

117TH CONGRESS
2D SESSION

S. 4274

To improve the Federal effort to reduce wildland fire risks, and for other purposes.

IN THE SENATE OF THE UNITED STATES

MAY 19 (legislative day, MAY 17), 2022

Mr. LUJÁN (for himself, Mr. PADILLA, Mrs. MURRAY, Mr. WYDEN, Mrs. FEINSTEIN, Ms. CORTEZ MASTO, Ms. ROSEN, Mr. HEINRICH, and Ms. SMITH) introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

A BILL

To improve the Federal effort to reduce wildland fire risks,
and for other purposes.

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

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “National Wildland Fire
5 Risk Reduction Program Act of 2022”.

6 **SEC. 2. DEFINITIONS.**

7 In this Act:

1 (1) DIRECTOR.—The term “Director” means
2 the Director of the National Institute of Standards
3 and Technology.

4 (2) FIRE ENVIRONMENT.—The term “fire envi-
5 ronment” means—

6 (A) the environmental conditions, such as
7 soil moisture, vegetation, topography, snowpack,
8 atmospheric temperature, moisture, and wind,
9 that influence—

10 (i) fuel and fire behavior; and

11 (ii) smoke dispersion and transport;

12 and

13 (B) the associated environmental impacts
14 occurring during and after fire events.

15 (3) FIREGROUND.—The term “fireground”
16 means the operational area at the scene of a fire
17 controlled by an incident command system.

18 (4) FIRE WEATHER.—The term “fire weather”
19 means any type of weather conditions that influence
20 the start, spread, character, or behavior of wildfire
21 or fires at the wildland-urban interface and all asso-
22 ciated meteorological and chemical phenomena, in-
23 cluding air quality, smoke, and meteorological pa-
24 rameters such as relative humidity, air temperature,
25 wind speed and direction, and atmospheric composi-

1 tion and chemistry, including emissions and mixing
2 heights.

3 (5) NATIONAL LABORATORY.—The term “Na-
4 tional Laboratory” has the meaning given the term
5 in section 2 of the Energy Policy Act of 2005 (42
6 U.S.C. 15801).

7 (6) PROGRAM.—The term “Program” means
8 the National Wildland Fire Risk Reduction Program
9 established under section 3.

10 (7) PROGRAM AGENCIES.—The term “Program
11 agencies” means any Federal agency with respon-
12 sibilities under the Program.

13 (8) STAKEHOLDERS.—The term “stakeholders”
14 means any public or private organization engaged in
15 addressing wildland fires, associated smoke, and
16 their impacts, including relevant Federal agencies,
17 States, territories, Tribes, local governments, busi-
18 nesses, nonprofit organizations (including national
19 standards and building code organizations), fire-
20 fighting departments and organizations, institutions
21 of higher education, National Laboratories, scientific
22 disciplinary societies, professional associations, and
23 other users of wildland fire data products.

24 (9) WILDLAND FIRE.—The term “wildland
25 fire” means any nonstructure fire that occurs in

1 vegetation or natural fuels and includes wildfires
2 originating from an unplanned ignition and pre-
3 scribed fires.

4 (10) WILDLAND-URBAN INTERFACE.—The term
5 “Wildland-Urban Interface” has the meaning given
6 such term in section 4 of the Federal Fire Preven-
7 tion and Control Act of 1974 (15 U.S.C. 2203).

8 **SEC. 3. ESTABLISHMENT OF NATIONAL WILDLAND FIRE**
9 **RISK REDUCTION PROGRAM.**

10 (a) PROGRAM REQUIRED.—The President shall es-
11 tablish a program to achieve major measurable reductions
12 in the losses of life, property, and natural resources from
13 wildland fires through a coordinated Federal effort—

14 (1) to improve the assessment of fire environ-
15 ments and the understanding and prediction of
16 wildland fires, associated smoke, and their impacts,
17 including—

18 (A) at the wildland-urban interface;

19 (B) on communities, buildings, and other
20 infrastructure;

21 (C) on ecosystem services and watersheds;

22 and

23 (D) social and economic impacts;

24 (2) to develop and encourage the adoption of
25 science-based and cost-effective measures to enhance

1 community resilience to wildland fires, to address
2 and mitigate wildland fire and associated smoke im-
3 pacts, and to restore natural fire regimes in fire-de-
4 pendent ecosystems; and

5 (3) to improve the understanding and mitiga-
6 tion of the effects of climate change, drought, and
7 climate variability on wildland fire risk, frequency,
8 and severity, and to inform paragraphs (1) and (2).

9 (b) DESIGNATION.—The program established under
10 subsection (a) shall be known as the “National Wildland
11 Fire Risk Reduction Program”.

12 **SEC. 4. ACTIVITIES OF NATIONAL WILDLAND FIRE RISK RE-**
13 **DUCTION PROGRAM.**

14 The Program shall consist of the activities described
15 under section 8, which shall be designed—

16 (1) to support research and development, in-
17 cluding interdisciplinary research, related to fire en-
18 vironments, wildland fires, associated smoke, and
19 their impacts, in furtherance of a coordinated inter-
20 agency effort to address wildland fire risk reduction;

21 (2) to support data management and steward-
22 ship, the development and coordination of data sys-
23 tems and computational tools, and the creation of a
24 centralized, integrated data collaboration environ-
25 ment for Program agency data to accelerate the un-

1 derstanding of fire environments, wildland fires, as-
2 sociated smoke, and their impacts, and the benefits
3 of wildland fire risk mitigation measures;

4 (3) to support the development of tools and
5 technologies, including decision support tools and
6 risk and hazard maps, to improve understanding,
7 monitoring, and prediction of wildland fires and as-
8 sociated smoke and mitigation of their negative im-
9 pacts;

10 (4) to support research and development activi-
11 ties to improve data, tools, and technologies that di-
12 rectly inform, support, and complement active land
13 management, forest and habitat restoration, and
14 healthy ecosystem practices executed by relevant
15 Federal agencies and State, local, territorial, and
16 Tribal entities;

17 (5) to support education and training to expand
18 the number of students and researchers in areas of
19 study and research related to wildland fires;

20 (6) to accelerate the translation of research re-
21 lated to wildland fires and associated smoke into op-
22 erations to reduce harm to communities, buildings,
23 other infrastructure, and ecosystem services;

24 (7) to conduct communication and outreach re-
25 garding wildland fire science and wildland fire risk

1 mitigation to communities, energy utilities and oper-
2 ators of other critical infrastructure, and other rel-
3 evant stakeholders;

4 (8) to support research and development
5 projects funded under joint solicitations or through
6 memoranda of understanding between not fewer
7 than 2 agencies participating in the Program; and

8 (9) to disseminate, to the extent practicable,
9 scientific data and related products and services in
10 formats meeting shared standards to enhance the
11 interoperability, usability, and accessibility of Pro-
12 gram agency data, including data under paragraph
13 (2), in order to better meet the needs of Program
14 agencies, other Federal agencies, and relevant stake-
15 holders.

16 **SEC. 5. INTERAGENCY COORDINATING COMMITTEE ON**
17 **WILDLAND FIRE RISK REDUCTION.**

18 (a) ESTABLISHMENT.—

19 (1) IN GENERAL.—Not later than 90 days after
20 the date of the enactment of this Act, the Director
21 shall establish an interagency coordinating com-
22 mittee for the Program.

23 (2) DESIGNATION.—The interagency coordi-
24 nating committee established under paragraph (1)
25 shall known as the “Interagency Coordinating Com-

1 mittee on Wildland Fire Risk Reduction” (in this
2 section the “Committee”).

3 (b) MEMBERSHIP.—The Committee shall be com-
4 posed of the following, or their designees:

5 (1) The Director.

6 (2) The Director of the Office of Science and
7 Technology Policy.

8 (3) The Director of the National Science Foun-
9 dation.

10 (4) The Administrator of the National Oceanic
11 and Atmospheric Administration.

12 (5) The Administrator of the Federal Emer-
13 gency Management Agency.

14 (6) The Administrator of the United States
15 Fire Administration.

16 (7) The Chief of the Forest Service.

17 (8) The Administrator of the National Aero-
18 nautics and Space Administration.

19 (9) The Administrator of the Environmental
20 Protection Agency.

21 (10) The Secretary of Energy.

22 (11) The Director of the Office of Management
23 and Budget.

24 (12) The Secretary of the Interior.

1 (13) The Director of United States Geological
2 Survey.

3 (14) The Secretary of Health and Human Serv-
4 ices.

5 (15) The Secretary of Defense.

6 (16) The Secretary of Housing and Urban De-
7 velopment.

8 (17) The Director of the National Institute of
9 Food and Agriculture.

10 (18) The head of any other Federal agency that
11 the Director considers appropriate.

12 (c) MEETINGS.—The members of the Committee
13 shall meet not less than twice each year for the first 2
14 years of the Committee and then not less frequently than
15 once each year thereafter at the call of the Director.

16 (d) CHAIRPERSONS.—The Director and the Director
17 of the Office of Science and Technology Policy or their
18 designees shall be co-chairpersons of the Committee.

19 (e) GENERAL PURPOSE AND DUTIES.—The Com-
20 mittee shall oversee the planning, management, and co-
21 ordination of the Program and solicit stakeholder input
22 on Program goals.

23 (f) STRATEGIC PLAN.—

24 (1) IN GENERAL.—The Committee shall develop
25 and submit to Congress, not later than 2 years after

1 the date of the enactment of this Act, a strategic
2 plan for the Program.

3 (2) CONTENTS.—The strategic plan developed
4 and submitted under paragraph (1) shall include the
5 following:

6 (A) Prioritized goals for the Program, con-
7 sistent with the purposes of the Program as de-
8 scribed in section 3(a).

9 (B) Short-term, mid-term, and long-term
10 research and development objectives to achieve
11 those goals.

12 (C) A description of the role of each Pro-
13 gram agency in achieving the prioritized goals.

14 (D) A description of how the Committee
15 will foster collaboration between and among the
16 Program agencies and other Federal agencies to
17 help meet the goals of the Program.

18 (E) The methods by which progress toward
19 the goals will be assessed.

20 (F) An explanation of how the Program
21 will foster the translation of research into meas-
22 urable reductions in the losses of life, property,
23 and ecosystem services from wildland fires, in-
24 cluding recommended outcomes and metrics for
25 each program goal and how operational Pro-

1 gram agencies will transition demonstrated
2 technologies and research findings into decision
3 support tools and operations.

4 (G) A description of the research infra-
5 structure, including databases and computa-
6 tional tools, needed to accomplish the research
7 and development objectives outlined in subpara-
8 graph (B), a description of how research infra-
9 structure in existence at the time of the devel-
10 opment of the plan will be used to meet the ob-
11 jectives, an explanation of how new research in-
12 frastructure will be developed to meet the objec-
13 tives, and a description of how the Program will
14 implement the integrated data collaboration en-
15 vironment per section 4(2).

16 (H) A description of how Program agen-
17 cies will collaborate with stakeholders and take
18 into account stakeholder needs and rec-
19 ommendations in developing research and devel-
20 opment objectives.

21 (I) Recommendations on the most effective
22 means to integrate the research results into
23 wildland fire preparedness and response actions
24 across Federal, State, local, Tribal, and terri-
25 torial levels.

1 (J) Guidance on how the Committee’s rec-
2 ommendations are best used in climate adapta-
3 tion planning for Federal, State, local, Tribal,
4 and territorial entities.

5 (K) A nationally recognized, consensus-
6 based definition of wildland-urban interface and
7 other key terms and definitions relating to
8 wildland fire, developed in consideration of the
9 meaning given such term in section 4 of the
10 Federal Fire Prevention and Control Act of
11 1974 (15 U.S.C. 2203).

12 (L) A description of opportunities to sup-
13 port new areas of research and development
14 and new types of collaborations that seek to op-
15 timize building and landscape design across
16 multiple resilience goals, including resilience to
17 wildland fires and other natural hazards, energy
18 efficiency, and environmental sustainability.

19 (3) UPDATES.—Not later than 6 years after the
20 date of the enactment of this Act and not less fre-
21 quently than once every 4 years thereafter, the Com-
22 mittee shall update the strategic plan developed
23 under paragraph (1).

24 (g) COORDINATION WITH OTHER FEDERAL EF-
25 FORTS.—To the extent practicable, the Committee shall

1 ensure that the activities of the Program are coordinated
2 with, and not duplicative of, other relevant Federal initia-
3 tives and interagency bodies, as appropriate, including—
4 (1) the Joint Fire Science Program;
5 (2) the Wildland Fire Leadership Council;
6 (3) the Wildland Fire Management Policy Com-
7 mittee;
8 (4) the Wildland Fire Mitigation and Manage-
9 ment Commission;
10 (5) the National Interagency Fire Center;
11 (6) the National Interagency Coordination Cen-
12 ter;
13 (7) the National Predictive Services Oversight
14 Group;
15 (8) the Interagency Council for Advancing Me-
16 teorological Services;
17 (9) the National Windstorm Impact Reduction
18 Program;
19 (10) the National Multi-Agency Coordinating
20 Group; and
21 (11) the Mitigation Framework Leadership
22 Group.
23 (h) ASSESSMENT OF NEED FOR NATIONAL ACAD-
24 EMIES OF SCIENCES, ENGINEERING, AND MEDICINE
25 STUDY.—

1 (1) IN GENERAL.—The Committee shall as-
2 sess—

3 (A) the need for a study, or a series of
4 studies, to be conducted by the National Acad-
5 emies of Sciences, Engineering, and Medicine;
6 and

7 (B) how such a study or studies could help
8 identify research areas for further study and in-
9 form research objectives, including further re-
10 search into the interactions between climate
11 change and wildland fires.

12 (2) BRIEFING.—Not later than 1 year after the
13 date of the enactment of this Act, the Committee
14 shall brief the Committee on Commerce, Science,
15 and Transportation of the Senate and the Com-
16 mittee on Space, Science, and Technology of the
17 House of Representatives and on the findings of the
18 Committee with respect to the assessment conducted
19 under paragraph (1).

20 (i) PROGRESS REPORT.—

21 (1) IN GENERAL.—Not later than 540 days
22 after the date of the submittal of the first strategic
23 plan under subsection (f) and not less frequently
24 than once every 2 years thereafter, the Committee

1 shall submit to Congress a report on the progress of
2 the Program.

3 (2) CONTENTS.—Each report submitted under
4 paragraph (1) shall include, for the period covered
5 by the report, the following:

6 (A) A description of the activities funded
7 under the Program, a description of how those
8 activities align with the prioritized goals and re-
9 search objectives established in the strategic
10 plan under subsection (f), and the budgets, per
11 agency, for these activities.

12 (B) The outcomes achieved by the Pro-
13 gram for each of the goals identified in the
14 Strategic Plan.

15 **SEC. 6. NATIONAL ADVISORY COMMITTEE ON WILDLAND**
16 **FIRE RISK REDUCTION.**

17 (a) ESTABLISHMENT.—

18 (1) IN GENERAL.—The Director shall establish
19 an advisory committee on wildland fire risk reduc-
20 tion.

21 (2) DESIGNATION.—The committee established
22 under paragraph (1) shall be known as the “Na-
23 tional Advisory Committee on Wildland Fire Risk
24 Reduction” (in this section referred to as the “Advi-
25 sory Committee”).

1 (b) COMPOSITION.—

2 (1) IN GENERAL.—The Advisory Committee
3 shall be composed of not fewer than 7 and not more
4 than 15 members selected by the Director from
5 among those who the Director considers are quali-
6 fied to provide advice on wildland fire risk reduction
7 and represent related scientific, architectural, and
8 engineering disciplines, including the following:

9 (A) Representatives of research and aca-
10 demic institutions.

11 (B) Standards development organizations.

12 (C) Emergency management agencies.

13 (D) State, local, Tribal, and territorial gov-
14 ernments.

15 (E) Business communities.

16 (F) Such others as the Director considers
17 appropriate.

18 (2) LIMITATION.—None of the members of the
19 Advisory Committee may be employees of the Fed-
20 eral Government.

21 (c) DUTIES.—The Advisory Committee shall carry
22 out assessments and develop recommendations on—

23 (1) trends and developments in the natural, en-
24 gineering, and social sciences and practices of wild-
25 fire risk mitigation;

1 (2) the priorities of the Program’s strategic
2 plan described in section 5(f);

3 (3) the management, coordination, implementa-
4 tion, and activities of the Program;

5 (4) the effectiveness of the Program in meeting
6 its purposes; and

7 (5) any need to revise the Program.

8 (d) COMPENSATION.—The members of the Advisory
9 Committee shall serve without compensation.

10 (e) BIENNIAL REPORTS.—Not less frequently than
11 once every 2 years, the Advisory Committee shall submit
12 to the Director a report on the assessments carried out
13 under subsection (b) and the recommendations developed
14 under such subsection.

15 (f) CHARTER.—Notwithstanding section 14(b)(2) of
16 the Federal Advisory Committee Act (5 U.S.C. App.), the
17 Advisory Committee shall not be required to file a charter
18 subsequent to its initial charter, filed under section 9(c)
19 of such Act, before the termination date specified in sub-
20 section (g) of this section.

21 (g) TERMINATION.—The Advisory Committee shall
22 terminate on September 30, 2026.

23 (h) CONFLICT OF INTEREST.—An Advisory Com-
24 mittee member shall recuse themselves from any Advisory

1 Committee activity in which they have an actual pecuniary
2 interest.

3 **SEC. 7. REVIEW BY COMPTROLLER GENERAL OF THE**
4 **UNITED STATES.**

5 Not later than 3 years after the date of the enact-
6 ment of this Act, the Comptroller General of the United
7 States shall—

8 (1) evaluate the progress and performance of
9 the Program in establishing and making progress to-
10 ward the goals of the Program as set forth in this
11 Act;

12 (2) develop such recommendations as the
13 Comptroller General determines are appropriate to
14 improve the Program; and

15 (3) submit to Congress a report on—

16 (A) the findings of the Comptroller Gen-
17 eral with respect to the evaluation carried out
18 under paragraph (1); and

19 (B) such recommendations as the Comp-
20 troller General may have developed under para-
21 graph (2).

22 **SEC. 8. RESPONSIBILITIES OF NATIONAL WILDLAND FIRE**
23 **RISK REDUCTION PROGRAM AGENCIES.**

24 (a) DIRECTOR OF THE NATIONAL INSTITUTE OF
25 STANDARDS AND TECHNOLOGY.—

1 (1) RESEARCH AND DEVELOPMENT ACTIVI-
2 TIES.—The Director shall—

3 (A) carry out research on the effect of
4 wildland fires on communities, buildings, and
5 other infrastructure, including structure-to-
6 structure transmission of fire and spread within
7 communities;

8 (B) carry out research on the generation of
9 firebrands and firebrand showers in wildland
10 fires and on methods and materials to prevent
11 or reduce firebrand ignition of communities,
12 buildings, and other infrastructure;

13 (C) carry out research on novel materials,
14 systems, structures, and construction designs to
15 harden structures, parcels, and communities to
16 the impact of wildland fires;

17 (D) carry out research on the impact of
18 environmental factors on wildland fire behavior,
19 including wind, terrain, and moisture;

20 (E) support the development of perform-
21 ance-based tools to mitigate the effect of
22 wildland fires, and work with appropriate
23 groups to promote and assist in the use of such
24 tools, including through model building codes
25 and fire codes, standard test methods, vol-

1 untary consensus standards, and construction
2 and retrofit best practices;

3 (F) in collaboration with the United States
4 Fire Administration, carry out research and de-
5 velopment of decontamination methods and
6 technologies for firefighting gear on and off the
7 field;

8 (G) develop and execute a research plan on
9 public safety communication coordination
10 standards among Federal, State, local, terri-
11 torial, and Tribal wildland firefighters, fire
12 management response officials, and the Na-
13 tional Interagency Fire Center;

14 (H) carry out research to improve and in-
15 tegrate existing communications systems to
16 transmit secure, real-time data, alerts, and ac-
17 curate advisories to wildland firefighters;

18 (I) carry out both live and virtual field
19 testing and measurement of equipment, soft-
20 ware, and other technologies to determine cur-
21 rent effectiveness and timeliness of information
22 dissemination and develop standards and best
23 practices for the delivery of useful and secure
24 real-time data to wildland firefighters; and

1 (J) develop and publish recommendations
2 to improve public safety communication coordi-
3 nation standards among wildland firefighters
4 and member agencies of the National Inter-
5 agency Fire Center, including providing such
6 recommendations to the Office of Budget and
7 Management and the Office of Science and
8 Technology Policy.

9 (2) WILDLAND-URBAN INTERFACE FIRE POST-
10 INVESTIGATIONS.—The Director shall—

11 (A) coordinate Federal post-wildland fire
12 investigations of fires at the wildland-urban
13 interface; and

14 (B) develop methodologies, in coordination
15 with the Administrator of the Federal Emer-
16 gency Management Agency and in consultation
17 with relevant stakeholders, to characterize the
18 effect of wildland fires on communities and the
19 impact of changes in building and fire codes, in-
20 cluding methodologies—

21 (i) for collecting, inventorying, and
22 analyzing information on the performance
23 of communities, buildings, and other infra-
24 structure in wildland fires; and

1 (ii) for improved collection of perti-
2 nent information from different sources,
3 including first responders, the design and
4 construction industry, insurance compa-
5 nies, and building officials.

6 (b) DIRECTOR OF THE NATIONAL SCIENCE FOUNDA-
7 TION.—

8 (1) RESEARCH AND DEVELOPMENT ACTIVI-
9 TIES.—The Director of the National Science Foun-
10 dation shall support research and development ac-
11 tivities, including large-scale convergent research—

12 (A) to improve the understanding and pre-
13 diction of wildland fire risks, including the con-
14 ditions that increase the likelihood of a wildland
15 fire, the behavior of wildland fires, and the im-
16 pacts of wildland fires on buildings, commu-
17 nities, infrastructure, watersheds, ecosystems,
18 and living systems;

19 (B) to develop and improve research infra-
20 structure, tools, and technologies, including sen-
21 sors and sensor networks, databases, and com-
22 putational models, to enable and accelerate the
23 understanding and prediction of wildland fires
24 and their impacts;

1 (C) to improve the understanding of the
2 impacts of climate change, drought, and climate
3 variability on wildland fires, including wildland
4 fire risk, frequency, size, and severity;

5 (D) to improve the understanding of long-
6 term wildland fire management strategies, in-
7 cluding natural fire regimes, and wildland fire
8 prediction, mitigation, and resilience strategies;
9 and

10 (E) to improve the understanding of—

11 (i) the response to wildland fire risk
12 communications by individuals, commu-
13 nities, and policymakers;

14 (ii) economic, social, and other factors
15 influencing the implementation and adop-
16 tion of wildland fire risk reduction meas-
17 ures by individuals, communities, and pol-
18 icymakers; and

19 (iii) decision making regarding
20 wildland fires and emergency response to
21 wildland fires.

22 (2) WILDLAND FIRE STUDENTS AND TRAIN-
23 EES.—The Director of the National Science Founda-
24 tion shall support undergraduate and graduate re-
25 search opportunities and graduate and postdoctoral

1 fellowships and traineeships in fields of study rel-
2 evant to wildland fires and their impacts.

3 (c) ADMINISTRATOR OF THE NATIONAL OCEANIC
4 AND ATMOSPHERIC ADMINISTRATION.—

5 (1) RESEARCH AND DEVELOPMENT ACTIVI-
6 TIES.—The Administrator of the National Oceanic
7 and Atmospheric Administration shall support re-
8 search and development activities, including re-
9 search, observations, modeling, forecasting, pre-
10 diction, and historical analysis of wildland fires and
11 associated fire weather and smoke—

12 (A) to improve understanding, prediction,
13 detection, forecasting, monitoring, and assess-
14 ments of wildland fires and associated fire
15 weather and smoke for—

16 (i) the protection of life, property, and
17 natural resources; and

18 (ii) the enhancement of the national
19 economy;

20 (B) to develop products and services to
21 meet stakeholder needs;

22 (C) to transition physical and social
23 science research into operations;

24 (D) to improve modeling and technology,
25 including coupled fire-atmosphere fire behavior

1 modeling, in consultation with relevant Federal
2 agencies;

3 (E) to improve the understanding of the
4 links between fire weather events and subsea-
5 sonal-to-climate impacts; and

6 (F) to improve the forecasting and under-
7 standing of the impacts of prescribed fires and
8 how such impacts differ from those of wildland
9 fires which originate from an unplanned igni-
10 tion.

11 (2) WEATHER FORECASTING AND DECISION
12 SUPPORT FOR WILDLAND FIRES.—The Adminis-
13 trator shall—

14 (A) develop and provide, in consultation
15 with such Federal agencies as the Adminis-
16 trator considers appropriate, accurate, precise,
17 timely, and effective risk communications, fore-
18 casts, watches, and warnings relating to
19 wildland fires and fire weather events that en-
20 danger life and property, including—

21 (i) red flag warnings;

22 (ii) operational fire weather alerts;

23 and

24 (iii) any other warnings or alerts the
25 Administrator deems appropriate;

1 (B) provide relevant stakeholders and the
2 public with impact-based decision support serv-
3 ices, seasonal climate predictions, air quality
4 products, and smoke forecasts; and

5 (C) provide on-site weather forecasts, sea-
6 sonal climate predictions, and other decision
7 support to wildland fire incident command
8 posts, including by deploying incident mete-
9 orologists for the duration of an extreme event.

10 (3) WILDLAND FIRE DATA.—The Administrator
11 shall contribute to and support the centralized, inte-
12 grated data collaboration environment pursuant to
13 section 4(2) and any other relevant Federal data
14 systems by ensuring—

15 (A) interoperability, usability, and accessi-
16 bility of the National Oceanographic and At-
17 mospheric Administration data and tools relat-
18 ing to wildland fires, associated smoke, and
19 their impacts;

20 (B) inclusion of historical wildland fire in-
21 cident and fire weather data, and identifying
22 potential gaps in such data; and

23 (C) the acquisition or collection of addi-
24 tional data that is needed to advance wildland
25 fire science.

1 (4) WILDLAND FIRE AND FIRE WEATHER SUR-
2 VEILLANCE AND OBSERVATIONS.—The Adminis-
3 trator of the National Oceanic and Atmospheric Ad-
4 ministration, in coordination with the Administrator
5 of the National Aeronautics and Space Administra-
6 tion and in consultation with relevant stakeholders,
7 shall—

8 (A) leverage available observations, tech-
9 nologies, and assets and develop or acquire new
10 technologies and data to sustain and enhance
11 environmental observations used for wildland
12 fire prediction and detection, fire weather and
13 smoke forecasting and monitoring, and post-
14 wildland fire recovery, with a focus on—

15 (i) collecting data for pre-ignition
16 analysis, such as drought, fuel conditions,
17 and soil moisture, that will help predict se-
18 vere wildland fire conditions on subsea-
19 sonal to decadal timescales;

20 (ii) supporting identification and clas-
21 sification of fire environments to determine
22 vulnerability to wildland fires and rapid
23 wildland fire growth;

24 (iii) detecting, observing, and moni-
25 toring wildland fires and smoke;

1 (iv) supporting research on the inter-
2 action of weather and wildland fire behav-
3 ior; and

4 (v) supporting post-fire assessments
5 conducted by Program agencies and rel-
6 evant stakeholders;

7 (B) prioritize the ability to detect, observe,
8 and monitor wildland fire and smoke in the re-
9 quirements of the National Oceanic and Atmos-
10 pheric Administration for current and future
11 operational space-based assessments and com-
12 mercial data purchases; and

13 (C) not later than 1 year after the date of
14 the enactment of this Act—

15 (i) may offer to enter into contracts
16 with one or more entities to obtain addi-
17 tional space-based and airborne remoting
18 sensing data and observations that may
19 enhance or supplement—

20 (I) the understanding, moni-
21 toring, prediction, and mitigation of
22 wildland fire risks; and

23 (II) the relevant Program activi-
24 ties under section 4; and

1 (ii) in carrying out clause (i), shall
2 consult with private sector entities through
3 the Advisory Committee established under
4 section 6 to identify needed tools and data
5 that can best be provided by satellites of
6 the National Oceanic and Atmospheric Ad-
7 ministration and are most beneficial to
8 wildland fire smoke detection and moni-
9 toring.

10 (5) FIRE WEATHER TESTBED.—In collaboration
11 with Program agencies and other relevant stake-
12 holders, the Administrator of the National Oceanic
13 and Atmospheric Administration shall establish a
14 fire weather testbed to evaluate physical and social
15 science research, technology, and other available
16 data and research to develop fire weather products
17 and services for implementation by relevant stake-
18 holders.

19 (6) EXTRAMURAL RESEARCH.—The Adminis-
20 trator shall—

21 (A) collaborate with and support the non-
22 Federal wildland fire research community,
23 which includes institutions of higher education,
24 private entities, nongovernmental organizations,
25 and other relevant stakeholders, by making

1 funds available through competitive grants, con-
2 tracts, and cooperative agreements; and

3 (B) in carrying out the program under
4 subparagraph (A), the Administrator, in col-
5 laboration with other relevant Federal agencies,
6 may establish one or more national centers for
7 prescribed fire and wildfire sciences that lever-
8 age Federal research and development with uni-
9 versity and nongovernmental partnerships.

10 (7) HIGH PERFORMANCE COMPUTING.—The
11 Administrator, in consultation with the Secretary of
12 Energy, shall acquire high performance computing
13 technologies and supercomputing technologies,
14 leveraging existing resources, as practicable—

15 (A) to conduct research and development
16 activities;

17 (B) to support the translation of Program-
18 related research to operations; and

19 (C) to host operational fire and smoke
20 forecast models.

21 (8) INCIDENT METEOROLOGIST WORKFORCE AS-
22 SESSMENT.—

23 (A) IN GENERAL.—Not later than 180
24 days after the date of the enactment of this
25 Act, the Administrator shall submit to the Com-

1 committee on Commerce, Science, and Transpor-
2 tation of the Senate and the Committee on
3 Science, Space, and Technology of the House of
4 Representatives the results of an assessment of
5 National Weather Service workforce and train-
6 ing challenges for incident meteorologists and a
7 roadmap for overcoming the challenges identi-
8 fied.

9 (B) CONSIDERATIONS.—The assessment
10 described in subparagraph (A) shall take into
11 consideration—

12 (i) information technology support;

13 (ii) logistical and administrative oper-
14 ations;

15 (iii) anticipated weather and climate
16 conditions; and

17 (iv) feedback from relevant stake-
18 holders.

19 (C) CONTENTS.—The assessment de-
20 scribed in subparagraph (A) shall include, to
21 the maximum extent practicable, an identifica-
22 tion by the National Weather Service of—

23 (i) the expected number of incident
24 meteorologists needed over the next 5
25 years;

1 (ii) potential hiring authorities nec-
2 essary to overcome identified workforce
3 and training challenges; and

4 (iii) alternative services or assistance
5 operations the National Weather Service
6 could provide to meet operational needs.

7 (d) ADMINISTRATOR OF THE FEDERAL EMERGENCY
8 MANAGEMENT AGENCY.—

9 (1) IN GENERAL.—The Administrator of the
10 Federal Emergency Management Agency shall sup-
11 port—

12 (A) the development of community risk as-
13 sessment tools and effective mitigation tech-
14 niques for responding to wildland fires, includ-
15 ing at the wildland-urban interface;

16 (B) the collection and analysis of data re-
17 lating to wildland and wildland-urban interface
18 fire and operational response;

19 (C) public outreach, education, and infor-
20 mation dissemination relating to wildland fires
21 and wildland fire risk; and

22 (D) the promotion of wildland and
23 wildland-urban interface fire preparedness and
24 community risk reduction measures, includ-
25 ing—

- 1 (i) hardening the wildland-urban
2 interface through proper construction ma-
3 terials;
- 4 (ii) land use practices;
- 5 (iii) sprinklers;
- 6 (iv) assessment of State, local, Tribal,
7 and territorial emergency response capacity
8 and capabilities, including evacuation plan-
9 ning and evacuation routes; and
- 10 (v) other tools and approaches as ap-
11 propriate.

12 (2) FIRE-RESISTANT PRACTICES.—In collabora-
13 tion with the Director and the heads of such other
14 Program agencies as the Administrator considers
15 appropriate, the Administrator shall—

16 (A) promote and assist in the implementa-
17 tion of research results; and

18 (B) promote fire-resistant building, ret-
19 rofit, and land use practices within the design
20 and construction industry, including architects,
21 engineers, contractors, builders, planners, code
22 officials, and inspectors.

23 (3) KNOWLEDGE TRANSFER AND DISSEMINA-
24 TION.—The Administrator shall—

1 (A) establish and operate a wildland fire
2 preparedness and mitigation technical assist-
3 ance program to assist State, Tribal, local, and
4 territorial governments in using wildland fire
5 mitigation strategies, including through the
6 adoption and implementation of wildland and
7 wildland-urban interface fire resistance codes,
8 standards, and land use;

9 (B) incorporate wildland and wildland-
10 urban interface fire risk mitigation and loss
11 avoidance data into the existing risk, mitiga-
12 tion, and loss avoidance analyses of the Federal
13 Emergency Management Agency;

14 (C) incorporate data on the adoption and
15 implementation of wildland and wildland-urban
16 interface fire resistant codes and standards into
17 the hazard resistant code tracking resources of
18 the Federal Emergency Management Agency;

19 (D) translate new information and re-
20 search findings into best practices to improve
21 training and education for firefighter, fire serv-
22 ice, and allied professions in wildland fire re-
23 sponse, crew deployment, and wildland fire re-
24 siliance, prevention, mitigation, and firefighting;

1 (E) conduct outreach and disseminate in-
2 formation to fire departments regarding best
3 practices for wildland and wildland-urban inter-
4 face firefighting, education, training, and
5 fireground deployment; and

6 (F) develop resources regarding best prac-
7 tices for establishing or enhancing peer-support
8 programs within wildland fire firefighting units.

9 (4) WILDLAND FIRE HAZARD SEVERITY MAP.—

10 The Administrator shall, in collaboration with such
11 other heads of Program agencies and stakeholders
12 as the Administrator considers appropriate, develop
13 a national-level, interactive, and publicly accessible
14 wildland fire hazard severity map that includes com-
15 munity and parcel level data and that can readily in-
16 tegrate with risk gradations within wildland and
17 wildland-urban interface fire resistant codes and
18 standards.

19 (5) PFAS STUDY.—The Administrator shall, in
20 coordination with the Director and such other heads
21 of Federal agencies as the Administrator considers
22 appropriate, carry out a study to—

23 (A) examine perfluoroalkyl and
24 polyfluoroalkyl substances (“PFAS”) and other

1 potentially harmful contaminants in firefighter
2 gear, fire retardants, and wetting agents;

3 (B) determine the lifecycle of firefighting
4 garments; and

5 (C) evaluate exposure risks based on dif-
6 ferent phases of the fire.

7 (e) ADMINISTRATOR OF THE NATIONAL AERO-
8 NAUTICS AND SPACE ADMINISTRATION.—

9 (1) IN GENERAL.—The Administrator of the
10 National Aeronautics and Space Administration
11 shall—

12 (A) support relevant basic and applied sci-
13 entific research and modeling;

14 (B) ensure the use in the Program of all
15 relevant National Aeronautics and Space Ad-
16 ministration Earth observations data for max-
17 imum utility;

18 (C) explore and apply novel tools and tech-
19 nologies in the activities of the Program;

20 (D) support the translation of research to
21 operations, including to Program agencies and
22 relevant stakeholders;

23 (E) facilitate the communication of
24 wildland fire research, knowledge, and tools to
25 relevant stakeholders; and

1 (F) use commercial data where such data
2 is available and accessible through existing Fed-
3 eral Government commercial contracts, agree-
4 ments, or other means, and purchase data that
5 is deemed necessary based on consultation with
6 other Program agencies.

7 (2) RESEARCH AND DEVELOPMENT ACTIVI-
8 TIES.—The Administrator shall support basic and
9 applied wildland fire research and modeling activi-
10 ties, including competitively selected research—

11 (A) to improve understanding and pre-
12 diction of fire environments, wildland fires, as-
13 sociated smoke, and their impacts;

14 (B) to improve the understanding of the
15 impacts of climate change, drought, and climate
16 variability on wildland fire risk, frequency, size,
17 and severity;

18 (C) to characterize the pre-fire phase and
19 fire-inducing conditions, such as soil moisture
20 and vegetative fuel availability;

21 (D) to characterize the active fire phase,
22 such as fire and smoke plume mapping, fire be-
23 havior and spread modeling, and domestic and
24 global fire activity;

1 (E) to characterize the post-fire phase,
2 such as landscape changes, air quality, erosion,
3 landslides, watershed impacts, and impacts on
4 carbon distributions in ecosystem biomass;

5 (F) to contribute to advancing predictive
6 wildland fire models;

7 (G) to address other relevant investigations
8 and measurements prioritized by the National
9 Academies of Sciences, Engineering, and Medi-
10 cine Decadal Survey on Earth Science and Ap-
11 plications from Space;

12 (H) to improve the translation of research
13 knowledge into actionable information;

14 (I) to develop research and data products,
15 including maps, decision-support information,
16 and tools, and support related training as ap-
17 propriate and practicable;

18 (J) to collaborate with other Program
19 agencies and relevant stakeholders, as appro-
20 priate, on joint research and development
21 projects, including research grant solicitations
22 and field campaigns; and

23 (K) to transition research advances to op-
24 erations, including to Program agencies and rel-
25 evant stakeholders, as practicable.

1 (3) WILDLAND FIRE DATA SYSTEMS AND COM-
2 PUTATIONAL TOOLS.—The Administrator shall—

3 (A) identify, from the National Aero-
4 nautics and Space Administration’s Earth
5 science data systems, data, including combined
6 data products, that can contribute to improving
7 the understanding, monitoring, prediction, and
8 mitigation of wildland fires and their impacts,
9 including data related to fire weather, plume
10 dynamics, smoke and fire behavior, impacts of
11 climate change, drought, and climate variability,
12 land and property burned, and wildlife and eco-
13 system destruction, among other areas;

14 (B) prioritize the dissemination of data
15 identified under subparagraph (A) to the widest
16 extent practicable to support relevant research
17 and operations stakeholders;

18 (C) consider opportunities to support the
19 Program under section 3 and the Program ac-
20 tivities under section 4 when planning and de-
21 veloping Earth observation satellites, instru-
22 ments, and airborne measurement platforms;

23 (D) identify opportunities, in collaboration
24 with Program agencies and relevant stake-
25 holders, to acquire additional airborne and

1 space-based data and observations that may en-
2 hance or supplement the understanding, moni-
3 toring, prediction, and mitigation of wildland
4 fire risks and other relevant Program activities
5 under section 4, and consider such options as
6 commercial solutions, including commercial
7 data purchases, prize authority, academic part-
8 nerships, and ground-based or space-based in-
9 struments, as practicable and appropriate; and

10 (E) jointly develop with Program agencies,
11 and contribute data to, the centralized, inte-
12 grated data collaboration environment pursuant
13 to section 4(2) and any other relevant inter-
14 agency systems, by—

15 (i) collecting, organizing, and inte-
16 grating the National Aeronautics and
17 Space Administration’s scientific data,
18 data systems, and computational tools re-
19 lated to wildland fires, associated smoke,
20 and their impacts; and

21 (ii) enhancing the interoperability,
22 usability, and accessibility of the National
23 Aeronautics and Space Administration’s
24 scientific data, data systems, and computa-
25 tional tools, including—

1 (I) observation and available real-
2 time and near-real-time measure-
3 ments;

4 (II) derived science and data
5 products, such as fuel conditions, risk
6 and spread maps, and data products
7 to represent the wildland-urban inter-
8 face;

9 (III) relevant historical and ar-
10 chival observations, measurements,
11 and derived science and data prod-
12 ucts; and

13 (IV) other relevant decision sup-
14 port and information tools.

15 (4) UNIFIED CONCEPT OF OPERATIONS.—The
16 Administrator shall, in collaboration with such other
17 heads of Program agencies and relevant stakeholders
18 as the Administrators considers as practicable and
19 appropriate, establish a program—

20 (A) to develop and demonstrate a unified
21 concept of operations for the safe and effective
22 deployment of diverse air capabilities in active
23 wildland fire monitoring, mitigation, and risk
24 reduction;

25 (B) to develop—

1 (i) and demonstrate a wildland fire
2 airspace operations system accounting for
3 piloted aircraft, uncrewed aerial systems,
4 and other new and emerging capabilities
5 such as autonomous and high-altitude as-
6 sets;

7 (ii) an interoperable communications
8 strategy to support such system; and

9 (iii) a roadmap for the on-ramping of
10 new technologies, capabilities, or entities
11 into such system; and

12 (C) to identify—

13 (i) additional development, testing,
14 and demonstration that would be required
15 to expand the scale of program operations;

16 (ii) actions that would be required to
17 transition the unified concept of operations
18 in subparagraph (A) into ongoing, oper-
19 ational use; and

20 (iii) other objectives for the program,
21 as deemed appropriate by the Adminis-
22 trator.

23 (5) SENSING FOR ACTIVE WILDFIRE MONI-
24 TORING AND RISK MITIGATION.—The Administrator
25 shall, in collaboration with such other heads of Pro-

1 gram agencies and relevant stakeholders as the Ad-
2 ministrator considers practicable and appropriate—

3 (A) develop and demonstrate affordable
4 and deployable sensing technologies to im-
5 prove—

6 (i) monitoring of fire fuel and active
7 wildland fires;

8 (ii) wildland fire behavior models and
9 forecasts;

10 (iii) mapping efforts; and

11 (iv) the prediction of wildland fires
12 and mitigation of their negative impacts;
13 and

14 (B) in carrying out subparagraph (A)—

15 (i) conduct a pilot program to test
16 and demonstrate technologies such as in-
17 frared, microwave, and radar sensors suit-
18 able for deployment on spacecraft, aircraft,
19 uncrewed aerial systems, and ground-based
20 in situ platforms, as appropriate and prac-
21 ticable;

22 (ii) develop and demonstrate afford-
23 able and deployable sensing technologies
24 that can be transitioned to operations for

1 collection of near-real-time localized meas-
2 urements;

3 (iii) develop and demonstrate near-
4 real-time data processing, availability,
5 interoperability, and visualization, as prac-
6 ticable;

7 (iv) identify opportunities and actions
8 required, in collaboration with Program
9 agencies and relevant stakeholders, to
10 transition relevant technologies, tech-
11 niques, and data to science operations
12 upon successful demonstration of the feasi-
13 bility and scientific utility of such tech-
14 nologies, techniques, and data;

15 (v) transition demonstrated tech-
16 nologies, techniques, and data into ongo-
17 ing, operational use, including to Program
18 agencies and relevant stakeholders;

19 (vi) prioritize and facilitate, to the
20 greatest extent practicable, the dissemina-
21 tion of relevant scientific data to oper-
22 ations, including to Program agencies and
23 relevant stakeholders; and

24 (vii) consider opportunities for poten-
25 tial partnerships among industry, govern-

1 ment, National Laboratories, academic in-
2 stitutions, non-profit organizations, and
3 other relevant stakeholders.

4 (f) ADMINISTRATOR OF THE ENVIRONMENTAL PRO-
5 TECTION AGENCY.—

6 (1) RESEARCH AND DEVELOPMENT ACTIVI-
7 TIES.—The Administrator of the Environmental
8 Protection Agency shall support research and devel-
9 opment activities—

10 (A) to improve the understanding of—

11 (i) wildland fire and smoke impacts on
12 communities, and outdoor and indoor air
13 quality, watersheds and water quality, and
14 freshwater ecosystems;

15 (ii) wildland fire smoke plume charac-
16 teristics, chemical composition, chemical
17 transformation, and transport;

18 (iii) wildland fire and smoke impacts
19 on contaminant containment and remedi-
20 ation;

21 (iv) the contribution of wildland fire
22 emissions to climate-forcing emissions;

23 (v) differences between the impacts of
24 prescribed fires, as compared to other

1 wildland fires, on communities and air and
2 water quality; and

3 (vi) climate change, drought, and cli-
4 mate variability on wildland fires and
5 smoke plumes, including on smoke expo-
6 sure;

7 (B) to develop and improve tools, sensors,
8 and technologies, including databases and com-
9 putational models, to accelerate the under-
10 standing, monitoring, and prediction of wildland
11 fires and smoke exposure; and

12 (C) to better integrate observational data,
13 such as remote sensing data from academic,
14 governmental, or commercial sources, into
15 wildland fire and smoke characterization models
16 to improve modeling at finer temporal and spa-
17 tial resolutions.

18 (2) RISK REDUCTION COMMUNICATION STRATE-
19 GIES.—The Administrator shall, in coordination with
20 such other heads of Federal agencies and stake-
21 holders as the Administrator considers appropriate,
22 promote the translation of research findings under
23 this subsection and improve communication of
24 wildland fire and smoke risk reduction strategies to
25 the public.

1 (g) SECRETARY OF ENERGY.—

2 (1) RESEARCH AND DEVELOPMENT ACTIVI-
3 TIES.—The Secretary of Energy shall, in collabora-
4 tion with the National Laboratories, carry out re-
5 search and development activities to advance tools,
6 techniques, and technologies, as the Secretary con-
7 siders applicable, for—

8 (A) withstanding and addressing the cur-
9 rent and projected impacts of wildland fires on
10 energy sector infrastructure;

11 (B) providing real-time or near-time
12 awareness of the risks posed by wildland fires
13 to the operation of energy infrastructure in af-
14 fected and potentially affected areas, including
15 by leveraging the Department of Energy’s high-
16 performance computing capabilities and climate
17 and ecosystem models;

18 (C) early detection of malfunctioning, dam-
19 aged, or otherwise hazardous electrical equip-
20 ment on the transmission and distribution grid,
21 including detection of spark ignition that may
22 cause wildland fires, and assessment of com-
23 peting technologies and strategies for address-
24 ing such hazards;

1 (D) assisting with the planning, safe exe-
2 cution of, and safe and timely restoration of
3 power after emergency power shut offs relating
4 to wildland fire risk due to malfunctioning or
5 damaged grid infrastructure;

6 (E) improving electric grid and energy sec-
7 tor safety and resilience in the event of multiple
8 simultaneous or co-located weather or climate
9 events leading to extreme conditions, such as
10 extreme wind, wildland fires, extreme cold, ex-
11 treme or exceptional drought, and extreme heat;

12 (F) improving coordination between utili-
13 ties and relevant Federal agencies to enable
14 communication, information-sharing, and situa-
15 tional awareness in the event of wildland fires
16 that impact the electric grid;

17 (G) wildland fire forecasting, spread, and
18 ecosystem impact;

19 (H) considering optimal building energy ef-
20 ficiency practices and distributed renewable en-
21 ergy resource strategies, as practicable, in
22 wildland fire research; and

23 (I) considering the use of real-time satellite
24 views, sensing wind patterns, and tracking op-
25 erations of energy infrastructure service coupled

1 with artificial intelligence to quickly predict fire
2 patterns once they have ignited and use these
3 predictions to devise plans to prevent damage to
4 energy sector infrastructure.

5 (2) TRANSMISSION INFRASTRUCTURE RESIL-
6 IENCE AND RISK REDUCTION.—The Secretary shall
7 coordinate data across relevant entities, including
8 academic, governmental, National Laboratory, and
9 other stakeholders, to improve the understanding of
10 wildland fire and to promote resilience and wildland
11 fire prevention in the planning, design, construction,
12 operation, and maintenance of transmission infra-
13 structure.

14 (3) NATIONAL LABORATORIES.—The Secretary
15 shall use the capabilities of the National Labora-
16 tories, including user facilities, earth and environ-
17 mental systems modeling resources, and high-per-
18 formance computing and data analytics capabilities,
19 to improve the accuracy of efforts to understand and
20 predict wildfire behavior and occurrence and miti-
21 gate negative wildland fire impacts.

22 (4) ECONOMIC AND SOCIAL IMPLICATIONS OF
23 POWER DISRUPTIONS.—The Secretary shall foster
24 engagement between the National Laboratories and
25 practitioners, researchers, policy organizations, utili-

1 ties, and other entities, as appropriate, to under-
2 stand the economic and social implications of power
3 disruptions caused by wildland fires, particularly
4 within disadvantaged communities and regions vul-
5 nerable to wildland fires, including rural areas.

6 **SEC. 9. BUDGET ACTIVITIES.**

7 Beginning with the first submittal of the budget of
8 the President under section 1105(a) of title 31, United
9 States Code, after the date of the enactment of this Act,
10 the Director, the Director of the National Science Founda-
11 tion, the Administrator of the National Oceanic and At-
12 mospheric Administration, the Director of the Federal
13 Emergency Management Agency, the Administrator of the
14 National Aeronautics and Space Administration, the Ad-
15 ministrator of the Environmental Protection Agency, and
16 the Secretary of Energy shall each ensure that whenever
17 the budget justification materials are submitted to Con-
18 gress in support of their respective Federal agencies under
19 such section, such budget justification materials include
20 a description of the projected activities of the respective
21 agency under the Program for the fiscal year covered by
22 the budget and an estimate of the amount such agency
23 plans to spend on such activities for the relevant fiscal
24 year.

1 **SEC. 10. AUTHORIZATION OF APPROPRIATIONS FOR NA-**
2 **TIONAL WILDLAND FIRE RISK REDUCTION**
3 **PROGRAM.**

4 (a) NATIONAL INSTITUTE OF STANDARDS AND
5 TECHNOLOGY.—There are authorized to be appropriated
6 to the National Institute of Standards and Technology to
7 carry out this Act amounts as follows:

- 8 (1) \$35,800,000 for fiscal year 2022.
9 (2) \$36,100,000 for fiscal year 2023.
10 (3) \$36,400,000 for fiscal year 2024.
11 (4) \$36,700,000 for fiscal year 2025.
12 (5) \$37,100,000 for fiscal year 2026.

13 (b) NATIONAL OCEANIC AND ATMOSPHERIC ADMIN-
14 ISTRATION.—There are authorized to be appropriated to
15 the National Oceanic and Atmospheric Administration to
16 carry out this Act amounts as follows:

- 17 (1) \$200,000,000 for fiscal year 2022.
18 (2) \$215,000,000 for fiscal year 2023.
19 (3) \$220,000,000 for fiscal year 2024.
20 (4) \$230,000,000 for fiscal year 2025.
21 (5) \$250,000,000 for fiscal year 2026.

22 (c) FEDERAL EMERGENCY MANAGEMENT AGEN-
23 CY.—There are authorized to be appropriated to the Ad-
24 ministrator of the Federal Emergency Management Agen-
25 cy to carry out this Act amounts as follows:

- 26 (1) \$6,000,000 for fiscal year 2022.

1 (2) \$6,400,000 for fiscal year 2023.

2 (3) \$6,700,000 for fiscal year 2024.

3 (4) \$7,100,000 for fiscal year 2025.

4 (5) \$7,600,000 for fiscal year 2026.

5 (d) NATIONAL AERONAUTICS AND SPACE ADMINIS-
6 TRATION.—There are authorized to be appropriated to the
7 National Aeronautics and Space Administration to carry
8 out this Act amounts as follows:

9 (1) \$95,000,000 for fiscal year 2022.

10 (2) \$100,000,000 for fiscal year 2023.

11 (3) \$110,000,000 for fiscal year 2024.

12 (4) \$110,000,000 for fiscal year 2025.

13 (5) \$110,000,000 for fiscal year 2026.

14 (e) ENVIRONMENTAL PROTECTION AGENCY.—There
15 is authorized to be appropriated to the Administrator of
16 the Environmental Protection Agency to carry out this Act
17 amounts as follows:

18 (1) \$11,000,000 for fiscal year 2022.

19 (2) \$11,700,000 for fiscal year 2023.

20 (3) \$12,400,000 for fiscal year 2024.

21 (4) \$13,100,000 for fiscal year 2025.

22 (5) \$13,900,000 for fiscal year 2026.

23 (f) DEPARTMENT OF ENERGY.—There is authorized
24 to be appropriated to the Department of Energy to carry
25 out this Act amounts as follows:

- 1 (1) \$5,000,000 for fiscal year 2022.
- 2 (2) \$5,300,000 for fiscal year 2023.
- 3 (3) \$5,600,000 for fiscal year 2024.
- 4 (4) \$5,900,000 for fiscal year 2025.
- 5 (5) \$6,300,000 for fiscal year 2026.

○