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1ST SESSION

H. R. 4584

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

IN THE HOUSE OF REPRESENTATIVES

JULY 12, 2023

Ms. LOFGREN (for herself and Ms. BONAMICI) introduced the following bill; which was referred to the Committee on Science, Space, and Technology, and in addition to the Committee on Transportation and Infrastructure, 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 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”.

6 **SEC. 2. ESTABLISHMENT.**

7 The President shall establish a National Wildland
8 Fire Risk Reduction Program with the purpose of achiev-

1 ing major measurable reductions in the losses of life and
2 property from wildland fires through a coordinated Fed-
3 eral effort to—

4 (1) improve the assessment of fire environments
5 and the understanding and prediction of wildland
6 fires, associated smoke, and their impacts, includ-
7 ing—

8 (A) at the wildland-urban interface;

9 (B) on communities, buildings and other
10 infrastructure;

11 (C) on ecosystem services; and

12 (D) social and economic impacts;

13 (2) develop and encourage the adoption of
14 science-based and cost-effective measures to enhance
15 resilience to wildland fires and prevent and mitigate
16 negative impacts of wildland fires and associated
17 smoke; and

18 (3) improve the understanding and mitigation
19 of the impacts of climate change and variability on
20 wildland fire risk, frequency, and severity, and to in-
21 form paragraphs (1) and (2).

22 **SEC. 3. PROGRAM ACTIVITIES.**

23 The Program shall consist of the activities described
24 under section 7, which shall be designed—

1 (1) to support research and development, in-
2 cluding interdisciplinary research, related to fire en-
3 vironments, wildland fires, associated smoke, and
4 their impacts, in furtherance of a coordinated inter-
5 agency effort to address wildland fire risk reduction;

6 (2) to support data management and steward-
7 ship, the development and coordination of data sys-
8 tems and computational tools, and the creation of a
9 centralized, integrated data collaboration environ-
10 ment for Program agency data, to accelerate the un-
11 derstanding of fire environments, wildland fires, as-
12 sociated smoke, and their impacts, and the benefits
13 of wildland fire risk mitigation measures;

14 (3) to support the development of tools and
15 technologies, including decision support tools and
16 risk and hazard maps, to improve understanding,
17 monitoring, prediction, and mitigation of wildland
18 fires, associated smoke, and their impacts;

19 (4) to support education and training to expand
20 the number of students and researchers in areas of
21 study and research related to wildland fires;

22 (5) to accelerate the translation of research re-
23 lated to wildland fires and associated smoke into op-
24 erations to reduce risk to communities, buildings,
25 other infrastructure, and ecosystem services;

1 (6) to conduct communication and outreach re-
2 garding wildland fire science and wildland fire risk
3 mitigation, to communities, energy utilities and op-
4 erators of other critical infrastructure, and other rel-
5 evant stakeholders;

6 (7) to support research and development
7 projects funded under joint solicitations or through
8 memoranda of understanding between no fewer than
9 two agencies participating in the Program; and

10 (8) to disseminate, to the extent practicable,
11 scientific data and related products and services in
12 formats meeting shared standards to enhance the
13 interoperability, usability, and accessibility of Pro-
14 gram Agency data, including data as part of para-
15 graph (2) in order to better meet the needs of Pro-
16 gram agencies, other Federal agencies, and relevant
17 stakeholders.

18 **SEC. 4. INTERAGENCY COORDINATING COMMITTEE ON**

19 **WILDLAND FIRE RISK REDUCTION.**

20 (a) **ESTABLISHMENT.**—Not later than 90 days after
21 enactment of this Act, the Director of the Office of Science
22 and Technology Policy shall establish an Interagency Co-
23 ordinating Committee on Wildland Fire Risk Reduction
24 (in this Act referred to as “the Committee”), to be co-

1 chaired by the Director and the Director of the National
2 Institute of Standards and Technology.

3 (b) MEMBERSHIP.—In addition to the co-chairs, the
4 Committee shall be composed of—

5 (1) the Director of the National Science Foun-
6 dation;

7 (2) the Administrator of the National Oceanic
8 and Atmospheric Administration;

9 (3) the Administrator of the Federal Emer-
10 gency Management Agency;

11 (4) the United States Fire Administrator;

12 (5) the Chief of the Forest Service;

13 (6) the Administrator of the National Aero-
14 nautics and Space Administration;

15 (7) the Administrator of the Environmental
16 Protection Agency;

17 (8) the Secretary of Energy;

18 (9) the Director of the Office of Science and
19 Technology Policy;

20 (10) the Director of the Office of Management
21 and Budget;

22 (11) the Secretary of the Interior;

23 (12) the Director of United States Geological
24 Survey;

1 (13) the Secretary of Health and Human Serv-
2 ices;

3 (14) the Secretary of Defense;

4 (15) the Secretary of Housing and Urban De-
5 velopment; and

6 (16) the head of any other Federal agency that
7 the Director considers appropriate.

8 (c) MEETINGS.—The Committee shall meet not less
9 than twice a year for the first two years and then not
10 less than once a year at the call of the Director.

11 (d) GENERAL PURPOSE AND DUTIES.—The Com-
12 mittee shall oversee the planning, management, and co-
13 ordination of the Program, and solicit stakeholder input
14 on Program goals.

15 (e) STRATEGIC PLAN.—The Committee shall develop
16 and submit to Congress, not later than 1 year after enact-
17 ment, and update every 4 years thereafter, a Strategic
18 Plan for the Program that includes—

19 (1) prioritized goals for the Program, consistent
20 with the purposes of the Program as described in
21 section 2;

22 (2) short-term, mid-term, and long-term re-
23 search and development objectives to achieve those
24 goals;

1 (3) a description of the role of each Program
2 agency in achieving the prioritized goals;

3 (4) a description of how the Committee will fos-
4 ter collaboration between and among the Program
5 agencies and other Federal agencies to help meet the
6 goals of the Program;

7 (5) the methods by which progress toward the
8 goals will be assessed;

9 (6) an explanation of how the Program will fos-
10 ter the translation of research into measurable re-
11 ductions in the losses of life, property, and eco-
12 system services from wildland fires, including rec-
13 ommended outcomes and metrics for each program
14 goal and how operational Program agencies will
15 transition demonstrated technologies and research
16 findings into decision support tools and operations;

17 (7) a description of the research infrastructure,
18 including databases and computational tools, needed
19 to accomplish the research and development objec-
20 tives outlined in paragraph (2), a description of how
21 research infrastructure in existence at the time of
22 the development of the plan will be used to meet the
23 objectives, an explanation of how new research infra-
24 structure will be developed to meet the objectives,
25 and a description of how the program will implement

1 the integrated data collaboration environment per
2 section 3(2);

3 (8) a description of how Program agencies will
4 collaborate with stakeholders and take into account
5 stakeholder needs and recommendations in devel-
6 oping research and development objectives;

7 (9) recommendations on the most effective
8 means to integrate the research results into wildland
9 fire preparedness and response actions across Fed-
10 eral, State, local, Tribal, and territorial levels;

11 (10) guidance on how the Committee's rec-
12 ommendations are best used in climate adaptation
13 planning for Federal, State, local, Tribal, and terri-
14 torial entities;

15 (11) a nationally recognized, consensus-based
16 definition of wildland-urban interface and other key
17 terms and definitions relating to wildland fire, devel-
18 oped in consideration of the meaning given such
19 term in section 4(11) of the Federal Fire Prevention
20 and Control Act of 1974 (15 U.S.C. 2203(11)); and

21 (12) a description of opportunities to support
22 new areas of research and development and new
23 types of collaborations that seek to optimize building
24 and landscape design across multiple resilience
25 goals, including resilience to wildland fires and other

1 natural hazards, energy efficiency, and environ-
2 mental sustainability.

3 (f) COORDINATION WITH OTHER FEDERAL EF-
4 FORTS.—The Director shall ensure that the activities of
5 the Program are coordinated with other relevant Federal
6 initiatives as appropriate.

7 (g) NATIONAL ACADEMIES STUDY.—The Committee
8 shall assess the need for a study, or a series of studies,
9 to be conducted by the National Academies of Sciences,
10 Engineering, and Medicine, and how such a study, or se-
11 ries of studies, could help identify research areas for fur-
12 ther study and inform research objectives, including fur-
13 ther research into the interactions between climate change
14 and wildland fires. The Committee shall brief the Com-
15 mittee on Science, Space, and Technology of the House
16 of Representatives and the Committee on Commerce,
17 Science, and Transportation of the Senate on its assess-
18 ment under this subsection not later than 1 year after the
19 date of enactment of this Act.

20 (h) PROGRESS REPORT.—Not later than 18 months
21 after the date of the transmission of the first Strategic
22 Plan under subsection (e) to Congress and not less fre-
23 quently than once every two years thereafter, the Com-
24 mittee shall submit to Congress a report on the progress
25 of the Program that includes—

1 (1) a description of the activities funded under
2 the Program, a description of how those activities
3 align with the prioritized goals and research objec-
4 tives established in the Strategic Plan, and the
5 budgets, per agency, for these activities; and

6 (2) the outcomes achieved by the Program for
7 each of the goals identified in the Strategic Plan.

8 **SEC. 5. NATIONAL ADVISORY COMMITTEE ON WILDLAND**
9 **FIRE RISK REDUCTION.**

10 (a) IN GENERAL.—The Director shall establish a Na-
11 tional Advisory Committee on Wildland Fire Risk Reduc-
12 tion, consisting of not fewer than seven and not more than
13 15 members who are qualified to provide advice on
14 wildland fire risk reduction and represent related sci-
15 entific, architectural, and engineering disciplines, none of
16 whom may be employees of the Federal Government, in-
17 cluding—

18 (1) representatives of research and academic in-
19 stitutions;

20 (2) standards development organizations;

21 (3) emergency management agencies;

22 (4) State, local, and Tribal governments;

23 (5) business communities, including the insur-
24 ance industry; and

1 (6) other representatives as designated by the
2 Director.

3 (b) ASSESSMENT.—The Advisory Committee shall
4 offer assessments and recommendations on—

5 (1) trends and developments in the natural, en-
6 gineering, and social sciences and practices of
7 wildland fire risk mitigation;

8 (2) the priorities of the Program’s Strategic
9 Plan;

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

12 (4) the effectiveness of the Program in meeting
13 its purposes; and

14 (5) the need to revise the Program.

15 (c) COMPENSATION.—The members of the Advisory
16 Committee established under this section shall serve with-
17 out compensation.

18 (d) REPORTS.—At least every 2 years, the Advisory
19 Committee shall report to the Director on the assessments
20 carried out under subsection (b) and its recommendations
21 for ways to improve the Program.

22 (e) CHARTER.—Notwithstanding section 14(b)(2) of
23 the Federal Advisory Committee Act (5 U.S.C. App.), the
24 Advisory Committee shall not be required to file a charter
25 subsequent to its initial charter, filed under section 9(c)

1 of such Act, before the termination date specified in sub-
2 section (f) of this section.

3 (f) **TERMINATION.**—The Advisory Committee shall
4 terminate on September 30, 2026.

5 (g) **CONFLICT OF INTEREST.**—An Advisory Com-
6 mittee member shall recuse himself from any Advisory
7 Committee activity in which he has an actual pecuniary
8 interest.

9 **SEC. 6. GOVERNMENT ACCOUNTABILITY OFFICE REVIEW.**

10 Not later than three years after the date of the enact-
11 ment of this Act, the Comptroller General of the United
12 States shall submit to Congress a report that—

13 (1) evaluates the progress and performance of
14 the Program in establishing and making progress to-
15 ward the goals of the Program as set forth in this
16 Act; and

17 (2) includes such recommendations as the
18 Comptroller General determines are appropriate to
19 improve the Program.

20 **SEC. 7. RESPONSIBILITIES OF PROGRAM AGENCIES.**

21 (a) **NATIONAL INSTITUTE OF STANDARDS AND**
22 **TECHNOLOGY.**—The responsibilities of the Director of the
23 National Institute of Standards and Technology with re-
24 spect to the Program are as follows:

1 (1) RESEARCH AND DEVELOPMENT ACTIVI-
2 TIES.—The Director of the National Institute of
3 Standards and Technology shall—

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

9 (B) carry out research on the generation of
10 firebrands from wildland fires and on methods
11 and materials to prevent or reduce firebrand ig-
12 nition of communities, buildings, and other in-
13 frastructure;

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

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

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

1 and fire codes, standard test methods, vol-
2 untary consensus standards, and construction
3 and retrofit best practices.

4 (2) WILDLAND-URBAN INTERFACE FIRE POST-
5 INVESTIGATIONS.—The Director of the National In-
6 stitute of Standards and Technology shall—

7 (A) coordinate Federal post-wildland fire
8 investigations of fires at the wildland-urban
9 interface; and

10 (B) develop methodologies, in collaboration
11 with the Administrator of FEMA and in con-
12 sultation with relevant stakeholders, to charac-
13 terize the impact of wildland fires on commu-
14 nities and the impact of changes in building
15 and fire codes, including methodologies—

16 (i) for collecting, inventorying, and
17 analyzing information on the performance
18 of communities, buildings, and other infra-
19 structure in wildland fires; and

20 (ii) for improved collection of perti-
21 nent information from different sources,
22 including first responders, the design and
23 construction industry, insurance compa-
24 nies, and building officials.

1 (b) NATIONAL SCIENCE FOUNDATION.—As a part of
2 the Program, the Director of the National Science Foun-
3 dation shall support—

4 (1) research, including large-scale convergent
5 research, to improve the understanding and pre-
6 diction of wildland fire risks, including the condi-
7 tions that increase the likelihood of a wildland fire,
8 the behavior of wildland fires, and their impacts on
9 buildings, communities, infrastructure, ecosystems
10 and living systems;

11 (2) development and improvement of tools and
12 technologies, including databases and computational
13 models, to enable and accelerate the understanding
14 and prediction of wildland fires and their impacts;

15 (3) development of research infrastructure, as
16 appropriate, to enable and accelerate the under-
17 standing and prediction of wildland fires and their
18 impacts, including upgrades or additions to the Na-
19 tional Hazards Engineering Research Infrastructure;

20 (4) research to improve the understanding of—

21 (A) the response to wildland fire risk and
22 response messages by individuals, communities,
23 and policymakers;

24 (B) social and economic factors influencing
25 the implementation and adoption of wildland

1 fire risk reduction and response measures by in-
2 dividuals, communities, and policymakers; and

3 (C) decision making and emergency re-
4 sponse to wildland fires;

5 (5) undergraduate and graduate research op-
6 portunities and graduate and postdoctoral fellow-
7 ships and traineeships in fields of study relevant to
8 wildland fires and their impacts; and

9 (6) research to improve the understanding of
10 the impacts of climate change and climate variability
11 on wildland fires, including wildland fire risk, fre-
12 quency, and severity, and wildland fire prediction,
13 mitigation, and resilience strategies.

14 (c) NATIONAL OCEANIC AND ATMOSPHERIC ADMIN-
15 ISTRATION.—

16 (1) IN GENERAL.—The Administrator of the
17 National Oceanic and Atmospheric Administration
18 (in this subsection referred to as the “Adminis-
19 trator”) shall conduct research, observations, mod-
20 eling, forecasting, prediction, and historical analysis
21 of wildland fires to improve understanding of
22 wildland fires, and associated fire weather and
23 smoke, for the protection of life and property and
24 for the enhancement of the national economy.

1 (2) WEATHER FORECASTING AND DECISION
2 SUPPORT FOR WILDLAND FIRES.—The Adminis-
3 trator shall—

4 (A) develop and provide in consultation
5 with the relevant Federal Agencies, as the Ad-
6 ministrator determines appropriate, accurate,
7 timely, and effective warnings and forecasts of
8 wildland fires and fire weather events that en-
9 danger life and property, which may include red
10 flag warnings, operational fire weather alerts,
11 and any other warnings or alerts the Adminis-
12 trator deems appropriate;

13 (B) provide stakeholders and the public
14 with impact-based decision support services,
15 seasonal climate predictions, air quality prod-
16 ucts, and smoke forecasts; and

17 (C) provide on-site weather forecasts, sea-
18 sonal climate predictions, and other decision
19 support to wildland fire incident command
20 posts, including by deploying incident mete-
21 orologists for the duration of an extreme event.

22 (3) WILDLAND FIRE DATA.—The Administrator
23 shall contribute to and support the centralized, inte-
24 grated data collaboration environment per section

1 3(2) and any other relevant Federal data systems by
2 ensuring—

3 (A) interoperability, usability, and accessi-
4 bility of National Oceanic and Atmospheric Ad-
5 ministration data and tools related to wildland
6 fires, associated smoke, and their impacts;

7 (B) inclusion of historical wildland fire in-
8 cident and fire weather data, and identifying
9 potential gaps in such data; and

10 (C) the acquisition or collection of addi-
11 tional data that is needed to advance wildland
12 fire science.

13 (4) WILDLAND FIRE AND FIRE WEATHER SUR-
14 VEILLANCE AND OBSERVATIONS.—The Adminis-
15 trator, in coordination with Administrator of the Na-
16 tional Aeronautics and Space Administration and in
17 consultation with relevant stakeholders—

18 (A) shall leverage existing observations,
19 technologies and assets and develop or acquire
20 new technologies and data to sustain and en-
21 hance environmental observations used for
22 wildland fire prediction and detection, fire
23 weather and smoke forecasting and monitoring,
24 and post-wildland fire recovery, with a focus
25 on—

1 (i) collecting data for pre-ignition
2 analysis, such as drought, fuel and vegeta-
3 tion conditions, and soil moisture, that will
4 help predict severe wildland fire conditions
5 on subseasonal to decadal timescales;

6 (ii) supporting identification and clas-
7 sification of fire environments at the small-
8 est practical scale to determine vulner-
9 ability to wildland fires and rapid wildland
10 fire growth;

11 (iii) detecting, observing, and moni-
12 toring wildland fires and smoke;

13 (iv) supporting research on the inter-
14 action of weather and wildland fire behav-
15 ior; and

16 (v) supporting post-fire assessments
17 conducted by Program agencies and rel-
18 evant stakeholders;

19 (B) shall prioritize the ability to detect, ob-
20 serve, and monitor wildland fire and smoke in
21 its requirements for its current and future ob-
22 serving systems and commercial data purchases;
23 and

24 (C) not later than 12 months after the
25 date of enactment of this Act—

1 (i) may offer to enter into contracts
2 with one or more entities to obtain addi-
3 tional airborne and space-based data and
4 observations that may enhance or supple-
5 ment the understanding, monitoring, pre-
6 diction, and mitigation of wildland fire
7 risks, and the relevant Program activities
8 under section 3; and

9 (ii) in carrying out clause (i), shall
10 consult with private sector entities through
11 an advisory committee to identify needed
12 tools and data that can be best provided by
13 NOAA satellites and are most beneficial to
14 wildfire and smoke detection and moni-
15 toring.

16 (5) FIRE WEATHER TESTBED.—In collaboration
17 with Program agencies and other relevant stake-
18 holders, the Administrator shall establish a Fire
19 Weather Testbed to evaluate physical and social
20 science, technology, and other research to develop
21 fire weather products and services for implementa-
22 tion by relevant stakeholders.

23 (6) WILDLAND FIRE AND FIRE WEATHER RE-
24 SEARCH AND DEVELOPMENT.—The Administrator
25 shall support a wildland fire and smoke research and

1 development program that includes both physical
2 and social science with the goals of—

3 (A) improving the understanding, pre-
4 diction, detection, forecasting, monitoring, and
5 assessments of wildland fires and associated fire
6 weather and smoke;

7 (B) developing products and services to
8 meet stakeholder needs;

9 (C) transitioning physical and social
10 science research into operations;

11 (D) improving modeling and technology,
12 including coupled fire-atmosphere fire behavior
13 modeling, in consultation with relevant Federal
14 agencies;

15 (E) better understanding of links between
16 fire weather events and subseasonal-to-climate
17 impacts; and

18 (F) pursuing high-priority fire science re-
19 search needs applicable to the National Oceanic
20 and Atmospheric Administration as identified
21 by any other relevant Federal program.

22 (7) EXTRAMURAL RESEARCH.—The Adminis-
23 trator shall collaborate with and support the non-
24 Federal wildland fire research community, which in-
25 cludes institutions of higher education, private enti-

1 ties, nongovernmental organizations, and other rel-
2 evant stakeholders, by making funds available
3 through competitive grants, contracts, and coopera-
4 tive agreements. In carrying out the program under
5 this paragraph, the Administrator, in collaboration
6 with other relevant Federal agencies, may establish
7 one or more national centers for prescribed fire and
8 wildfire sciences that leverage Federal research and
9 development with university and nongovernmental
10 partnerships.

11 (8) HIGH PERFORMANCE COMPUTING.—The
12 Administrator, in consultation with the Secretary of
13 Energy, shall acquire high performance computing
14 technologies and supercomputing technologies,
15 leveraging existing resources, as practicable, to con-
16 duct research and development activities, support re-
17 search to operations under this subsection, and host
18 operational fire and smoke forecast models.

19 (d) FEDERAL EMERGENCY MANAGEMENT AGEN-
20 CY.—The Administrator of the Federal Emergency Man-
21 agement Agency, acting through the United States Fire
22 Administration, shall—

23 (1) support—

24 (A) the development of community risk as-
25 sessment tools and effective mitigation tech-

1 niques for preventing and responding to
2 wildland fires, including at the wildland-urban
3 interface;

4 (B) wildland and wildland-urban interface
5 fire and operational response-related data col-
6 lection and analysis;

7 (C) public outreach, education, and infor-
8 mation dissemination related to wildland fires
9 and wildland fire risk; and

10 (D) promotion of wildland and wildland-
11 urban interface fire preparedness and commu-
12 nity risk reduction, to include hardening the
13 wildland-urban interface through proper con-
14 struction materials, land use practices, sprin-
15 klers, assessment of State and local emergency
16 response capacity and capabilities, and other
17 tools and approaches as appropriate;

18 (2) in collaboration with the National Institute
19 of Standards and Technology, and other program
20 agencies, as appropriate, promote and assist in the
21 implementation of research results and promote fire-
22 resistant buildings, retrofit, and land use practices
23 within the design and construction industry, includ-
24 ing architects, engineers, contractors, builders, plan-
25 ners, code officials, and inspectors;

1 (3) establish and operate a wildland fire pre-
2 paredness and mitigation technical assistance pro-
3 gram to assist State, local, Tribal and territorial
4 governments in using wildland fire mitigation strate-
5 gies, including through the adoption and implemen-
6 tation of wildland and wildland-urban interface fire
7 resistant codes, standards, and land use;

8 (4) incorporate wildland and wildland-urban
9 interface fire risk mitigation and loss avoidance data
10 into the Agency's existing risk, mitigation, and loss
11 avoidance analyses;

12 (5) incorporate data on the adoption and imple-
13 mentation of wildland and wildland-urban interface
14 fire resistant codes and standards into the Agency's
15 hazard resistant code tracking resources;

16 (6) translate new information and research
17 findings into best practices to improve firefighter,
18 fire service, and allied professions training and edu-
19 cation in wildland fire response, crew deployment,
20 prevention, mitigation, resilience, and firefighting;

21 (7) conduct outreach and information dissemi-
22 nation to fire departments regarding best practices
23 for wildland and wildland-urban interface fire-
24 fighting, training, and fireground deployment;

1 (8) in collaboration with other relevant Pro-
2 gram agencies and stakeholders, develop a national
3 level, interactive and publicly accessible wildland fire
4 hazard severity map that includes community and
5 parcel level data and that can readily integrate with
6 risk gradations within wildland and wildland-urban
7 interface fire resistant codes and standards; and

8 (9) develop resources regarding best practices
9 for establishing or enhancing peer-support programs
10 within wildland fire firefighting units.

11 (e) NATIONAL AERONAUTICS AND SPACE ADMINIS-
12 TRATION.—The responsibilities of the Administrator of
13 the National Aeronautics and Space Administration (in
14 this subsection referred to as the “Administrator”) with
15 respect to the Program are as follows:

16 (1) IN GENERAL.—The Administrator shall,
17 with respect to the Program—

18 (A) support relevant basic and applied sci-
19 entific research and modeling;

20 (B) ensure the use in the Program of all
21 relevant National Aeronautics and Space Ad-
22 ministration Earth observations data for max-
23 imum utility;

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

1 (D) support the translation of research to
2 operations, including to Program agencies and
3 relevant stakeholders;

4 (E) facilitate the communication of
5 wildland fire research, knowledge, and tools to
6 relevant stakeholders; and

7 (F) use commercial data where such data
8 is available and accessible through existing Fed-
9 eral Government commercial contracts, agree-
10 ments, or other means, and purchase data that
11 is deemed necessary based on consultation with
12 other Program agencies.

13 (2) WILDLAND FIRE RESEARCH AND APPLICA-
14 TIONS.—The Administrator shall support basic and
15 applied wildland fire research and modeling activi-
16 ties, including competitively selected research, to—

17 (A) improve the understanding and pre-
18 diction of fire environments, wildland fires, as-
19 sociated smoke, and their impacts;

20 (B) improve the understanding of the im-
21 pacts of climate change and variability on
22 wildland fire risk, frequency, and severity;

23 (C) characterize the pre-fire phase and
24 fire-inducing conditions, such as soil moisture
25 and vegetative fuel availability;

1 (D) characterize the active fire phase, such
2 as fire and smoke plume mapping, fire behavior
3 and spread modeling, and domestic and global
4 fire activity;

5 (E) characterize the post-fire phase, such
6 as landscape changes, air quality, erosion, land-
7 slides, and impacts on carbon distributions in
8 forest biomass;

9 (F) contribute to advancing predictive
10 wildland fire models;

11 (G) address other relevant investigations
12 and measurements prioritized by the National
13 Academies of Sciences, Engineering, and Medi-
14 cine Decadal Survey on Earth Science and Ap-
15 plications from Space;

16 (H) improve the translation of research
17 knowledge into actionable information;

18 (I) develop research and data products, in-
19 cluding maps, decision-support information, and
20 tools, and support related training as appro-
21 priate and practicable;

22 (J) collaborate with other Program agen-
23 cies and relevant stakeholders, as appropriate,
24 on joint research and development projects, in-

1 including research grant solicitations and field
2 campaigns; and

3 (K) transition research advances to oper-
4 ations, including to Program agencies and rel-
5 evant stakeholders, as practicable.

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

8 (A) identify, from the National Aero-
9 nautics and Space Administration’s Earth
10 science data systems, data, including combined
11 data products and relevant commercial data
12 sets, that can contribute to improving the un-
13 derstanding, monitoring, prediction, and mitiga-
14 tion of wildland fires and their impacts, includ-
15 ing data related to fire weather, plume dynam-
16 ics, smoke and fire behavior, impacts of climate
17 change and variability, land and property
18 burned, wildlife and ecosystem destruction,
19 among other areas;

20 (B) prioritize the dissemination of data
21 identified or obtained under this subparagraph
22 to the widest extent practicable to support rel-
23 evant research and operational stakeholders;

24 (C) consider opportunities to support the
25 Program under section 2 and the Program ac-

1 activities under section 3 when planning and de-
2 veloping Earth observation satellites, instru-
3 ments, and airborne measurement platforms;

4 (D) identify opportunities, in collaboration
5 with Program agencies and relevant stake-
6 holders, to obtain additional airborne and
7 space-based data and observations that may en-
8 hance or supplement the understanding, moni-
9 toring, prediction, and mitigation of wildland
10 fire risks, and the relevant Program activities
11 under section 3, and consider such options as
12 commercial solutions, including commercial
13 data purchases, prize authority, academic part-
14 nerships, and ground-based or space-based in-
15 struments, as practicable and appropriate; and

16 (E) contribute to and support, to the max-
17 imum extent practicable, the centralized, inte-
18 grated data collaboration environment per sec-
19 tion 3(2) and any other relevant interagency
20 data systems, by collecting, organizing, and in-
21 tegrating the National Aeronautics and Space
22 Administration's scientific data, data systems,
23 and computational tools related to wildland
24 fires, associated smoke, and their impacts, and
25 by enhancing the interoperability, useability,

1 and accessibility of National Aeronautics and
2 Space Administration’s scientific data, data sys-
3 tems, and computational tools, including—

4 (i) observations and available real-
5 time and near-real-time measurements;

6 (ii) derived science and data products,
7 such as fuel conditions, risk and spread
8 maps, and data products to represent the
9 wildland-urban interface;

10 (iii) relevant historical and archival
11 observations, measurements, and derived
12 science and data products; and

13 (iv) other relevant decision support
14 and information tools.

15 (4) NOVEL TOOLS FOR ACTIVE WILDLAND FIRE
16 MONITORING AND RISK MITIGATION.—The Adminis-
17 trator, in collaboration with other Program agencies
18 and relevant stakeholders shall apply novel tools and
19 technologies to support active wildland fire research,
20 monitoring, mitigation, and risk reduction, as prac-
21 ticable and appropriate. In particular, the Adminis-
22 trator shall:

23 (A) Establish, in collaboration with the
24 heads of other relevant Federal agencies, a pro-
25 gram to develop and demonstrate a unified con-

1 cept of operations for the safe and effective de-
2 ployment of diverse air capabilities in active
3 wildland fire monitoring, mitigation, and risk
4 reduction. The objectives of the Program shall
5 be to—

6 (i) develop and demonstrate a
7 wildland fire airspace operations system
8 accounting for piloted aircraft, uncrewed
9 aerial systems, and other new and emerg-
10 ing capabilities such as autonomous and
11 high-altitude assets;

12 (ii) develop an interoperable commu-
13 nications strategy;

14 (iii) develop a roadmap for the on-
15 ramping of new technologies, capabilities,
16 or entities;

17 (iv) identify additional development,
18 testing, and demonstration that would be
19 required to expand the scale of operations;

20 (v) identify actions that would be re-
21 quired to transition the unified concept of
22 operations in subparagraph (A) into ongo-
23 ing, operational use; and

24 (vi) other objectives, as deemed appro-
25 priate by the Administrator.

1 (B) Develop and demonstrate affordable
2 and deployable sensing technologies, in con-
3 sultation with other Program agencies and rel-
4 evant stakeholders, to improve the monitoring
5 of fire fuel and active wildland fires, wildland
6 fire behavior models and forecast, mapping ef-
7 forts, and the prediction and mitigation of
8 wildland fires and their impacts. The Adminis-
9 trator shall—

10 (i) test and demonstrate technologies
11 such as infrared, microwave, and active
12 sensors suitable for deployment on space-
13 craft, aircraft, uncrewed aerial systems,
14 and ground-based and in situ platforms, as
15 appropriate and practicable;

16 (ii) develop and demonstrate afford-
17 able and deployable sensing technologies
18 that can be transitioned to operations for
19 collection of near-real-time localized meas-
20 urements;

21 (iii) develop and demonstrate near-
22 real-time data processing, availability,
23 interoperability, and visualization, as prac-
24 ticable;

1 (iv) identify opportunities and actions
2 required, in collaboration with Program
3 agencies and relevant stakeholders, to
4 transition relevant technologies, tech-
5 niques, and data to science operations,
6 upon successful demonstration of the feasi-
7 bility and scientific utility of the sensors
8 and data;

9 (v) transition demonstrated tech-
10 nologies, techniques, and data into ongo-
11 ing, operational use, including to Program
12 agencies and relevant stakeholders;

13 (vi) prioritize and facilitate, to the
14 greatest extent practicable, the dissemina-
15 tion of these science data to operations, in-
16 cluding to Program agencies and relevant
17 stakeholders; and

18 (vii) consider opportunities for poten-
19 tial partnerships, including commercial
20 data purchases, among industry, govern-
21 ment, academic institutions, and non-profit
22 organizations and other relevant stake-
23 holders in carrying out clauses (i) through
24 (vi), as appropriate and practicable.

1 (f) ENVIRONMENTAL PROTECTION AGENCY.—The
2 Administrator of the Environmental Protection Agency
3 shall support environmental research and development ac-
4 tivities to—

5 (1) improve the understanding of—

6 (A) wildland fire smoke plume characteris-
7 tics, chemical transformation, chemical com-
8 position, and transport;

9 (B) wildland fire and smoke impacts to
10 contaminant containment and remediation;

11 (C) the contribution of wildland fire emis-
12 sions to climate forcing emissions;

13 (D) differences between the impacts of pre-
14 scribed fires compared to other wildland fires
15 on communities and air and water quality; and

16 (E) climate change and variability on
17 wildland fires and smoke plumes, including on
18 smoke exposure;

19 (2) develop and improve tools, sensors, and
20 technologies including databases and computational
21 models, to accelerate the understanding, monitoring,
22 and prediction of wildland fires and smoke exposure;

23 (3) better integrate observational data into
24 wildland fire and smoke characterization models to

1 improve modeling at finer temporal and spatial reso-
2 lution; and

3 (4) improve communication of wildland fire and
4 smoke risk reduction strategies to the public in co-
5 ordination with relevant stakeholders and other Fed-
6 eral agencies.

7 (g) DEPARTMENT OF ENERGY.—The Secretary of
8 Energy shall carry out research and development activities
9 to—

10 (1) create tools, techniques, and technologies
11 for—

12 (A) withstanding and addressing the cur-
13 rent and projected impact of wildland fires on
14 energy sector infrastructure;

15 (B) providing real-time or near-time
16 awareness of the risks posed by wildland fires
17 to the operation of energy infrastructure in af-
18 fected and potentially affected areas, including
19 by leveraging the Department’s high-perform-
20 ance computing capabilities and climate and
21 ecosystem models;

22 (C) enabling early detection of, and assess-
23 ment of competing technologies and strategies
24 for addressing, malfunctioning electrical equip-

1 ment on the transmission and distribution grid,
2 including spark ignition causing wildland fires;

3 (D) assisting with the planning, safe exe-
4 cution of, and safe and timely restoration of
5 power after emergency power shut offs fol-
6 lowing wildland fires started by grid infrastruc-
7 ture;

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

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

19 (2) coordinate data and computational re-
20 sources across relevant entities to improve our un-
21 derstanding of wildland fires and to promote resil-
22 ience and wildland fire prevention in the planning,
23 design, construction, operation, and maintenance of
24 transmission infrastructure;

1 (3) consider optimal building energy efficiency
2 and weatherization practices, as practicable, in
3 wildland fire research;

4 (4) utilize the Department of Energy’s National
5 Laboratory capabilities, including user facilities,
6 earth and environmental systems modeling re-
7 sources, and high-performance computing and data
8 analytics capabilities, to improve the accuracy of ef-
9 forts to understand and predict wildland fire behav-
10 ior and occurrence and mitigate wildland fire im-
11 pacts; and

12 (5) foster engagement between the National
13 Laboratories and practitioners, researchers, policy
14 organizations, utilities, and other entities the Sec-
15 retary determines to be appropriate to understand
16 the economic and social implications of power dis-
17 ruptions caused by wildland fires, particularly within
18 disadvantaged communities and regions vulnerable
19 to wildland fires, including rural areas.

20 **SEC. 8. BUDGET ACTIVITIES.**

21 The Director of the National Institute of Standards
22 and Technology, the Director of the National Science
23 Foundation, the Administrator of the National Oceanic
24 and Atmospheric Administration, the Director of the Fed-
25 eral Emergency Management Agency, the Administrator

1 of the National Aeronautics and Space Administration,
2 the Administrator of the Environmental Protection Agen-
3 cy, and the Secretary of Energy shall each include in the
4 annual budget request to Congress of each respective
5 agency a description of the projected activities of such
6 agency under the Program for the fiscal year covered by
7 the budget request and an estimate of the amount such
8 agency plans to spend on such activities for the relevant
9 fiscal year.

10 **SEC. 9. DEFINITIONS.**

11 In this Act:

12 (1) **DIRECTOR.**—The term “Director” means
13 the Director of the Office of Science and Technology
14 Policy.

15 (2) **PROGRAM.**—The term “Program” means
16 the Program established under section 2.

17 (3) **PROGRAM AGENCIES.**—The term “Program
18 agencies” means any Federal agency with respon-
19 sibilities under the Program.

20 (4) **STAKEHOLDERS.**—The term “stakeholders”
21 means any public or private organization engaged in
22 addressing wildland fires, associated smoke, and
23 their impacts, and shall include relevant Federal
24 agencies, States, territories, Tribes, State and local
25 governments, businesses, not-for-profit organiza-

1 tions, including national standards and building code
2 organizations, firefighting departments and organi-
3 zations, academia, and other users of wildland fire
4 data products.

5 (5) WILDLAND FIRE.—The term “wildland
6 fire” means any non-structure fire that occurs in
7 vegetation or natural fuels and includes wildfires
8 and prescribed fires.

9 (6) FIRE ENVIRONMENT.—The term “fire envi-
10 ronment” means surrounding conditions, influences,
11 and modifying forces of topography, fuel, and weath-
12 er that determine fire behavior.

13 **SEC. 10. AUTHORIZATION OF APPROPRIATIONS.**

14 (a) NATIONAL INSTITUTE OF STANDARDS AND
15 TECHNOLOGY.—There are authorized to be appropriated
16 to the National Institute of Standards and Technology for
17 carrying out this Act—

18 (1) \$35,800,000 for fiscal year 2024;

19 (2) \$36,100,000 for fiscal year 2025;

20 (3) \$36,400,000 for fiscal year 2026;

21 (4) \$36,700,000 for fiscal year 2027; and

22 (5) \$37,100,000 for fiscal year 2028.

23 (b) NATIONAL SCIENCE FOUNDATION.—There are
24 authorized to be appropriated to the National Science
25 Foundation for carrying out this Act—

- 1 (1) \$50,000,000 for fiscal year 2024;
- 2 (2) \$53,000,000 for fiscal year 2025;
- 3 (3) \$56,200,000 for fiscal year 2026;
- 4 (4) \$59,600,000 for fiscal year 2027; and
- 5 (5) \$63,100,000 for fiscal year 2028.

6 (c) NATIONAL OCEANIC AND ATMOSPHERIC ADMIN-
7 ISTRATION.—There are authorized to be appropriated to
8 the National Oceanic and Atmospheric Administration for
9 carrying out this Act—

- 10 (1) \$200,000,000 for fiscal year 2024;
- 11 (2) \$215,000,000 for fiscal year 2025;
- 12 (3) \$220,000,000 for fiscal year 2026;
- 13 (4) \$230,000,000 for fiscal year 2027; and
- 14 (5) \$250,000,000 for fiscal year 2028.

15 (d) NATIONAL AERONAUTICS AND SPACE ADMINIS-
16 TRATION.—There are authorized to be appropriated to the
17 National Aeronautics and Space Administration for car-
18 rying out this Act—

- 19 (1) \$95,000,000 for fiscal year 2024;
- 20 (2) \$100,000,000 for fiscal year 2025;
- 21 (3) \$110,000,000 for fiscal year 2026;
- 22 (4) \$110,000,000 for fiscal year 2027; and
- 23 (5) \$110,000,000 for fiscal year 2028.

1 (e) ENVIRONMENTAL PROTECTION AGENCY.—There
2 are authorized to be appropriated to the Environmental
3 Protection Agency for carrying out this Act—

4 (1) \$11,000,000 for fiscal year 2024;

5 (2) \$11,700,000 for fiscal year 2025;

6 (3) \$12,400,000 for fiscal year 2026;

7 (4) \$13,100,000 for fiscal year 2027; and

8 (5) \$13,900,000 for fiscal year 2028.

9 (f) FEDERAL EMERGENCY MANAGEMENT AGENCY.—
10 There are authorized to be appropriated to the Federal
11 Emergency Management Agency for carrying out this
12 Act—

13 (1) \$6,000,000 for fiscal year 2024;

14 (2) \$6,400,000 for fiscal year 2025;

15 (3) \$6,700,000 for fiscal year 2026;

16 (4) \$7,100,000 for fiscal year 2027; and

17 (5) \$7,600,000 for fiscal year 2028.

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