 into probabilistic forecasts.”.

6 (b) AUTHORIZATION OF APPROPRIATIONS.—Section
7 4 of the National Integrated Drought Information System
8 Act of 2006 (Public Law 109–430; 15 U.S.C. 313d note)
9 is amended to read as follows:

10 **“SEC. 4. AUTHORIZATION OF APPROPRIATIONS.**

11 “There are authorized to be appropriated to carry out
12 this Act the following:

13 “(1) \$15,000,000 for fiscal year 2026.

14 “(2) \$15,500,000 for fiscal year 2027.

15 “(3) \$16,000,000 for fiscal year 2028.

16 “(4) \$16,500,000 for fiscal year 2029.

17 “(5) \$17,000,000 for fiscal year 2030.”.

18 **SEC. 503. NATIONAL MESONET PROGRAM.**

19 (a) PROGRAM.—The Under Secretary shall maintain
20 the National Mesonet Program (referred to in this section
21 as the “Program”), which shall carry out the following:

22 (1) Obtain observations to improve under-
23 standing of and forecast capabilities for atmospheric,
24 drought, fire, and water events, with a prioritization
25 on leveraging available commercial, academic, and

1 other non-Federal Government environmental data
2 to enhance coordination across the private, public,
3 and academic sectors of the weather enterprise in
4 the United States.

5 (2) Establish means to integrate greater density
6 and more types of environmental observations into
7 the Program on an annual basis, including by en-
8 couraging local and regional networks of environ-
9 mental monitoring stations and in situ sensor net-
10 works, including soil moisture and ground-based
11 profilers, to participate in the Program.

12 (3) Establish memoranda of understanding with
13 networks outside of the scope of the Program in fur-
14 therance of this section.

15 (4) Coordinate with satellite data and services
16 acquired through the Commercial Data Program
17 under section 302 of the Weather Research and
18 Forecasting Innovation Act of 2017 (15 U.S.C.
19 8532), as amended by section 401 of this Act.

20 (b) PROGRAM ELEMENTS.—In carrying out the Pro-
21 gram, the Under Secretary shall carry out the following:

22 (1) Increase data density by carrying out the
23 following:

24 (A) Improving and increasing the quantity
25 and density of environmental observations used

1 by the Administration and the National Weath-
2 er Service to support baseline forecasts, includ-
3 ing nowcasts, warnings, and hyper local fore-
4 casts that protect individuals, businesses, agri-
5 cultural production, food security, military, and
6 government agencies in the United States, and
7 enabling such individuals and entities to operate
8 in a safe, efficient, and orderly manner.

9 (B) Yielding increased quantities of bound-
10 ary-layer data to improve numerical weather
11 prediction performance, including in subsea-
12 sonal-to-seasonal timescales.

13 (C) Identifying available terrestrial or ma-
14 rine environmental data, or quantifiable gaps in
15 such data, to improve the understanding of air-
16 sea interactions.

17 (D) Supporting the National Weather
18 Service in reaching its target of a 30-minute
19 warning time for severe weather through better
20 predictive model algorithms driven by increas-
21 ingly effective observations.

22 (2) Monitor local meteorological conditions by
23 carrying out the following:

24 (A) Acquiring soil and moisture data to
25 monitor soil moisture, vegetation water content,

1 and moisture loss from evaporation, in support
2 of operational forecasting, the National Inte-
3 grated Drought Information System, and local
4 commercial, agricultural, and emergency man-
5 agement needs.

6 (B) Supporting the National Coordinated
7 Soil Moisture Monitoring Network in acquiring
8 soil moisture and related data to support the
9 development of decision-support products and
10 other information services.

11 (C) Expanding and enhancing environ-
12 mental observational networks in the roadway
13 environment to provide real-time road weather
14 and surface conditions for surface transpor-
15 tation and related economic sectors.

16 (3) Administer the Program by carrying out the
17 following:

18 (A) Obtaining data in furtherance of this
19 section only when demonstrably cost-effective
20 and meeting or exceeding data quality stand-
21 ards available to the National Oceanic and At-
22 mospheric Administration (referred to in this
23 section as the “Administration”).

24 (B) Subject to subparagraph (A),
25 leveraging existing networks of environmental

1 monitoring stations, including supplemental
2 radar systems, to increase the quantity and
3 density of environmental observations and data
4 available to the Administration.

5 (C) Providing the critical technical and ad-
6 ministrative infrastructure needed to facilitate
7 rapid integration and sustained use of new and
8 emerging networks of environmental monitoring
9 stations anticipated in coming years from non-
10 Federal Government sources.

11 (D) Coordinating with existing data devel-
12 oped by the Administration and used for fore-
13 casts, including data from the National Envi-
14 ronmental Satellite, Data, and Information
15 Service, the Integrated Ocean Observing Sys-
16 tem, the Global Ocean Monitoring and Observ-
17 ing Program, the National Data Buoy Center,
18 and the National Ocean Service.

19 (E) Identifying and communicating to the
20 Office of Oceanic and Atmospheric Research
21 and other partners priorities of research and
22 development needed to advance observations in
23 the Program.

24 (c) FINANCIAL AND TECHNICAL ASSISTANCE.—

1 (1) IN GENERAL.—In furtherance of the Pro-
2 gram, in a fiscal year, the Under Secretary may
3 award not less than 15 percent of the amount appro-
4 priated for the Program for such fiscal year for fi-
5 nancial assistance to State, Tribal, private, and aca-
6 demic entities seeking to build, expand, or upgrade
7 equipment and capacity of mesonet systems.

8 (2) OTHER FEDERAL AWARDS.—Financial as-
9 sistance under this subsection may be made in co-
10 ordination with and in addition to awards from
11 other Federal agencies.

12 (3) AGREEMENTS.—Before receiving financial
13 assistance under paragraph (1), the State, Tribal,
14 private, or academic entity seeking financial assist-
15 ance under this subsection shall enter into an agree-
16 ment with the Under Secretary to provide data to
17 the Program, subject to verification by the Program
18 of the relative operational value and evaluation of
19 the cost of such data, for use in weather prediction,
20 severe weather warnings, and emergency response.

21 (4) ASSISTANCE AND OTHER SUPPORT.—The
22 Under Secretary may provide the following:

23 (A) Technical assistance, project imple-
24 mentation support, and guidance to State, Trib-

1 al, private, and academic entities seeking finan-
2 cial assistance under this subsection.

3 (B) Technical and financial assistance for
4 maintenance of monitoring stations in under-
5 represented or remote areas of the country
6 where it is financially unfeasible for one entity
7 to operate such stations without such assist-
8 ance.

9 (5) TERMS.—In providing financial assistance
10 under this subsection, the Under Secretary shall es-
11 tablish terms to ensure that each State, Tribal, pri-
12 vate, or academic entity that receives financial as-
13 sistance under this subsection receives a level of sup-
14 port commensurate with the quality and other char-
15 acteristics of the data to be provided.

16 (6) DETERMINATION.—A State, Tribal, private,
17 or academic entity may only receive financial assist-
18 ance under this subsection if the Under Secretary
19 determines such entity will receive sufficient finan-
20 cial support from non-Federal Government sources
21 and fully maintain the quality of the mesonet system
22 and associated data standards required by the Pro-
23 gram for a period of not less than five years.

24 (7) PRIORITY.—The Under Secretary shall
25 prioritize providing assistance under paragraph (1)

1 to not fewer than one entity in a remote area or an
2 area that has a lack of environmental monitoring
3 stations described in subsection (a)(2).

4 (d) ADVISORY COMMITTEE.—

5 (1) IN GENERAL.—The Under Secretary shall
6 ensure the Program has an active advisory com-
7 mittee of subject matter experts to make rec-
8 ommendations to the Administration on the identi-
9 fication, implementation, procurement, and tracking
10 of data needed to supplement the Program, and rec-
11 ommend improvements, expansions, and acquisitions
12 of available data.

13 (2) DESIGNATION OF EXISTING COMMITTEE.—

14 The Under Secretary may designate an existing ad-
15 visory committee, subcommittee, or working group of
16 the Federal Government, including the Science Advi-
17 sory Board of the Administration, to carry out the
18 requirement under paragraph (1).

19 (3) ACADEMIC EXPERTISE.—The advisory com-

20 mittee under paragraph (1), in consultation with the
21 Program, shall include expertise from one or more
22 institutions of higher education (as such term is de-
23 fined in section 101 of the Higher Education Act of
24 1965 (20 U.S.C. 1001)) to assist the advisory com-
25 mittee to identify, evaluate, and recommend poten-

1 tial partnerships, regional or subregional consortia,
2 and collaborative methods that would expand the
3 number of participants and volume of data in the
4 Program.

5 (e) REGULAR BRIEFINGS.—

6 (1) IN GENERAL.—Not less frequently than an-
7 nually through 2035, the Under Secretary shall pro-
8 vide regular briefings to the Committee on Com-
9 merce, Science, and Transportation of the Senate
10 and the Committee on Science, Space, and Tech-
11 nology of the House of Representatives on all activi-
12 ties under the Program.

13 (2) BRIEFING CONTENT.—Each briefing re-
14 quired under paragraph (1) shall include informa-
15 tion relating to the following:

16 (A) Efforts to implement the activities de-
17 scribed in subsection (b).

18 (B) Any financial or technical assistance
19 provided pursuant to subsection (c).

20 (C) Efforts to address recommendations
21 received from the advisory committee under
22 subsection (d), if any.

23 (D) The potential need and associated ben-
24 efits of a coastal and ocean mesonet, or other
25 emerging areas of weather data needs.

1 (E) Progress toward eliminating gaps in
2 weather observation data in States and regions
3 of the United States.

4 (F) Any other topic the Under Secretary
5 determines relevant.

6 (f) AUTHORIZATION OF APPROPRIATIONS.—From
7 amounts authorized to be appropriated to the National
8 Weather Service, there shall be available not more than
9 the following amounts to carry out this section:

10 (1) \$50,000,000 for fiscal year 2026.

11 (2) \$55,000,000 for fiscal year 2027.

12 (3) \$61,000,000 for fiscal year 2028.

13 (4) \$68,000,000 for fiscal year 2029.

14 (5) \$70,000,000 for fiscal year 2030.

15 **SEC. 504. NATIONAL COORDINATED SOIL MOISTURE MONI-**
16 **TORING NETWORK.**

17 (a) IN GENERAL.—The Under Secretary, in collabo-
18 ration with the Secretary of Agriculture, the Director of
19 the United States Geological Survey, the Administrator of
20 the National Aeronautics and Space Administration, and
21 the heads of other relevant Federal agencies and depart-
22 ments, shall support the development, deployment, and
23 maintenance of soil moisture monitoring networks by man-
24 aging the National Coordinated Soil Moisture Monitoring
25 Network (in this section referred to as the “Network”)

1 within the National Integrated Drought Information Sys-
2 tem.

3 (b) ACTIVITIES.—The Under Secretary shall ensure
4 the Network includes activities that carry out the fol-
5 lowing:

6 (1) Establishing a visible, user-friendly website.

7 (2) Developing a set of criteria for high-quality
8 data sources.

9 (3) Supporting research necessary to develop or
10 improve soil moisture monitoring products at a na-
11 tional scale.

12 (4) Increasing the number of long-term, high-
13 quality, in situ and remote sensing soil moisture
14 monitoring stations across the United States.

15 (5) Sharing methodologies and validation proto-
16 cols with the private sector.

17 (6) Engaging with the citizen science commu-
18 nity.

19 (7) Developing, releasing, and promoting new,
20 nationwide point-based and gridded soil moisture
21 data products that meet the needs of diverse end-
22 user groups.

23 (8) Supporting community building and out-
24 reach to the network of individuals engaged with soil

1 moisture information delivery, from data provision to
2 end-user decisionmaking.

3 **SEC. 505. NATIONAL WATER CENTER.**

4 Section 301 of the Coordinated Ocean Observations
5 and Research Act of 2020 (42 U.S.C. 10371) is amend-
6 ed—

7 (1) in subsection (a)—

8 (A) in paragraph (1)(A)—

9 (i) in the matter preceding clause (i),
10 by inserting “, within the Office of Water
11 Prediction of the National Weather Serv-
12 ice,” after “shall establish”;

13 (ii) in clause (i), by striking “and”
14 after the semicolon;

15 (iii) in clause (ii), by striking the pe-
16 riod and inserting “; and”; and

17 (iv) by adding at the end the following
18 new clause:

19 “(iii) to lead the transition of water
20 research by the Federal Government, in-
21 cluding model development, into operations
22 of the National Oceanic and Atmospheric
23 Administration and the National Weather
24 Service.”; and

1 (B) in paragraph (2), by adding at the end
2 the following new subparagraphs:

3 “(F) Serving as the primary Center within
4 the National Oceanic and Atmospheric Admin-
5 istration for research, development, collabora-
6 tion, and coordination of the water research
7 and forecast activities of the Administration
8 and other centers and networks of the Federal
9 Government, including those of the Department
10 of Agriculture, the Army Corps of Engineers,
11 the Bureau of Reclamation, the United States
12 Geological Survey, and the Federal Emergency
13 Management Agency.

14 “(G) Integrating and promoting consist-
15 ency among national and regional hydrological
16 forecast operations and service delivery.”; and

17 (C) by adding at the end the following new
18 paragraph:

19 “(3) INCORPORATION INTO UNIFIED FORECAST
20 SYSTEM.—The Under Secretary shall use the Weath-
21 er and Climate Operational Supercomputing System,
22 or any other successor system, to support the devel-
23 opment and implementation of advanced water re-
24 sources modeling capabilities under paragraph

1 (2)(B) and shall incorporate those modeling capabili-
2 ties into the unified forecast system.”;

3 (2) by striking subsection (b);

4 (3) by redesignating subsection (c) as sub-
5 section (b);

6 (4) by inserting after subsection (b), as redesign-
7 nated by paragraph (3), the following:

8 “(c) ORGANIZATION.—The Under Secretary, acting
9 through the Director of the Office of Water Prediction of
10 the National Weather Service, shall carry out the fol-
11 lowing:

12 “(1) Supervise and oversee the administration,
13 management, and operations of each River Forecast
14 Center of the National Weather Service and coordi-
15 nate such administration, management, and oper-
16 ations with the National Water Center.

17 “(2) Administer the duties and activities of the
18 National Oceanic and Atmospheric Administration
19 related to the Cooperative Institute for Research to
20 Operations in Hydrology, or any successor entity,
21 and coordinate the activities of the Institute with the
22 National Water Center.”; and

23 (5) in subsection (d)(4), by striking “fiscal year
24 2024” and inserting “each of fiscal years 2026
25 through 2030”.

1 **SEC. 506. SATELLITE TRANSFERS BRIEFING.**

2 Not later than 180 days after the date of the enact-
3 ment of this Act, the Secretary of Commerce shall brief
4 the Committee on Commerce, Science, and Transportation
5 of the Senate and the Committee on Science, Space, and
6 Technology of the House of Representatives on the De-
7 partment of Commerce's authorities and policies, and Fed-
8 eral Government-wide policies, related to transferring any
9 portion of the weather satellite systems operated by the
10 Department of Commerce to any other Federal depart-
11 ment or agency, including the following:

12 (1) A description of the process for decommis-
13 sioning a Department of Commerce operational
14 weather satellite, any existing agreements related to
15 transfers of weather satellites, whether decommis-
16 sioned or not, and any reimbursable agreements re-
17 lated to the transfer of physical property or the op-
18 eration of Department of Commerce weather sat-
19 ellites on behalf of any other Federal department or
20 agency.

21 (2) A summary of any Department of Com-
22 merce plans for potential transfer of existing or fu-
23 ture weather satellite systems to any other Federal
24 department or agency.

1 **TITLE VI—HARMFUL ALGAL**
2 **BLOOM AND HYPOXIA RE-**
3 **SEARCH AND CONTROL**

4 **SEC. 601. SHORT TITLE.**

5 This title may be cited as the “Harmful Algal Bloom
6 and Hypoxia Research and Control Amendments Act of
7 2025”.

8 **SEC. 602. AMENDMENTS TO THE HARMFUL ALGAL BLOOMS**
9 **AND HYPOXIA RESEARCH AND CONTROL ACT**
10 **OF 1998.**

11 (a) ASSESSMENTS.—

12 (1) IN GENERAL.—Section 603 of the Harmful
13 Algal Blooms and Hypoxia Research and Control
14 Act of 1998 (33 U.S.C. 4001) is amended—

15 (A) in the section heading, by striking
16 “ASSESSMENTS” and inserting “TASK
17 FORCE, ASSESSMENTS, AND ACTION
18 STRATEGY”;

19 (B) in subsection (a)—

20 (i) by redesignating paragraphs (13)
21 and (14) as paragraphs (14) and (15), re-
22 spectively; and

23 (ii) by inserting after paragraph (12)
24 the following new paragraph:

25 “(13) the Department of Energy;”;

1 (C) by striking subsections (b), (c), (d),
2 (e), (g), (h), and (i);

3 (D) by redesignating subsection (f) as sub-
4 section (b);

5 (E) in subsection (b), as so redesignated—

6 (i) in paragraph (1), in the first sen-
7 tence, by striking “coastal waters including
8 the Great Lakes” and inserting “marine,
9 estuarine, and freshwater systems”; and

10 (ii) in paragraph (2)—

11 (I) by amending subparagraph
12 (A) to read as follows:

13 “(A) examine—

14 “(i) the causes and ecological con-
15 sequences of hypoxia on marine and aquat-
16 ic species in their environments; and

17 “(ii) the costs of hypoxia, including
18 impacts on food safety and security;”;

19 (II) by redesignating subpara-
20 graphs (B), (C), and (D) as subpara-
21 graphs (D), (E), and (F), respectively;

22 (III) by inserting after subpara-
23 graph (A) the following new subpara-
24 graphs:

1 “(B) examine the effect of other environ-
2 mental stressors on hypoxia;

3 “(C) evaluate alternatives for reducing,
4 mitigating, and controlling hypoxia and its envi-
5 ronmental impacts;”;

6 (IV) in subparagraph (D), as re-
7 designated by subclause (II), by in-
8 serting “, social,” after “ecological”;
9 and

10 (V) in subparagraph (E), as re-
11 designated by subclause (II), by strik-
12 ing “hypoxia modeling and monitoring
13 data” and inserting “hypoxia mod-
14 eling, forecasting, and monitoring and
15 observation data”; and

16 (F) by adding at the end the following new
17 subsections:

18 “(c) ACTION STRATEGY AND SCIENTIFIC ASSESS-
19 MENT FOR MARINE AND FRESHWATER HARMFUL ALGAL
20 BLOOMS.—

21 “(1) IN GENERAL.—Not less frequently than
22 once every five years, the Task Force shall complete
23 and submit to Congress an action strategy for harm-
24 ful algal blooms in the United States.

1 “(2) ELEMENTS.—Each Action Strategy
2 shall—

3 “(A) examine, and include a scientific as-
4 sessment of, marine and freshwater harmful
5 algal blooms, including such blooms—

6 “(i) in the Great Lakes;

7 “(ii) in the upper reaches of estuaries;

8 “(iii) in freshwater lakes and rivers;

9 “(iv) in coastal and marine waters;

10 and

11 “(v) that originate in freshwater lakes
12 or rivers and migrate to coastal waters;

13 “(B) examine the causes, ecological con-
14 sequences or physiological consequences on fish
15 function, and economic or sociocultural impacts,
16 including food safety and security, of harmful
17 algal blooms;

18 “(C) examine the effect of other environ-
19 mental stressors on harmful algal blooms;

20 “(D) examine potential methods to pre-
21 vent, control, and mitigate harmful algal blooms
22 and the potential ecological, social, cultural, and
23 economic costs and benefits of such methods;

24 “(E) identify priorities for research needed
25 to advance techniques and technologies to de-

1 tect, predict, monitor, respond to, and minimize
2 the occurrence, duration, and severity of harm-
3 ful algal blooms, including recommendations to
4 eliminate significant gaps in harmful algal
5 bloom forecasting, monitoring, and observation
6 data;

7 “(F) evaluate progress made by, and the
8 needs of, activities and actions of the Task
9 Force to prevent, control, and mitigate harmful
10 algal blooms;

11 “(G) identify ways to improve coordination
12 and prevent unnecessary duplication of effort
13 among Federal agencies with respect to re-
14 search on harmful algal blooms; and

15 “(H) include regional chapters relating to
16 the requirements described in this paragraph in
17 order to highlight geographically and eco-
18 logically diverse locations with significant eco-
19 logical, social, cultural, and economic impacts
20 from harmful algal blooms.

21 “(d) CONSULTATION.—In carrying out subsections
22 (b) and (c), the Task Force shall consult with the fol-
23 lowing:

24 “(1) States, Indian tribes, and local govern-
25 ments.

1 “(2) Appropriate industries (including fisheries,
2 agriculture, and fertilizer), academic institutions,
3 and nongovernmental organizations with relevant ex-
4 pertise.”.

5 (2) CLERICAL AMENDMENT.—The table of con-
6 tents in section 2 of the Coast Guard Authorization
7 Act of 1998 (Public Law 105–383; 112 Stat. 3412;
8 136 Stat. 1268) is amended by amending the item
9 relating to section 603 to read as follows:

“Sec. 603. Task Force, assessments, and Action Strategy.”.

10 (3) CONFORMING AMENDMENT.—Section 102
11 of the Harmful Algal Bloom and Hypoxia Amend-
12 ments Act of 2004 (33 U.S.C. 4001a) is amended
13 by striking “In developing” and all that follows
14 through “management.”.

15 (b) NATIONAL HARMFUL ALGAL BLOOM AND HY-
16 POXIA PROGRAM.—Section 603A of the Harmful Algal
17 Blooms and Hypoxia Research and Control Act of 1998
18 (33 U.S.C. 4002) is amended—

19 (1) in subsection (a)—

20 (A) in paragraph (1)—

21 (i) by striking “predicting,” and in-
22 serting “monitoring, observing, fore-
23 casting,”; and

24 (ii) by striking “and” after the semi-
25 colon; and

1 (B) by striking paragraph (2) and insert-
2 ing the following new paragraphs:

3 “(2) the scientific assessment submitted under
4 section 603(b); and

5 “(3) the Action Strategy.”;

6 (2) in subsection (c)—

7 (A) in paragraph (3), by striking “ocean
8 and Great Lakes science and management pro-
9 grams and centers” and inserting “programs
10 and centers relating to the science and manage-
11 ment of marine, estuarine, and freshwater sys-
12 tems”; and

13 (B) in paragraph (5), by inserting “while
14 recognizing each agency is acting under its own
15 independent mission and authority” before the
16 semicolon;

17 (3) in subsection (d), by striking “Except as
18 provided in subsection (h), the” and inserting
19 “The”;

20 (4) in subsection (e)—

21 (A) by amending paragraph (2) to read as
22 follows:

23 “(2) examine the causes, ecological con-
24 sequences, and costs of harmful algal blooms and
25 hypoxia;”;

1 (B) in paragraph (3)—

2 (i) in subparagraph (B), by inserting
3 “, including the annual Gulf of Mexico hy-
4 poxia zone mapping cruise” after “Pro-
5 gram”;

6 (ii) in subparagraph (C), by striking
7 “and” after the semicolon; and

8 (iii) by adding at the end the fol-
9 lowing new subparagraphs:

10 “(E) to identify opportunities to improve
11 monitoring of harmful algal blooms and hy-
12 poxia, with a particular focus on waters that
13 may affect fisheries, public health, or subsist-
14 ence harvest;

15 “(F) to evaluate adaptation and mitigation
16 strategies to address the impacts of harmful
17 algal blooms and hypoxia;

18 “(G) to support the resilience of the sea-
19 food industry to harmful algal blooms and to
20 expand access to testing for harmful algal
21 bloom toxins, including for subsistence and rec-
22 reational harvesters, through innovative meth-
23 ods that increase the efficiency and effective-
24 ness of such testing in rural and remote areas;

1 “(H) to support sustained observations to
2 provide State and local entities, Indian tribes,
3 and other entities access to real-time or near
4 real-time observations data for decisionmaking
5 to protect human and ecological health and
6 local economies; and

7 “(I) to assess the combined effects of
8 harmful algal blooms, hypoxia, and stressors
9 such as runoff and infrastructure changes on
10 marine, freshwater, or estuarine ecosystems and
11 living resources;”;

12 (C) in paragraph (4), by striking “agen-
13 cies” and inserting “entities, regional coastal
14 observing systems (as such term is defined in
15 section 12303 of the Integrated Coastal and
16 Ocean Observation System Act of 2009 (33
17 U.S.C. 3602)),”;

18 (D) in paragraph (6), by inserting “and
19 communities” after “ecosystems”;

20 (E) in paragraph (8), by inserting “and
21 Indian tribes” after “managers”;

22 (F) in paragraph (9)(A), by striking “,
23 tribal, and local stakeholders” and inserting
24 “and local stakeholders and Indian tribes, Trib-

1 al organizations, and Native Hawaiian organi-
2 zations”;

3 (G) by redesignating paragraphs (3), (4),
4 (5), (6), (7), (8), (9), (10), and (11) as para-
5 graphs (4), (5), (6), (7), (8), (9), (10), (12),
6 and (13), respectively;

7 (H) by inserting after paragraph (2) the
8 following new paragraph:

9 “(3) consult with entities that are most depend-
10 ent on coastal and water resources that may be im-
11 pacted by marine and freshwater harmful algal
12 blooms and hypoxia, including—

13 “(A) State and local entities;

14 “(B) Indian tribes, Tribal organizations,
15 and Native Hawaiian organizations;

16 “(C) island communities;

17 “(D) low-population rural communities;

18 “(E) subsistence communities; and

19 “(F) fisheries and recreation industries;”;

20 and

21 (I) by inserting after paragraph (10), as
22 redesignated by subparagraph (G), the fol-
23 lowing new paragraph:

24 “(11) expand access to testing for harmful algal
25 bloom toxins, including for subsistence and rec-

1 reational harvesters, through innovative methods
2 that increase the efficiency and effectiveness of such
3 testing in rural and remote areas;”;

4 (5) by amending subsection (f) to read as fol-
5 lows:

6 “(f) COOPERATION; DUPLICATION OF EFFORT.—The
7 Under Secretary shall work cooperatively with and avoid
8 duplication of effort of other agencies on the Task Force
9 and States, Indian tribes, Tribal organizations, Native
10 Hawaiian organizations, and nongovernmental organiza-
11 tions concerned with marine and freshwater issues.”; and

12 (6) by striking subsection (g), (h), and (i).

13 (c) NATIONAL OCEANIC AND ATMOSPHERIC ADMIN-
14 ISTRATION ACTIVITIES.—

15 (1) IN GENERAL.—Section 603B of the Harm-
16 ful Algal Blooms and Hypoxia Research and Control
17 Act of 1998 (33 U.S.C. 4003) is amended to read
18 as follows:

19 **“SEC. 603B. NATIONAL OCEANIC AND ATMOSPHERIC AD-**
20 **MINISTRATION ACTIVITIES.**

21 “(a) IN GENERAL.—The Under Secretary shall carry
22 out the following:

23 “(1) Carry out response activities for marine,
24 coastal, and Great Lakes harmful algal bloom and
25 hypoxia events.

1 “(2) Develop and enhance operational harmful
2 algal bloom observing and forecasting programs, in-
3 cluding operational observations and forecasting,
4 monitoring, modeling, data management, and infor-
5 mation dissemination.

6 “(3) Develop forecast modeling that includes
7 the effect of hurricanes and other weather events on
8 the resuspension of bioavailable nutrients in sedi-
9 ments and related interactions with harmful algal
10 blooms.

11 “(4) Enhance communication and coordination
12 among Federal agencies carrying out activities and
13 research relating to marine and freshwater harmful
14 algal bloom and hypoxia.

15 “(5) Leverage existing resources and expertise
16 available from local research universities and institu-
17 tions.

18 “(6) Use cost-effective methods in carrying out
19 this section.

20 “(b) INTEGRATED COASTAL AND OCEAN OBSERVA-
21 TION SYSTEM.—The collection of monitoring and observ-
22 ing data under this section shall comply with all data
23 standards and protocols developed pursuant to the Inte-
24 grated Coastal and Ocean Observation System Act of
25 2009 (33 U.S.C. 3601 et seq.). Such data shall be made

1 available through the National Integrated Coastal and
 2 Ocean Observation System established under section
 3 12304 of such Act (33 U.S.C. 3603).”.

4 (2) CLERICAL AMENDMENT.—The table of con-
 5 tents in section 2 of the Coast Guard Authorization
 6 Act of 1998 (Public Law 105–383; 112 Stat. 3412;
 7 136 Stat. 1268) is amended by striking the item re-
 8 lating to section 603B and inserting the following
 9 new item:

“Sec. 603B. National Oceanic and Atmospheric Administration activities.”.

10 (d) ENVIRONMENTAL PROTECTION AGENCY ACTIVI-
 11 TIES.—

12 (1) IN GENERAL.—The Harmful Algal Bloom
 13 and Hypoxia Research and Control Act of 1998 is
 14 amended by inserting after section 603B (33 U.S.C.
 15 4003) the following new section:

16 **“SEC. 603C. ENVIRONMENTAL PROTECTION AGENCY AC-**
 17 **TIVITIES.**

18 “(a) IN GENERAL.—The Administrator shall carry
 19 out the following:

20 “(1) Carry out research on the ecology and
 21 human health impacts of freshwater harmful algal
 22 blooms and hypoxia events.

23 “(2) Develop and enhance operational fresh-
 24 water harmful algal bloom monitoring, observing,
 25 and forecasting programs in lakes, rivers, and res-

1 ervoirs, and coordinate with the National Oceanic
2 and Atmospheric Administration on such programs
3 in the Great Lakes and estuaries (including tribu-
4 taries thereof), including operational observations
5 and forecasting, monitoring, modeling, data manage-
6 ment, and information dissemination, to support
7 event response, prioritization, prevention, adapta-
8 tion, and mitigation activities.

9 “(3) Enhance communication and coordination
10 among Federal agencies carrying out freshwater
11 harmful algal bloom and hypoxia activities and re-
12 search.

13 “(4) To the greatest extent practicable, leverage
14 existing resources and expertise available from Fed-
15 eral and State partners and local research univer-
16 sities and institutions.

17 “(5) Utilize cost-effective methods in carrying
18 out this section.

19 “(b) NONDUPLICATION.—The Administrator shall
20 ensure that activities carried out under subsection (a)
21 focus on new approaches to addressing freshwater harmful
22 algal blooms and are not duplicative of existing research
23 and development programs authorized by this title or any
24 other law.”.

1 (2) CLERICAL AMENDMENT.—The table of con-
2 tents in section 2 of the Coast Guard Authorization
3 Act of 1998 (Public Law 105–383; 112 Stat. 3412;
4 136 Stat. 1268) is amended by inserting after the
5 item relating to section 603B the following new
6 item:

“Sec. 603C. Environmental Protection Agency activities.”.

7 (e) NATIONAL HARMFUL ALGAL BLOOM AND HY-
8 POXIA OBSERVING NETWORK.—

9 (1) IN GENERAL.—Section 606 of the Harmful
10 Algal Blooms and Hypoxia Research and Control
11 Act of 1998 (33 U.S.C. 4005) is amended to read
12 as follows:

13 **“SEC. 606. NATIONAL HARMFUL ALGAL BLOOM OBSERVING**
14 **NETWORK.**

15 “(a) IN GENERAL.—The Under Secretary, acting
16 through the National Centers for Coastal Ocean Science
17 and the Integrated Ocean Observing System of the Na-
18 tional Oceanic and Atmospheric Administration, shall in-
19 tegrate Federal, State, regional, and local observing capa-
20 bilities to establish a national network of observing sys-
21 tems for the monitoring, detection, and forecasting of
22 harmful algal blooms by leveraging the capacity of re-
23 gional associations of the Integrated Ocean Observing Sys-
24 tem, including through the incorporation of emerging tech-
25 nologies and new data integration methods.

1 “(b) COORDINATION AND DATA ASSEMBLY.—In car-
2 rying out subsection (a), the Program Office of the Inte-
3 grated Ocean Observing System shall carry out the fol-
4 lowing:

5 “(1) Coordinate with the National Centers for
6 Coastal Ocean Science regarding observations, data
7 integration, and information dissemination.

8 “(2) Organize, integrate, disseminate, and pro-
9 vide a central architecture to support ecological fore-
10 casting of harmful algal blooms.

11 “(3) Coordinate with the Water Quality Portal
12 to store and serve discrete data related to the moni-
13 toring of freshwater, estuarine, and coastal harmful
14 algal blooms.”.

15 (2) CLERICAL AMENDMENT.—The table of con-
16 tents in section 2 of the Coast Guard Authorization
17 Act of 1998 (Public Law 105–383; 112 Stat. 3412;
18 136 Stat. 1268) is amended by striking the item re-
19 lating to section 606 and inserting the following:

“Sec. 606. National harmful algal bloom observing network.”.

20 (f) NATIONAL-LEVEL INCUBATOR PROGRAM.—

21 (1) IN GENERAL.—The Harmful Algal Blooms
22 and Hypoxia Research and Control Act of 1998 is
23 amended by inserting after section 606 (33 U.S.C.
24 4005) the following new section:

1 **“SEC. 606A. NATIONAL-LEVEL INCUBATOR PROGRAM.**

2 “(a) IN GENERAL.—The Under Secretary, in collabo-
3 ration with the Administrator and research universities
4 and institutions, shall establish a national-level incubator
5 program (in this section referred to as the ‘program’) to
6 increase the number of strategies, technologies, and meas-
7 ures available to prevent, mitigate, and control harmful
8 algal blooms.

9 “(b) FRAMEWORK.—The program shall establish a
10 framework for preliminary assessments of novel strategies,
11 technologies, and measures to prevent, mitigate, and con-
12 trol harmful algal blooms in order to determine the poten-
13 tial effectiveness and scalability of such technologies.

14 “(c) FUNDING.—The program shall provide merit-
15 based funding, using amounts otherwise available to the
16 Under Secretary for the award of grants, for strategies,
17 technologies, and measures that eliminate or reduce,
18 through biological, chemical, or physical means, the levels
19 of harmful algae and associated toxins resulting from
20 harmful algal blooms.

21 “(d) DATABASE.—The program shall include a data-
22 base for cataloging the licensing and permitting require-
23 ments, economic costs, feasibility, effectiveness, and
24 scalability of novel and established strategies, tech-
25 nologies, and measures to prevent, mitigate, and control
26 harmful algal blooms.

1 “(e) PRIORITIZATION.—In carrying out the program,
2 the Under Secretary shall prioritize proposed strategies,
3 technologies, and measures that would, to the maximum
4 extent practicable, accomplish the following:

5 “(1) Protect key habitats for fish and wildlife.

6 “(2) Maintain biodiversity.

7 “(3) Protect public health.

8 “(4) Protect coastal resources of national, his-
9 torical, and cultural significance.

10 “(5) Benefit low-income communities, Indian
11 tribes, and rural communities.”.

12 (2) CLERICAL AMENDMENT.—The table of con-
13 tents in section 2 of the Coast Guard Authorization
14 Act of 1998 (Public Law 105–383; 112 Stat. 3412;
15 136 Stat. 1268) is amended by inserting after the
16 item relating to section 606 the following new item:

“Sec. 606A. National-level incubator program.”.

17 (g) DEFINITIONS.—Section 609 of the Harmful Algal
18 Blooms and Hypoxia Research and Control Act of 1998
19 (33 U.S.C. 4008) is amended—

20 (1) in paragraph (1), by striking “means the
21 comprehensive research plan and action strategy es-
22 tablished under section 603B” and inserting “means
23 the action strategy for harmful algal blooms in the
24 United States most recently submitted under section
25 603(c)”;

1 (2) by amending paragraph (3) to read as fol-
2 lows:

3 “(3) HARMFUL ALGAL BLOOM.—The term
4 ‘harmful algal bloom’ means a high concentration of
5 marine or freshwater algae (including diatoms),
6 macroalgae (including Sargassum), or cyanobacteria
7 resulting in nuisance conditions or harmful impacts
8 on marine and freshwater ecosystems, subsistence
9 resources, communities, or human health through
10 the production of toxic compounds or other biologi-
11 cal, chemical, or physical impacts of the bloom.”;

12 (3) by striking paragraph (9);

13 (4) by redesignating paragraphs (4), (5), (6),
14 (7), and (8) as paragraphs (5), (8), (9), (11), and
15 (13), respectively;

16 (5) by inserting after paragraph (3) the fol-
17 lowing new paragraph:

18 “(4) HARMFUL ALGAL BLOOM AND HYPOXIA
19 EVENT.—The term ‘harmful algal bloom and hy-
20 poxia event’ means the occurrence of a harmful algal
21 bloom or hypoxia as a result of a natural, anthropo-
22 genic, or undetermined cause.”;

23 (6) in paragraph (5), as redesignated by para-
24 graph (4)—

1 (A) by striking “aquatic” and inserting
2 “marine or freshwater”; and

3 (B) by striking “resident” and inserting
4 “marine or freshwater”;

5 (7) by inserting after paragraph (5), as redesign-
6 nated by paragraph (4), the following new para-
7 graphs:

8 “(6) INDIAN TRIBE.—The term ‘Indian tribe’
9 has the meaning given such term in section 4 of the
10 Indian Self-Determination and Education Assistance
11 Act (25 U.S.C. 5304).

12 “(7) NATIVE HAWAIIAN ORGANIZATION.—The
13 term ‘Native Hawaiian organization’ has the mean-
14 ing given such term in section 6207 of the Elemen-
15 tary and Secondary Education Act of 1965 (20
16 U.S.C. 7517) and includes the Department of Ha-
17 waiian Home Lands and the Office of Hawaiian Af-
18 fairs.”;

19 (8) by inserting after paragraph (9), as redesign-
20 nated by paragraph (4), the following new para-
21 graph:

22 “(10) SUBSISTENCE USE.—The term ‘subsist-
23 ence use’ means the customary and traditional use
24 of fish, wildlife, or other freshwater, coastal, or ma-
25 rine resources by any individual or community to

1 meet personal or family needs, including essential
2 economic, nutritional, or cultural applications.”; and

3 (9) by inserting after paragraph (11), as redes-
4 igned by paragraph (4), the following new para-
5 graph:

6 “(12) TRIBAL ORGANIZATION.—The term ‘Trib-
7 al organization’ has the meaning given such term in
8 section 4 of the Indian Self-Determination and Edu-
9 cation Assistance Act (25 U.S.C. 5304).”.

10 (h) AUTHORIZATION OF APPROPRIATIONS.—Section
11 610 of the Harmful Algal Blooms and Hypoxia Research
12 and Control Act of 1998 (33 U.S.C. 4009) is amended—

13 (1) by amending subsection (a) to read as fol-
14 lows:

15 “(a) IN GENERAL.—There is authorized to be appro-
16 priated to carry out this title, for each of fiscal years 2026
17 through 2030, the following:

18 “(1) \$19,500,000 to the Under Secretary.

19 “(2) \$8,000,000 to the Administrator.”; and

20 (2) by adding at the end the following new sub-
21 section:

22 “(c) TRANSFER AUTHORITY.—As specifically pro-
23 vided in advance in appropriations Acts, the Under Sec-
24 retary or the Administrator may transfer funds made
25 available to carry out this title to the head of any Federal

1 department or agency, with the concurrence of such head,
2 to carry out, as appropriate, relevant provisions of this
3 title and section 9(g) of the National Integrated Drought
4 Information System Reauthorization Act of 2018 (33
5 U.S.C. 4010).”.

6 **SEC. 603. OTHER HARMFUL ALGAL BLOOM MATTERS.**

7 (a) IN GENERAL.—Section 9(g) of the National Inte-
8 grated Drought Information System Reauthorization Act
9 of 2018 (33 U.S.C. 4010) is amended—

10 (1) in paragraph (1)—

11 (A) in subparagraph (B), by adding at the
12 end the following new sentence: “The appro-
13 priate Federal official may waive the non-Fed-
14 eral share requirements of the preceding sen-
15 tence if such official determines no reasonable
16 means are available through which the recipient
17 of the Federal share is able to satisfy the non-
18 Federal share requirement.”; and

19 (B) by adding at the end the following new
20 subparagraph:

21 “(D) CONTRACT, COOPERATIVE AGREE-
22 MENT, AND GRANT AUTHORITY.—The appro-
23 priate Federal official may enter into contracts,
24 cooperative agreements, and grants with States,
25 Indian Tribes, Tribal organizations, Native Ha-

1 waiian organizations, local governments, or
2 other entities to pay for or reimburse costs in-
3 curred by such entities for the purposes of sup-
4 porting the determination of, and assessing the
5 environmental, economic, social, subsistence
6 use, and public health effects of, a harmful
7 algal bloom or hypoxia event of national signifi-
8 cance.”;

9 (2) in paragraph (2)—

10 (A) in subparagraph (A), by inserting “a
11 leadership official of an affected Indian Tribe,
12 the executive official of the District of Colum-
13 bia, or the executive official of an affected terri-
14 tory or possession of the United States,” after
15 “State,”; and

16 (B) in subparagraph (B), by striking “con-
17 sider” and all that follows through “boundary.”
18 and inserting “consider factors such as the fol-
19 lowing:

20 “(i) The risk to public health and the
21 potential severity of the detrimental envi-
22 ronmental effects of the harmful algal
23 bloom or hypoxia event, as indicated by
24 any of the following:

1 “(I) Data on shellfish or water
2 quality obtained through sampling
3 programs, including baseline data,
4 and regulatory or advisory thresholds
5 established to explain management ac-
6 tions related to the event.

7 “(II) Toxin levels in fish, marine
8 mammals, seabirds, shellfish, or water
9 during the event.

10 “(III) Toxic aerosols produced
11 during the event, including potential
12 human exposures to toxic aerosols.

13 “(IV) Reports of human or ani-
14 mal illnesses or mortalities during the
15 event.

16 “(V) Any closures of fishing or
17 shellfish harvesting locations or rec-
18 reational public waters, including
19 beaches, during the event.

20 “(VI) The duration and spatial
21 extent of the event.

22 “(VII) Impacts to habitats or
23 ecosystems associated with the event.

24 “(ii) The potential economic, social,
25 and subsistence impacts associated with

1 the harmful algal bloom or hypoxia event,
2 including to fisheries and aquaculture,
3 recreation and tourism, monitoring and
4 management, social or cultural resource
5 use, and event response activities, assessed
6 in comparison with historical data from
7 when a State or region did not experience
8 such an event, as possible, as indicated by
9 any of the following:

10 “(I) Increases in public health
11 expenditures.

12 “(II) Losses to commercial fish-
13 eries and aquaculture industries,
14 recreation and tourism, real estate,
15 and other impacted industries or busi-
16 nesses.

17 “(III) Increases in monitoring
18 and management expenditures, includ-
19 ing costs incurred for event response
20 and clean-up (such as for beach clean-
21 up following an influx of biomass or a
22 fish-kill) by public or private sectors.

23 “(IV) Impacts to subsistence re-
24 sources, including nutritional, cul-

1 tural, and economic effects on subsist-
2 ence communities.

3 “(iii) The relative magnitude of the
4 impacts described in clause (ii) in relation
5 to past occurrences of harmful algal bloom
6 or hypoxia events that occur on a recurrent
7 or annual basis.

8 “(iv) The geographic scope of the
9 harmful algal bloom or hypoxia event, in-
10 cluding the potential of the event to affect
11 several municipalities, to affect more than
12 one State, or to cross an international
13 boundary.”;

14 (3) in paragraph (3), by adding at the end the
15 following new subparagraphs:

16 “(D) INDIAN TRIBE.—The term ‘Indian
17 Tribe’ has the meaning given that term in sec-
18 tion 4 of the Indian Self-Determination and
19 Education Assistance Act (25 U.S.C. 5304).

20 “(E) NATIVE HAWAIIAN ORGANIZATION.—
21 The term ‘Native Hawaiian organization’ has
22 the meaning given that term in section 6207 of
23 the Elementary and Secondary Education Act
24 of 1965 (20 U.S.C. 7517) and includes the De-

1 partment of Hawaiian Home Lands and the Of-
2 fice of Hawaiian Affairs.

3 “(F) TRIBAL ORGANIZATION.—The term
4 ‘Tribal organization’ has the meaning given
5 that term in section 4 of the Indian Self-Deter-
6 mination and Education Assistance Act (25
7 U.S.C. 5304).”; and

8 (4) by adding at the end the following new
9 paragraph:

10 “(4) AUTHORIZATION OF APPROPRIATIONS.—
11 There is authorized to be appropriated to carry out
12 this subsection \$2,000,000 for each of fiscal years
13 2026 through 2030, to remain available until ex-
14 pended.”.

15 (b) PROTECT FAMILIES FROM TOXIC ALGAL
16 BLOOMS.—Section 128 of the Water Resources Develop-
17 ment Act of 2020 (33 U.S.C. 610 note) is amended—

18 (1) by redesignating subsection (e) as sub-
19 section (f); and

20 (2) by inserting after subsection (d) the fol-
21 lowing new subsection:

22 “(e) HARMFUL ALGAL BLOOM TECHNOLOGIES.—In
23 carrying out the demonstration program under subsection
24 (a), the Secretary may enter into agreements with water
25 and irrigation districts located in the focus areas described

1 in subsections (c) and (d) for the use or sale of any new
2 technologies developed under the program to expedite the
3 removal of harmful algal blooms in such areas.”.

4 **TITLE VII—PREVENTING**
5 **HEALTH EMERGENCIES AND**
6 **TEMPERATURE-RELATED ILL-**
7 **NESS AND DEATHS**

8 **SEC. 701. SHORT TITLE.**

9 This title may be cited as the “Preventing Health
10 Emergencies And Temperature-related Illness and Deaths
11 Act of 2025” or the “Preventing HEAT Illness and
12 Deaths Act of 2025”.

13 **SEC. 702. DEFINITIONS.**

14 In this title:

15 (1) **EXTREME HEAT.**—The term “extreme
16 heat” means heat that substantially exceeds local
17 temperature norms in terms of any combination of
18 the following:

19 (A) Duration.

20 (B) Intensity.

21 (C) Season length.

22 (D) Frequency.

23 (2) **HEAT.**—The term “heat” means any com-
24 bination of the atmospheric parameters associated
25 with modulating human thermoregulation, such as

1 air temperature, humidity, solar exposure, and wind
2 speed.

3 (3) HEAT EVENT.—The term “heat event”
4 means an occurrence of extreme heat of 2 days or
5 more that may have heat-health implications.

6 (4) HEAT-HEALTH.—The term “heat-health”
7 means health effects to humans from heat, during or
8 outside of heat events, including from vulnerability
9 and exposure, or the risk of such effects.

10 (5) PLANNING.—The term “planning” means
11 activities performed across timescales (including
12 days, weeks, months, years, and decades) with sce-
13 nario-based, probabilistic or deterministic informa-
14 tion to identify and take actions to proactively miti-
15 gate heat-health risks.

16 (6) PREPAREDNESS.—The term “preparedness”
17 means activities performed across timescales with
18 decision support tools to manage risk in advance of
19 a heat event and increased ambient temperature.

20 (7) TRIBAL GOVERNMENT.—The term “Tribal
21 government” means the recognized governing body
22 of any Indian or Alaska Native tribe, band, nation,
23 pueblo, village, community, component band, or com-
24 ponent reservation, individually identified (including
25 parenthetically) in the list published most recently as

1 of the date of enactment of this Act pursuant to sec-
2 tion 104 of the Federally Recognized Indian Tribe
3 List Act of 1994 (25 U.S.C. 5131).

4 **SEC. 703. NATIONAL INTEGRATED HEAT HEALTH INFORMA-**
5 **TION SYSTEM INTERAGENCY COMMITTEE.**

6 (a) ESTABLISHMENT OF COMMITTEE.—There is es-
7 tablished within the National Oceanic and Atmospheric
8 Administration an interagency committee, to be known as
9 the “National Integrated Heat Health Information Sys-
10 tem Interagency Committee” (in this section referred to
11 as the “Committee”).

12 (b) PURPOSE.—The Committee shall coordinate
13 agencies represented on the Committee to execute, as ap-
14 propriate, activities across such agencies to ensure a
15 united Federal approach to reducing health risks from
16 heat.

17 (c) MEMBERSHIP.—

18 (1) IN GENERAL.—In order to carry out and
19 achieve the purpose described in subsection (b), the
20 Committee shall include the following:

21 (A) The Director of the National Inte-
22 grated Heat Health Information System.

23 (B) Not fewer than one representative
24 from each of the following:

1 (i) From the Department of Com-
2 merce, the following:

3 (I) From the National Oceanic
4 and Atmospheric Administration, the
5 following:

6 (aa) The National Weather
7 Service.

8 (bb) The Office of Oceanic
9 and Atmospheric Research.

10 (cc) The National Environ-
11 mental Satellite, Data, and Infor-
12 mation Service.

13 (II) The National Institute of
14 Standards and Technology.

15 (III) The Bureau of the Census.

16 (ii) From the Department of Health
17 and Human Services, the following:

18 (I) The Centers for Disease Con-
19 trol and Prevention, including the Na-
20 tional Institute for Occupational Safe-
21 ty and Health.

22 (II) The Office of the Assistant
23 Secretary of Health and Human Serv-
24 ices for Preparedness and Response.

1 (III) The Substance Abuse and
2 Mental Health Services Administra-
3 tion.

4 (IV) The National Institutes of
5 Health.

6 (V) The Indian Health Service.

7 (iii) From the Department of the In-
8 terior, the following:

9 (I) The Bureau of Indian Affairs.

10 (II) The Bureau of Land Man-
11 agement.

12 (III) The National Park Service.

13 (IV) The Office of Hawaiian Re-
14 lations.

15 (iv) From the Environmental Protec-
16 tion Agency, the following:

17 (I) The Office of Air and Radi-
18 ation, if the Administrator of the En-
19 vironmental Protection Agency deter-
20 mines appropriate.

21 (II) The Office of Research and
22 Development, if the Administrator de-
23 termines appropriate.

24 (III) The Office of International
25 and Tribal Affairs.

1 (v) The Federal Emergency Manage-
2 ment Agency.

3 (vi) The Department of Defense.

4 (vii) The Department of Agriculture.

5 (viii) The Department of Housing and
6 Urban Development.

7 (ix) The Department of Transpor-
8 tation.

9 (x) The Department of Energy.

10 (xi) The Department of Labor, includ-
11 ing the Occupational Safety and Health
12 Administration.

13 (xii) The Department of Veteran Af-
14 fairs.

15 (xiii) The Department of Education.

16 (xiv) The Department of State.

17 (xv) The United States Agency for
18 International Development.

19 (xvi) Such other Federal agencies as
20 the Under Secretary of Commerce for
21 Oceans and Atmosphere considers appro-
22 priate.

23 (2) SELECTION OF REPRESENTATIVES.—The
24 head of an agency specified in paragraph (1)(B)
25 shall, in appointing representatives of the agency to

1 the Committee, select representatives who have ex-
2 pertise in areas relevant to the responsibilities of the
3 Committee, such as weather prediction, health im-
4 pacts, behavioral science, public health hazard pre-
5 paredness and response, or mental health services.

6 (3) CO-CHAIRS.—

7 (A) IN GENERAL.—The members of the
8 Committee shall select three individuals from
9 among such members to serve as co-chairs of
10 the Committee, subject to the approval of the
11 Under Secretary of Commerce for Oceans and
12 Atmosphere.

13 (B) SELECTION.—

14 (i) INITIAL SELECTION.—Of the co-
15 chairs first selected, one shall be from the
16 National Oceanic and Atmospheric Admin-
17 istration, one shall be from the Depart-
18 ment of Health and Human Services, and
19 one shall be from the Federal Emergency
20 Management Agency.

21 (ii) SUBSEQUENT SELECTION.—Sub-
22 sequent co-chairs shall be selected from
23 among the members of the Committee, ex-
24 cept the National Oceanic and Atmospheric

1 Administration shall have the opportunity
2 to maintain a co-chair position.

3 (C) TERMS.—Each co-chair shall serve for
4 a term of not more than five years.

5 (D) RESPONSIBILITIES OF CO-CHAIRS.—
6 The co-chairs of the Committee shall, in con-
7 sultation with the Director of the National Inte-
8 grated Heat Health Information System, carry
9 out the following:

10 (i) Determine the agenda of the Com-
11 mittee, in consultation with other members
12 of the Committee.

13 (ii) Direct the work of the Committee.

14 (iii) Convene meetings of the Com-
15 mittee not less frequently than once each
16 fiscal quarter.

17 (d) RESPONSIBILITIES OF COMMITTEE.—The Com-
18 mittee shall coordinate an integrated, Federal Govern-
19 ment-wide approach to reducing health risks and impacts
20 of heat, including by carrying out the following:

21 (1) Developing the strategic plan required by
22 subsection (e).

23 (2) Coordinating across Federal agencies re-
24 garding heat-health communication, engagement, re-
25 search, service delivery, and workforce development.

1 (3) Building capacity and partnerships with
2 Federal and non-Federal entities.

3 (e) STRATEGIC PLAN.—

4 (1) IN GENERAL.—Not later than two years
5 after the date of the enactment of this Act, the
6 Committee shall submit to Congress and make avail-
7 able on a public website a 5-year strategic plan that
8 outlines the goals and projects of the Committee, in-
9 cluding how the Committee will improve coordination
10 and integration of interagency Federal capacity and
11 capabilities to address health risks of heat, including
12 the following:

13 (A) A strategy for improving and coordi-
14 nating existing Federal data collection and data
15 management, including sharing of data and sta-
16 tistics on heat-related illnesses and mortalities
17 and other impacts to inform heat-related activi-
18 ties.

19 (B) A strategy for improving and coordi-
20 nating Federal activities to understand user
21 gaps and needs, conduct research, foster inno-
22 vative solutions, and provide actionable infor-
23 mation and services.

1 (C) Mechanisms for financing heat plan-
2 ning and preparedness within such agencies as
3 the Committee considers appropriate.

4 (2) IMPLEMENTATION.—The head of an agency
5 represented on the Committee may implement the
6 portions of the strategic plan required under para-
7 graph (1) that are relevant to such agency.

8 (3) UPDATES.—Not later than five years after
9 the submission of the strategic plan required five
10 paragraph (1) and every five years thereafter, the
11 Committee shall brief Congress on an update of the
12 plan, which shall include progress made toward goals
13 outlined in the previous plan and new priorities that
14 emerge.

15 (f) CONSULTATION.—In carrying out the responsibil-
16 ities of the Committee, the Committee shall consult with
17 relevant—

18 (1) regional, State, Tribal, and local govern-
19 ments;

20 (2) international organizations and partners;

21 (3) research institutions;

22 (4) nongovernmental organizations and associa-
23 tions;

24 (5) medical experts with expertise in emergency
25 response; and

1 (6) environmental health, economic or business
2 development, or other stakeholders.

3 **SEC. 704. NATIONAL INTEGRATED HEAT HEALTH INFORMA-**
4 **TION SYSTEM.**

5 (a) ESTABLISHMENT.—The Under Secretary of Com-
6 merce for Oceans and Atmosphere shall establish within
7 the National Oceanic and Atmospheric Administration a
8 system, to be known as the “National Integrated Heat
9 Health Information System” (NIHHIS) (in this section
10 referred to as the “System”).

11 (b) PURPOSE.—The purpose of the System is to re-
12 duce heat-related impacts by accomplishing the following:

13 (1) Improving the delivery of data, information,
14 forecasts, warnings, predictions, and projections re-
15 lated to temperature and extreme heat and related
16 impacts.

17 (2) Through the Office of Oceanic and Atmos-
18 pheric Research, developing science-based solutions
19 and tools to improve impact-based decision support
20 services for heat impacts to human life, property,
21 and the United States economy.

22 (3) Supporting a research program on heat
23 health, in coordination with the agencies represented
24 on the National Integrated Heat Health Information
25 System Interagency Committee.

1 (c) DATA MANAGEMENT.—

2 (1) AVAILABILITY.—The data and metadata as-
3 sociated with the System shall be fully and openly
4 available, within the legal right to redistribute, in ac-
5 cordance with chapter 31 of title 44, United States
6 Code (commonly known as the “Federal Records Act
7 of 1950”), and the Foundations for Evidence-Based
8 Policymaking Act of 2018 (Public Law 115–435;132
9 Stat. 5529) and the amendments made by such Act,
10 to maximize use of such data to support the goals
11 of the System.

12 (2) NATIONAL CENTERS FOR ENVIRONMENTAL
13 INFORMATION.—

14 (A) IN GENERAL.—The Under Secretary of
15 Commerce for Oceans and Atmosphere shall
16 manage, maintain, and steward archival data
17 and metadata associated with the System with-
18 in the National Centers for Environmental In-
19 formation.

20 (B) WARNING COORDINATION METEOROLO-
21 GIST.—The Under Secretary of Commerce for
22 Oceans and Atmosphere shall designate at least
23 one warning coordination meteorologist, as de-
24 scribed in section 405 of the Weather Research
25 and Forecasting Innovation Act of 2017 (15

1 U.S.C. 8545), at the National Centers for Envi-
2 ronmental Information.

3 **SEC. 705. AUTHORIZATION OF APPROPRIATIONS.**

4 There is authorized to be appropriated to the Na-
5 tional Oceanic and Atmospheric Administration to carry
6 out sections 703 and 704, including for any administrative
7 costs for the National Integrated Heat Health Information
8 System Interagency Committee and the National Inte-
9 grated Heat Health Information System, \$5,000,000 for
10 each of fiscal years 2026 through 2030.

11 **TITLE VIII—NATIONAL LAND-**
12 **SLIDE PREPAREDNESS ACT**
13 **REAUTHORIZATION**

14 **SEC. 801. SHORT TITLE.**

15 This title may be cited as the “National Landslide
16 Preparedness Act Reauthorization Act of 2025”.

17 **SEC. 802. CERTAIN DEFINITIONS UNDER FLOOD LEVEL OB-**
18 **SERVATION, OPERATIONS, AND DECISION**
19 **SUPPORT ACT.**

20 (a) DEFINITIONS.—Section 12(a) of the Flood Level
21 Observation, Operations, and Decision Support Act (15
22 U.S.C. 9707(a)) is amended—

23 (1) by redesignating paragraphs (1) and (2) as
24 paragraphs (4) and (5), respectively; and

1 (2) by inserting before paragraph (4) (as so re-
2 designated) the following new paragraphs:

3 “(1) ATMOSPHERIC RIVER.—The term ‘atmos-
4 pheric river’ means a transient corridor of strong
5 water vapor in the atmosphere that—

6 “(A) produces significant quantities of rain
7 or snow; and

8 “(B) may be primarily beneficial to the
9 water supply or hazardous due to flooding.

10 “(2) ATMOSPHERIC RIVER FLOODING EVENT.—
11 The term ‘atmospheric river flooding event’ means
12 an atmospheric river that—

13 “(A) results in flooding of rivers and
14 streams or other hazards to human life, prop-
15 erty, or the economy; and

16 “(B) is of particular concern to human
17 health, property, and the economy, as deter-
18 mined by the Secretary of Commerce.

19 “(3) EXTREME PRECIPITATION EVENT.—The
20 term ‘extreme precipitation event’ means precipita-
21 tion quantities exceeding the 5-year annual recur-
22 rence interval for a specific location.”.

23 (b) REQUIREMENTS.—Section 12(d)(1) of the Flood
24 Level Observation, Operations, and Decision Support Act
25 (15 U.S.C. 9707(d)(1)) is amended by inserting “, such

1 as precipitation resulting from hurricanes, atmospheric
2 river flooding events, and extreme precipitation events”
3 before the period at the end.

4 **SEC. 803. REAUTHORIZATION OF NATIONAL LANDSLIDE**
5 **PREPAREDNESS ACT.**

6 (a) DEFINITIONS.—Section 2 of the National Land-
7 slide Preparedness Act (43 U.S.C. 3101) is amended—

8 (1) by redesignating paragraphs (4) through
9 (11) as paragraphs (7), (8), (10), (11), (13), (14),
10 (15), and (16), respectively;

11 (2) by inserting after paragraph (3) the fol-
12 lowing new paragraphs:

13 “(4) ATMOSPHERIC RIVER.—The term ‘atmos-
14 pheric river’ has the meaning given the term in sec-
15 tion 12(a) of the Flood Level Observation, Oper-
16 ations, and Decision Support Act (15 U.S.C.
17 9707(a)).

18 “(5) ATMOSPHERIC RIVER FLOODING EVENT.—
19 The term ‘atmospheric river flooding event’ has the
20 meaning given the term in section 12(a) of the
21 Flood Level Observation, Operations, and Decision
22 Support Act (15 U.S.C. 9707(a)).

23 “(6) EXTREME PRECIPITATION EVENT.—The
24 term ‘extreme precipitation event’ has the meaning
25 given the term in section 12(a) of the Flood Level

1 Observation, Operations, and Decision Support Act
2 (15 U.S.C. 9707(a)).”;

3 (3) by inserting after paragraph (8) (as so re-
4 designated) the following new paragraph:

5 “(9) INSTITUTION OF HIGHER EDUCATION.—
6 The term ‘institution of higher education’ has the
7 meaning given the term in section 101(a) of the
8 Higher Education Act of 1965 (20 U.S.C.
9 1001(a)).”;

10 (4) by inserting after paragraph (11) (as so re-
11 designated) the following new paragraph:

12 “(12) NATIVE HAWAIIAN ORGANIZATION.—The
13 term ‘Native Hawaiian organization’ has the mean-
14 ing given the term in section 6207 of the Elemen-
15 tary and Secondary Education Act of 1965 (20
16 U.S.C. 7517), except that the term includes the De-
17 partment of Hawaiian Home Lands and the Office
18 of Hawaiian Affairs.”; and

19 (5) by adding at the end the following new
20 paragraph:

21 “(17) TRIBAL ORGANIZATION.—The term ‘Trib-
22 al organization’ has the meaning given the term in
23 section 4 of the Indian Self-Determination and Edu-
24 cation Assistance Act (25 U.S.C. 5304).”.

1 (b) NATIONAL LANDSLIDE HAZARDS REDUCTION
2 PROGRAM.—

3 (1) ESTABLISHMENT.—Section 3(a)(3) of the
4 National Landslide Preparedness Act (43 U.S.C.
5 3102(a)(3)) is amended by striking “protect” and
6 inserting “contribute to protecting”.

7 (2) PROGRAM ACTIVITIES.—Section
8 3(b)(1)(C)(ii) of the National Landslide Prepared-
9 ness Act (43 U.S.C. 3102(b)(1)(C)(ii)) is amended,
10 in the matter preceding subclause (I), by striking
11 “implement” and inserting “disseminate”.

12 (3) NATIONAL STRATEGY.—Section 3(b)(2) of
13 the National Landslide Preparedness Act (43 U.S.C.
14 3102(b)(2)) is amended—

15 (A) by redesignating subparagraphs (A)
16 through (C) as clauses (i) through (iii), respec-
17 tively, and indenting appropriately;

18 (B) in the matter preceding clause (i) (as
19 so redesignated), by striking “Not later than”
20 and inserting the following:

21 “(A) IN GENERAL.—Not later than”; and

22 (C) by adding at the end the following new
23 subparagraph:

24 “(B) ASSESSMENT.—For purposes of the
25 first national strategy published after the date

1 of the enactment of the National Landslide Pre-
2 paredness Act Reauthorization Act of 2025
3 under subparagraph (A), the Secretary, in con-
4 sultation with the Secretary of Commerce, shall
5 include an assessment of the risks that atmos-
6 pheric river flooding events and extreme pre-
7 cipitation events pose to the safety of life and
8 property in the United States with respect to
9 landslide hazards.”.

10 (4) NATIONAL LANDSLIDE HAZARDS DATA-
11 BASE.—Section 3(b)(3) of the National Landslide
12 Preparedness Act (43 U.S.C. 3102(b)(3)) is amend-
13 ed—

14 (A) by redesignating subparagraphs (C)
15 and (D) as subparagraphs (D) and (E), respec-
16 tively; and

17 (B) by inserting after subparagraph (B)
18 the following new subparagraph:

19 “(C) the identification of areas in need of
20 additional hazard risk assessment, including
21 areas that may be at risk due to—

22 “(i) hydrology or changes in hydrology
23 that may include erosion, drought, or other
24 characteristics that could impact landslide
25 risk;

1 “(ii) atmospheric river flooding events
2 and extreme precipitation events, as identi-
3 fied by the Secretary of Commerce and the
4 Secretary;

5 “(iii) geologic activity, such as vol-
6 canic eruptions, earthquakes, or tsunamis;
7 or

8 “(iv) data-poor areas or hazards with
9 poor monitoring that could contribute to
10 increased landslide risk;”.

11 (5) LANDSLIDE HAZARD AND RISK PREPARED-
12 NESS FOR COMMUNITIES.—Section 3(b)(4) of the
13 National Landslide Preparedness Act (43 U.S.C.
14 3102(b)(4)) is amended—

15 (A) in the matter preceding subparagraph
16 (A), by inserting “Native Hawaiian organiza-
17 tions and other stakeholders, as appropriate,”
18 before “and Indian tribes”;

19 (B) in subparagraph (A)—

20 (i) in the matter preceding clause (i),
21 by striking “local, and Tribal governments
22 and decisionmakers” and inserting “and
23 local governments, Indian tribes, Tribal or-
24 ganizations, Native Hawaiian organiza-
25 tions, and other decisionmakers”;

1 (ii) by amending clause (iii) to read as
2 follows:

3 “(iii) health and safety with respect to
4 landslides;”;

5 (iii) by redesignating clause (iv) as
6 clause (v); and

7 (iv) by inserting after clause (iii) the
8 following new clause:

9 “(iv) reducing losses from landslides,
10 including the threats caused by atmos-
11 pheric rivers and other extreme precipita-
12 tion events; and”; and

13 (C) in subparagraph (B)—

14 (i) in clause (i), by striking “local,
15 and Tribal officials” and inserting “and
16 local officials, Indian tribes, Tribal organi-
17 zations, and Native Hawaiian organiza-
18 tions”; and

19 (ii) in clause (ii), by striking “local,
20 and Tribal emergency managers” and in-
21 serting “and local emergency managers
22 and emergency managers of Indian tribes,
23 Tribal organizations, and Native Hawaiian
24 organizations”.

1 (6) DEBRIS FLOW EARLY WARNING SYSTEM.—
2 Section 3(b)(5) of the National Landslide Prepared-
3 ness Act (43 U.S.C. 3102(b)(5)) is amended—

4 (A) in subparagraph (B), by striking
5 “State, territorial, local, and Tribal govern-
6 ments” and inserting “State, territorial, and
7 local governments, Indian tribes, Tribal organi-
8 zations, and Native Hawaiian organizations”;

9 (B) by redesignating subparagraphs (A)
10 through (C) as clauses (i) through (iii), respec-
11 tively, and indenting appropriately;

12 (C) in the matter preceding clause (i) (as
13 so redesignated), by striking “In carrying out”
14 and inserting the following:

15 “(A) IN GENERAL.—In carrying out”; and

16 (D) by adding at the end the following new
17 subparagraph:

18 “(B) CONSULTATION.—In carrying out
19 subparagraph (A), the Secretary may consult
20 with an institution of higher education de-
21 scribed in subsection (d)(2)(B)(iv) and other
22 stakeholders to establish and support emer-
23 gency response procedures, as appropriate.”.

1 (7) EMERGENCY RESPONSE ACTIVITIES.—Sec-
2 tion 3(b)(6) of the National Landslide Preparedness
3 Act (43 U.S.C. 3102(b)(6)) is amended—

4 (A) by redesignating subparagraphs (A)
5 through (C) as clauses (i) through (iii), respec-
6 tively, and indenting appropriately;

7 (B) in the matter preceding clause (i) (as
8 so redesignated), by striking “In carrying” and
9 inserting the following:

10 “(A) IN GENERAL.—In carrying”;

11 (C) in subparagraph (A) (as so des-
12 ignated)—

13 (i) in the matter preceding clause (i)
14 (as so redesignated), by inserting “Native
15 Hawaiian organizations,” before “and In-
16 dian tribes”;

17 (ii) in clause (ii) (as so redesignated),
18 by striking “and” at the end;

19 (iii) in clause (iii) (as so redesign-
20 ated), by striking the period at the end
21 and inserting “; and”; and

22 (iv) by adding at the end the following
23 new clause:

24 “(iv) to improve real-time risk man-
25 agement during landslide events, including

1 with respect to landslide events caused
2 by—

3 “(I) hydrology or changes in hy-
4 drology that may include erosion,
5 drought, or other characteristics that
6 could impact landslide risk;

7 “(II) atmospheric river flooding
8 events and extreme precipitation
9 events, as identified by the Secretary
10 of Commerce and the Secretary;

11 “(III) geologic activity, such as
12 volcanic eruptions, earthquakes, or
13 tsunamis;

14 “(IV) data-poor areas or hazards
15 with poor monitoring that could con-
16 tribute to increased landslide risk; or

17 “(V) thawing permafrost and gla-
18 cial retreat causing destabilization of
19 slopes.”; and

20 (D) by adding at the end the following new
21 subparagraph:

22 “(B) CONSULTATION.—In carrying out
23 subparagraph (A), the Secretary may consult
24 with an institution of higher education de-

1 scribed in subsection (d)(2)(B)(iv) and the pri-
2 vate sector.”.

3 (8) INTERAGENCY COORDINATING COMMITTEE
4 ON LANDSLIDE HAZARDS.—Section 3(c)(2) of the
5 National Landslide Preparedness Act (43 U.S.C.
6 3102(c)(2)) is amended by adding at the end the fol-
7 lowing new subparagraph:

8 “(J) The Administrator of the National
9 Aeronautics and Space Administration.”.

10 (9) ADVISORY COMMITTEE.—Section 3(d)(2)(B)
11 of the National Landslide Preparedness Act (43
12 U.S.C. 3102(d)(2)(B)) is amended—

13 (A) in clause (iii), by striking “geological”;
14 and

15 (B) in clause (vi), by striking “local, and
16 Tribal emergency management agencies” and
17 inserting “and local emergency management
18 agencies and emergency management agencies
19 of Indian tribes and Native Hawaiian organiza-
20 tions”.

21 (10) REGIONAL PARTNERSHIPS.—Section 3 of
22 the National Landslide Preparedness Act (43 U.S.C.
23 3102) is amended—

1 (A) by redesignating subsections (e)
2 through (i) as subsections (f) through (j), re-
3 spectively; and

4 (B) by inserting after subsection (d) the
5 following new subsection:

6 “(e) REGIONAL PARTNERSHIPS.—

7 “(1) IN GENERAL.—As soon as practicable
8 after the date of enactment of the National Land-
9 slide Preparedness Act Reauthorization Act of 2025,
10 the Secretary shall establish in the State of Alaska
11 and other regions, as the Secretary determines ap-
12 propriate, a regional partnership with an eligible
13 partner described in paragraph (2).

14 “(2) ELIGIBLE PARTNERS.—An organization or
15 institution of higher education with expertise in
16 landslide mapping, research, and monitoring shall be
17 eligible for a regional partnership under paragraph
18 (1).

19 “(3) PURPOSES AND DUTIES.—A regional part-
20 nership established under paragraph (1) shall ac-
21 complish the following:

22 “(A) Allow the Secretary to leverage appli-
23 cable expertise in regional organizations.

24 “(B) Coordinate long-term landslide re-
25 search specific to the applicable region.

1 “(C) Align interagency landslide moni-
2 toring efforts.”.

3 (11) GRANT PROGRAMS.—Section 3 of the Na-
4 tional Landslide Preparedness Act (43 U.S.C. 3102)
5 is amended, in paragraph (1) of subsection (f) (as
6 so redesignated)—

7 (A) in subparagraph (A)(i), by striking
8 “local, and Tribal governments to research,
9 map, assess” and inserting “and local govern-
10 ments, Indian tribes, Tribal organizations, and
11 Native Hawaiian organizations to research,
12 map, assess, monitor”;

13 (B) in subparagraph (B)—

14 (i) in clause (i), by inserting “institu-
15 tions of higher education described in sub-
16 section (d)(2)(B)(iv),” before “and Indian
17 tribes”; and

18 (ii) in clause (ii)—

19 (I) by redesignating subclauses
20 (II) through (IV) as subclauses (III)
21 through (V), respectively; and

22 (II) by inserting after subclause
23 (I) the following new subclause:

1 “(II) in regions that have re-
2 cently experienced loss of life due to
3 landslides;” and

4 (C) in subparagraph (C)—

5 (i) in clause (i), by inserting “award-
6 ed” after “grants”; and

7 (ii) in clause (ii), by striking “made”
8 and inserting “or other accomplishments
9 resulting”.

10 (12) SIGNIFICANT EVENTS.—Section 3 of the
11 National Landslide Preparedness Act (43 U.S.C.
12 3102) is amended, in subsection (h)(3) (as so redes-
13 igned), by striking “local, and Tribal partners”
14 and inserting “and local partners, Indian tribes,
15 Tribal organizations, and Native Hawaiian organiza-
16 tions”.

17 (13) FUNDING.—Section 3 of the National
18 Landslide Preparedness Act (43 U.S.C. 3102) is
19 amended, in subsection (i) (as so redesignated)—

20 (A) in the matter preceding paragraph (1),
21 by striking “2024” and inserting “2030”; and

22 (B) in paragraph (1), by striking “there is
23 authorized to be appropriated to the United
24 States Geological Survey, \$25,000,000 to carry
25 out this section” and inserting “from amounts

1 appropriated or otherwise made available to the
2 United States Geological Survey, \$35,000,000
3 shall be used to carry out this section, of which
4 not less than \$10,000,000 shall be used for the
5 purchase, deployment, and repair of landslide
6 early warning systems in high risk areas”.

7 (c) 3D ELEVATION PROGRAM.—

8 (1) ESTABLISHMENT.—Section 5(a) of the Na-
9 tional Landslide Preparedness Act (43 U.S.C.
10 3104(a)) is amended—

11 (A) in paragraph (1)(A), by inserting “and
12 derivative” after “3D elevation”; and

13 (B) in paragraph (2)(B)(i), by inserting “,
14 process, and integrate” after “acquire”.

15 (2) 3D ELEVATION FEDERAL INTERAGENCY CO-
16 ORDINATING COMMITTEE.—Section 5(b)(3) of the
17 National Landslide Preparedness Act (43 U.S.C.
18 3104(b)(3)) is amended—

19 (A) by redesignating subparagraphs (D)
20 and (E) as subparagraphs (E) and (F), respec-
21 tively; and

22 (B) by inserting after subparagraph (C)
23 the following new subparagraph:

24 “(D) the 3D Hydrography Program Work-
25 ing Group;”.

1 (3) GRANTS AND COOPERATIVE AGREE-
2 MENTS.—Section 5(d)(3) of the National Landslide
3 Preparedness Act (43 U.S.C. 3104(d)(3)) is amend-
4 ed by striking “publically” and inserting “publicly”.

5 (4) FUNDING.—Section 5(e) of the National
6 Landslide Preparedness Act (43 U.S.C. 3104(e)) is
7 amended by striking “2024” and inserting “2030”.

8 **TITLE IX—OTHER AUTHORITIES**

9 **SEC. 901. METEOROLOGICAL OBSERVATIONS IN THE ARC-** 10 **TIC REGION.**

11 (a) ESTABLISHMENT OF METEOROLOGICAL OBSER-
12 VATION STATIONS IN THE ARCTIC REGION.—The Under
13 Secretary may take such action as may be necessary in
14 the development of an international basic meteorological
15 observation network in the Arctic region of the Western
16 Hemisphere, including the establishment, operation, and
17 maintenance of observation stations in cooperation with
18 the following:

19 (1) The Department of State and other Federal
20 agencies.

21 (2) The meteorological services and space-based
22 assets of the United States and foreign countries.

23 (3) The commercial sector.

24 (4) Local communities and Indian Tribes in the
25 Arctic region.

1 (5) Persons engaged in air and marine com-
2 merce.

3 (b) APPOINTMENT AND COMPENSATION OF EMPLOY-
4 EES FOR CONDUCT OF METEOROLOGICAL INVESTIGA-
5 TIONS IN ARCTIC REGION.—The Secretary of Commerce,
6 acting through the Under Secretary, may carry out the
7 following:

8 (1) Appoint employees for the conduct of mete-
9 orological investigations in the Arctic region without
10 regard to the civil service laws and fix their com-
11 pensation without regard to chapter 51 and sub-
12 chapter III of chapter 53 of title 5, United States
13 Code, and sections 5542, 5543, 5545, and 5546 of
14 such title, at base rates not to exceed the maximum
15 scheduled rate for GS-12 of the General Schedule
16 under section 5332 of such title.

17 (2) Grant extra compensation to employees of
18 other Federal agencies for taking and transmitting
19 meteorological observations without regard to section
20 5533 of title 5, United States Code.

21 (c) TRANSFER FROM OTHER GOVERNMENT DEPART-
22 MENTS OF SURPLUS EQUIPMENT AND SUPPLIES FOR
23 ARCTIC STATIONS.—Subject to approval of the President,
24 and without charge to the National Oceanic and Atmos-
25 pheric Administration, the Secretary of the Army, the Sec-

1 retary of the Air Force, and the Secretary of the Navy
2 may transfer to the National Weather Service equipment
3 and supplies that are surplus to the needs of their respec-
4 tive Departments and necessary for the establishment,
5 maintenance, and operation of Arctic observation stations
6 in the United States.

7 (d) SENSE OF CONGRESS.—It is the sense of Con-
8 gress that observations in polar regions and remote areas
9 are important for weather and environmental monitoring.

10 (e) REPEAL.—Section 1 of the Act of February 12,
11 1946 (60 Stat. 4, chapter 4; 15 U.S.C. 313a), is hereby
12 repealed.

13 **SEC. 902. UNFUNDED PRIORITIES LIST, REPORTS, AND**
14 **PLANS.**

15 (a) DEFINITIONS.—In this section:

16 (1) ADMINISTRATION.—The term “Administra-
17 tion” means the National Oceanic and Atmospheric
18 Administration.

19 (2) ADMINISTRATOR.—The term “Adminis-
20 trator” means the Administrator of the National
21 Oceanic and Atmospheric Administration.

22 (3) APPROPRIATE COMMITTEES OF CON-
23 GRESS.—The term “appropriate committees of Con-
24 gress” means the following:

1 (A) The Committee on Commerce, Science,
2 and Transportation of the Senate.

3 (B) The Committee on Appropriations of
4 the Senate.

5 (C) The Committee on Natural Resources
6 of the House of Representatives.

7 (D) The Committee on Science, Space, and
8 Technology of the House of Representatives.

9 (E) The Committee on Appropriations of
10 the House of Representatives.

11 (4) CAPITAL BUDGETARY LINE ITEM.—The
12 term “capital budgetary line item” means a line
13 item in the budget justification materials submitted
14 to Congress in support of the budget of the Presi-
15 dent for a fiscal year pursuant to section 1105 of
16 title 31, United States Code, for any aircraft or ves-
17 sel for the Administration valued at more than
18 \$3,000,000.

19 (5) INFRASTRUCTURE AND ASSETS.—The term
20 “infrastructure and assets” means the following:

21 (A) Repair and construction of infrastruc-
22 ture, facilities, and laboratories.

23 (B) Instrumentation.

1 (C) Resources for data storage and anal-
2 ysis, including options for cloud-based and
3 supercomputing services.

4 (D) With respect to the Office of Marine
5 and Aviation Operations, aircraft, vessels, and
6 uncrewed systems, associated facility construc-
7 tion and repair needs, instrumentation, and re-
8 quirements to operate new and existing assets
9 to reliably meet the mission needs of the Ad-
10 ministration.

11 (6) UNFUNDED PRIORITY.—The term “un-
12 funded priority” means a program or mission re-
13 quirement that—

14 (A) has not been selected for funding in
15 the applicable proposed budget;

16 (B) is necessary to fulfill a statutory or
17 mission requirement; and

18 (C) the Administrator would have rec-
19 ommended for inclusion in the applicable pro-
20 posed budget had additional resources been
21 available or had the requirement emerged be-
22 fore the budget was submitted.

23 (b) UNFUNDED PRIORITIES LIST.—

24 (1) IN GENERAL.—Not later than 15 days after
25 the date on which the President submits to Congress

1 the budget of the President for a fiscal year pursu-
2 ant to section 1105 of title 31, United States Code,
3 the Administrator, in consultation with the Assistant
4 Administrator for each line office of the Administra-
5 tion, shall submit to the appropriate committees of
6 Congress a report that includes a list of unfunded
7 priorities of the Administration.

8 (2) INCLUSIONS.—The list required by para-
9 graph (1) shall include unfunded priorities related to
10 the needs of the Administration—

11 (A) to meet statutory and mission require-
12 ments to—

13 (i) protect human life, property, and
14 the economy from the impacts of weather,
15 water, and space weather;

16 (ii) manage the Nation’s fisheries and
17 ocean, coastal, and Great Lakes resources;
18 and

19 (iii) manage, steward, and make im-
20 provements to data storage, accessibility,
21 interoperability, and utilization;

22 (B) with respect to infrastructure and as-
23 sets to satisfy statutory and mission require-
24 ments, including—

25 (i) needs with respect to—

1 (I) repair and construction of in-
2 frastructure, facilities, and labora-
3 tories;

4 (II) scientific support equipment
5 and instrumentation; and

6 (III) resources for data storage
7 and analysis, including options for
8 cloud-based and supercomputing serv-
9 ices; and

10 (ii) with respect to the Office of Ma-
11 rine and Aviation Operations, in coordina-
12 tion with the Assistant Administrator for
13 Marine and Aviation Operations, needs
14 with respect to aircraft and vessels, associ-
15 ated facility construction and repair needs,
16 and resources required to operate new and
17 existing assets;

18 (C) with respect to operational shortfalls
19 that compromise the ability of the Administra-
20 tion to satisfy the statutory and mission re-
21 quirements described in subparagraph (A), in-
22 cluding by compromising the ability of the Ad-
23 ministration to satisfy such requirements in a
24 timely manner;

1 (D) with respect to mitigating fishery dis-
2 asters, including in accordance with the require-
3 ments under the heading “FISHERIES DIS-
4 ASTER ASSISTANCE” in title II of the Dis-
5 aster Relief Supplemental Appropriations Act,
6 2023 (division N of Public Law 117–328); and

7 (E) with respect to transitioning successful
8 experimental programs under the Office of Oce-
9 anic and Atmospheric Research as of the date
10 of the enactment of this Act into an operational
11 capacity under another office of the Administra-
12 tion.

13 (3) PRIORITIZATION.—The list required by
14 paragraph (1) shall—

15 (A) present the unfunded priorities of the
16 Administration in order from highest to lowest
17 priority, as determined by the Administrator;
18 and

19 (B) with respect to each unfunded priority,
20 include—

21 (i) a brief description of the unfunded
22 priority and its relationship to the statu-
23 tory and mission requirements of the Ad-
24 ministration;

- 1 (ii) an estimate of the funding level
2 required; and
3 (iii) an assessment of the status of the
4 design or acquisition program, if applica-
5 ble.

6 (c) CAPITAL INVESTMENT PLAN.—

7 (1) IN GENERAL.—Not later than 60 days after
8 the date on which the President submits to Congress
9 the budget of the President for a fiscal year pursu-
10 ant to section 1105 of title 31, United States Code,
11 the Administrator, in consultation with the Assistant
12 Administrator for Marine and Aviation Operations
13 and the Assistant Administrators for the line offices
14 of the Administration, as appropriate, shall submit
15 to the appropriate committees of Congress a future-
16 years capital investment plan.

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

19 (A) The fleet replacement and moderniza-
20 tion plan required by section 604 of the NOAA
21 Fleet Modernization Act (33 U.S.C. 891b).

22 (B) The NOAA Aircraft Recapitalization
23 Plan and any plan developed to carry out sec-
24 tion 11708 of the Don Young Coast Guard Au-
25 thorization Act of 2022 (33 U.S.C. note prec.

851; enacted as part of subtitle A of title CXVII of division K of the James M. Inhofe National Defense Authorization Act for Fiscal Year 2023; Public Law 117–263).

(C) Any other plan the Administrator considers appropriate.

(3) ELEMENTS.—The plan required by paragraph (1) shall identify, for each capital budgetary line item, the following:

(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 five fiscal years or until completion, whichever is earlier.

(D) An estimated completion date at the projected funding levels.

(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. 903. MISCELLANEOUS AUTHORITIES.

(a) TECHNICAL ASSISTANCE IN THE PACIFIC.—

(1) IN GENERAL.—Subject to the availability of appropriations, and at the discretion of the Sec-

1 retary of Commerce, in consultation with the Sec-
2 retary of State, the Under Secretary may provide to
3 Pacific Island parties technical assistance and serv-
4 ices in line with the mission of the National Oceanic
5 and Atmospheric Administration.

6 (2) REGIONAL CAPACITY.—

7 (A) USE OF EXISTING PROGRAMS, OF-
8 FICES, AND SITES.—To implement this sub-
9 section, the Under Secretary shall primarily uti-
10 lize existing programs, offices, and sites of the
11 National Oceanic and Atmospheric Administra-
12 tion in the Pacific Islands region.

13 (B) COOPERATIVE INSTITUTE.—In order
14 to further augment existing regional capacity in
15 the Pacific Islands region, the Under Secretary
16 may consider the formation of a cooperative in-
17 stitute to focus and advise on the unique needs
18 of that region.

19 (3) PACIFIC ISLAND PARTIES DEFINED.—In
20 this subsection, the term “Pacific Island parties”
21 means the following:

22 (A) The Trust Territories of the Pacific Is-
23 lands.

24 (B) The Republic of Palau, the Republic of
25 the Marshall Islands, and the Federated States

1 of Micronesia, which have each entered into a
2 Compact of Free Association with the United
3 States.

4 (C) Such other parties as the Under Sec-
5 retary considers appropriate.

6 (b) STATE ASSISTANCE.—The Under Secretary may
7 provide technical assistance, data, and operational prod-
8 ucts or services in support of State governments, or enti-
9 ties and institutions partnering or collaborating with State
10 governments, in the voluntary production of State climate
11 or weather assessments.

12 (c) INTERNATIONAL COLLABORATION.—

13 (1) IN GENERAL.—The Under Secretary, acting
14 through the Director of the National Weather Serv-
15 ice, may establish partnerships and other mutually
16 beneficial relationships with national and regional
17 weather services around the world to support the co-
18 development and deployment of weather and climate
19 observations and instrumentation.

20 (2) EXISTING AGREEMENTS AND PARTNER-
21 SHIPS.—Partnerships and other relationships estab-
22 lished in accordance with paragraph (1), including
23 those provided by the international desks of the Na-
24 tional Centers for Environmental Prediction, shall
25 build upon existing agreements and partnerships

1 with the Department of State and the World Mete-
2 orological Organization.

3 (d) APP- OR WEB-BASED TOOLS.—The Under Sec-
4 retary may, in alignment with the 21st Century Integrated
5 Digital Experience Act (Public Law 115–336; 44 U.S.C.
6 3501 note) and the memorandum of the Director of the
7 Office of Management and Budget dated September 22,
8 2023, and entitled “Delivering a Digital-First Public Ex-
9 perience” (M–23–22), implement mobile applications,
10 modern application programming interfaces, or web-based
11 tools to increase the utility of and access to data, services,
12 and products of the National Oceanic and Atmospheric
13 Administration.

14 (e) BRIEFING.—Not later than one year after the
15 date of the enactment of this Act, the Under Secretary
16 shall provide the Committee on Commerce, Science, and
17 Transportation of the Senate and the Committee on
18 Science, Space, and Technology of the House of Rep-
19 resentatives a briefing on the number and time commit-
20 ment of intra-agency and interagency meetings, councils,
21 boards, and summits attended by each line office Assistant
22 Administrator and Deputy Administrator of the National
23 Oceanic and Atmospheric Administration.

○