

115TH CONGRESS  
2D SESSION

# S. 2290

To improve wildfire management operations and the safety of firefighters  
and communities with the best available technology.

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IN THE SENATE OF THE UNITED STATES

JANUARY 10, 2018

Ms. CANTWELL (for herself and Mr. GARDNER) introduced the following bill;  
which was read twice and referred to the Committee on Energy and Nat-  
ural Resources

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## A BILL

To improve wildfire management operations and the safety  
of firefighters and communities with the best available  
technology.

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; TABLE OF CONTENTS.**

4 (a) SHORT TITLE.—This Act may be cited as the  
5 “Wildfire Management Technology Advancement Act of  
6 2018”.

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

Sec. 1. Short title; table of contents.

Sec. 2. Purpose.

- Sec. 3. Definitions.
- Sec. 4. Unmanned aircraft systems.
- Sec. 5. Location systems for wildland firefighters.
- Sec. 6. Fire risk maps.
- Sec. 7. Real-time warnings.
- Sec. 8. Smoke projections from active wildland fires.
- Sec. 9. Reverse-911 telecommunications systems.
- Sec. 10. Firefighter injuries database.
- Sec. 11. Rapid response erosion database.
- Sec. 12. Research for effectiveness and standards.
- Sec. 13. Predicting where wildfires will start.
- Sec. 14. Study on aircraft operating at night.
- Sec. 15. Termination of authority.

1 **SEC. 2. PURPOSE.**

2       The purpose of this Act is to build on the successes  
 3 of the Federal Wildland Fire Management Policy and Na-  
 4 tional Cohesive Fire Strategy established pursuant to sec-  
 5 tion 503 of the FLAME Act of 2009 (43 U.S.C. 1748b)  
 6 (as in effect on the day before the date of enactment of  
 7 this Act), as necessary to protect the safety of firefighters  
 8 and communities from wildfires on public land and Na-  
 9 tional Forest System land created from the public domain,  
 10 by—

- 11           (1) reducing the damages, particularly to  
 12           houses, from wildfires;
- 13           (2) preparing forests and communities for  
 14           wildfires;
- 15           (3) increasing the safety of firefighters; and
- 16           (4) containing costs and increasing the account-  
 17           ability of decisions relating to wildland fires.

18 **SEC. 3. DEFINITIONS.**

19       In this Act:

1           (1) BURN SEVERITY MAP.—The term “burn se-  
2           verity map” means a map created by the Secretary  
3           concerned that depicts the changes in land-cover and  
4           soil properties caused by a wildland fire.

5           (2) SECRETARIES.—The term “Secretaries”  
6           means—

7                     (A) the Secretary of the Interior; and

8                     (B) the Secretary of Agriculture.

9           (3) SECRETARY CONCERNED.—The term “Sec-  
10          retary concerned” means—

11                    (A) the Secretary of the Interior, with re-  
12                    spect to activities under the Department of the  
13                    Interior; and

14                    (B) the Secretary of Agriculture, with re-  
15                    spect to activities under the Department of Ag-  
16                    riculture.

17           (4) WILDFIRE.—The term “wildfire” means  
18           any nonstructure fire, other than a prescribed fire,  
19           occurring in vegetation or natural fuels on—

20                    (A) public land; or

21                    (B) National Forest System land created  
22                    from the public domain.

23           (5) WILDLAND-URBAN INTERFACE.—

24                    (A) IN GENERAL.—The term “wildland-  
25                    urban interface” has the meaning given the

1 term in section 101 of the Healthy Forests Res-  
2 toration Act of 2003 (16 U.S.C. 6511).

3 (B) EXCLUSION.—The term “wildland-  
4 urban interface” does not include—

5 (i) any forest reserve not created from  
6 the public domain; or

7 (ii) any national grassland or land uti-  
8 lization project administered under title III  
9 of the Bankhead-Jones Farm Tenant Act  
10 (7 U.S.C. 1010 et seq.).

11 **SEC. 4. UNMANNED AIRCRAFT SYSTEMS.**

12 (a) DEFINITIONS.—In this section:

13 (1) RESTRICTED AIRSPACE.—The term “re-  
14 stricted airspace” means an area for which the Ad-  
15 ministrator of the Federal Aviation Administration  
16 has established a temporary flight restriction for a  
17 wildland fire.

18 (2) UNMANNED AIRCRAFT; UNMANNED AIR-  
19 CRAFT SYSTEM.—The terms “unmanned aircraft”  
20 and “unmanned aircraft system” have the meaning  
21 given those terms in section 331 of the FAA Mod-  
22 ernization and Reform Act of 2012 (Public Law  
23 112–95; 49 U.S.C. 40101 note).

24 (b) OFFICIAL USE.—

1           (1) AUTHORIZATION.—Subject to paragraph  
2           (4), Federal and State wildland firefighting agencies  
3           (including designees of the agencies) may operate  
4           unmanned aircraft systems in managing wildland  
5           fires.

6           (2) DEVELOPMENT OF PROTOCOLS AND  
7           PLANS.—Subject to the availability of appropria-  
8           tions, not later than March 1, 2019, Federal  
9           wildland firefighting agencies, in coordination with  
10          State wildland firefighting agencies, shall develop  
11          protocols and plans for the use of unmanned aircraft  
12          systems for surveillance, initial and extended attack,  
13          and incident management team use, as appropriate,  
14          including for the development of real-time maps of  
15          the location of wildland fires.

16          (3) DEADLINE.—Subject to the availability of  
17          appropriations, not later than May 1, 2020, and in  
18          accordance with the protocols and plans developed  
19          under paragraph (2), the Secretaries shall begin to  
20          equip firefighting personnel with unmanned aircraft  
21          systems to develop real-time maps, detect spot fires,  
22          assess fire behavior, develop tactical and strategic  
23          firefighting plans, position fire resources, and en-  
24          hance firefighter safety.

1           (4) LIMITATION ON OPERATION.—Unmanned  
2 aircraft may only be operated under this section in  
3 accordance with regulations and other authorities of  
4 the Administrator of the Federal Aviation Adminis-  
5 tration.

6           (c) UNOFFICIAL USE.—Not later than May 1, 2018,  
7 the Secretaries, in consultation with other appropriate  
8 Federal agencies, shall seek to reduce the number of con-  
9 flicts between personal-use unmanned aircraft and  
10 wildland fire operations by—

11           (1) enhancing public awareness of the potential  
12 for those conflicts;

13           (2) establishing a protocol to notify a user of an  
14 unmanned aircraft system operating within or adja-  
15 cent to restricted airspace;

16           (3) employing a system to ground an unmanned  
17 aircraft that is operating within restricted airspace;  
18 and

19           (4) encouraging the Administrator of the Fed-  
20 eral Aviation Administration to enforce penalties  
21 available under section 46320 of title 49, United  
22 States Code, when a user operates an unmanned air-  
23 craft system in a restricted airspace.

1 **SEC. 5. LOCATION SYSTEMS FOR WILDLAND FIRE-**  
2 **FIGHTERS.**

3 (a) IN GENERAL.—Subject to the availability of ap-  
4 propriations, not later than March 1, 2019, the Secre-  
5 taries shall jointly develop and operate a tracking system  
6 (referred to in this section as the “system”) to remotely  
7 locate the positions of fire resources assigned to Federal  
8 Type 1 Wildland Fire Incident Management Teams.

9 (b) REQUIREMENTS.—The system shall—

10 (1) use technology available to the Secretaries  
11 to remotely track the location of an active resource,  
12 such as a Global Positioning System;

13 (2) depict the location of each fire resource on  
14 the maps developed under section 4(b)(2); and

15 (3) operate continuously during the period any  
16 firefighting personnel are assigned to the applicable  
17 Federal wildland fire.

18 (c) OPERATION.—The Secretary concerned shall—

19 (1) operate the system during a wildland fire to  
20 increase—

21 (A) the safety of employees, officers, and  
22 contractors; and

23 (B) the effectiveness of the management of  
24 the wildland fire; and

1           (2) conduct training and maintain a culture  
2           such that an employee, officer, or contractor shall  
3           not rely on the system for safety.

4 **SEC. 6. FIRE RISK MAPS.**

5           Subject to the availability of appropriations, the Sec-  
6           retaries, in consultation with other appropriate Federal  
7           agencies, may assist a State, unit of local government, or  
8           nongovernmental organization that is seeking technical or  
9           financial support to develop or refine maps, at a scale and  
10          resolution to be useful for local governments, that depict  
11          the relative risk of wildfires for land in the wildland-urban  
12          interface.

13 **SEC. 7. REAL-TIME WARNINGS.**

14          (a) WILDLAND FIRE PROTOCOL.—The Secretaries  
15          shall ensure that the activities conducted by the Secre-  
16          taries relating to wildland fire safely achieve reasonable  
17          objectives while minimizing firefighter exposure to the low-  
18          est level necessary to accomplish those objectives.

19          (b) WILDFIRE DECISION SUPPORT SYSTEM.—

20                 (1) IN GENERAL.—The Secretaries shall estab-  
21                 lish a system to track and monitor decisions made  
22                 when managing a wildfire.

23                 (2) COMPONENTS OF THE SYSTEM.—The sys-  
24                 tem established under paragraph (1) shall be able to  
25                 alert the Secretaries if—



1 (A) unusual costs are incurred;

2 (B) an action is undertaken that would  
3 likely endanger the safety of a firefighter; or

4 (C) a decision regarding the management  
5 of a wildfire deviates from—

6 (i) a protocol established by the Secre-  
7 taries, including the requirement under  
8 subsection (a); or

9 (ii) a spatial fire management plan or  
10 fire management plan of the Secretary  
11 concerned.

12 **SEC. 8. SMOKE PROJECTIONS FROM ACTIVE WILDLAND**  
13 **FIRES.**

14 (a) IN GENERAL.—The Secretaries shall establish a  
15 program, to be known as the “Interagency Wildland Fire  
16 Air Quality Response Program”, under which the Sec-  
17 retary concerned—

18 (1) to the maximum extent practicable, shall as-  
19 sign a team of air resource advisors to a type 1 inci-  
20 dent management team managing a wildland fire;  
21 and

22 (2) may assign a team of air resource advisors  
23 to a type 2 incident management team managing a  
24 wildland fire.

1 (b) DUTY.—An air resource advisor assigned under  
2 subsection (a) shall use a model to project—

3 (1) how much smoke will be generated from the  
4 wildland fire; and

5 (2) where the impacts of the smoke will occur.

6 (c) PUBLIC DISSEMINATION.—At least once each  
7 day, the Secretaries shall make available to the public the  
8 projections generated under subsection (b).

9 **SEC. 9. REVERSE-911 TELECOMMUNICATIONS SYSTEMS.**

10 (a) IN GENERAL.—The Administrator of the Federal  
11 Emergency Management Agency (referred to in this sec-  
12 tion as the “Administrator”) may use funds appropriated  
13 for the emergency management performance grant pro-  
14 gram under section 662 of the Post-Katrina Emergency  
15 Management Reform Act of 2006 (6 U.S.C. 762) to make  
16 grants to States to provide funding to communities on the  
17 list of at-risk communities developed pursuant to title IV  
18 of the Department of the Interior and Related Appropria-  
19 tions Act, 2001 (Public Law 106–291; 114 Stat. 1006)  
20 (referred to in this section as “at-risk communities”) for  
21 the cost-shared installation of a reverse-911 system.

22 (b) NON-FEDERAL SHARE.—The non-Federal share  
23 of the cost of installing a reverse-911 system using a grant  
24 under this section shall be 50 percent.

1 (c) OUTCOME-BASED PERFORMANCE MEASURE.—  
2 Beginning in fiscal year 2019, as part of the budget sub-  
3 mission of the President, the Administrator shall report  
4 the percentage of at-risk communities that possess a re-  
5 verse-911 system.

6 **SEC. 10. FIREFIGHTER INJURIES DATABASE.**

7 (a) IN GENERAL.—Section 9(a) of the Federal Fire  
8 Prevention and Control Act of 1974 (15 U.S.C. 2208(a))  
9 is amended—

10 (1) in paragraph (2), by inserting “, categorized  
11 by the type of fire” after “such injuries and deaths”;

12 (2) in paragraph (3), by striking “activities;”  
13 and inserting “activities, including—

14 “(A) all injuries sustained by a firefighter  
15 and treated by a doctor, categorized by the type  
16 of firefighter;

17 “(B) all deaths sustained while undergoing  
18 a pack test or while preparing for a work capac-  
19 ity;

20 “(C) all injuries or deaths resulting from  
21 vehicle accidents; and

22 “(D) all injuries or deaths resulting from  
23 aircraft crashes;”;

24 (3) in paragraph (7), by striking “and” after  
25 the semicolon at the end;

1           (4) by redesignating paragraph (8) as para-  
2           graph (10); and

3           (5) by inserting after paragraph (7) the fol-  
4           lowing:

5           “(8) the total costs incurred in the management  
6           of each wildland fire managed by a Type 1 or 2 Inci-  
7           dent Management Team;

8           “(9) the total number of structures lost during  
9           wildfires; and”.

10          (b) USE OF EXISTING DATA GATHERING AND ANAL-  
11          YSIS ORGANIZATIONS.—Section 9(b)(3) of the Federal  
12          Fire Prevention and Control Act of 1974 (15 U.S.C.  
13          2208(b)(3)) is amended by inserting “, including the Cen-  
14          ter for Firefighter Injury Research and Safety Trends”  
15          after “public and private”.

16          (c) MEDICAL PRIVACY OF FIREFIGHTERS.—Section  
17          9 of the Federal Fire Prevention and Control Act of 1974  
18          (15 U.S.C. 2208) is amended by adding at the end the  
19          following:

20          “(e) MEDICAL PRIVACY OF FIREFIGHTERS.—The  
21          collection, storage, and transfer of any medical data col-  
22          lected under this section shall be conducted in accordance  
23          with—

24                  “(1) the privacy regulations promulgated under  
25                  section 264(c) of the Health Insurance Portability

1 and Accountability Act of 1996 (42 U.S.C. 1320d–  
2 2 note; Public Law 104–191); and

3 “(2) other applicable regulations, including  
4 parts 160, 162, and 164 of title 45, Code of Federal  
5 Regulations (as in effect on the date of enactment  
6 of this subsection).”.

7 **SEC. 11. RAPID RESPONSE EROSION DATABASE.**

8 (a) IN GENERAL.—The Secretaries, in coordination  
9 with the Administrator of the National Aeronautics and  
10 Space Administration, shall establish and maintain a data-  
11 base, to be known as the “Rapid Response Erosion Data-  
12 base” (referred to in this section as the “Database”).

13 (b) OPEN-SOURCE DATABASE.—

14 (1) AVAILABILITY.—The Secretaries shall make  
15 the Database (including the original source code)—

16 (A) web-based; and

17 (B) available without charge.

18 (2) COMPONENTS.—The Database shall provide  
19 for—

20 (A) the automatic incorporation into a  
21 burn severity map of spatial data relating to  
22 vegetation, soils, and elevation; and

23 (B) the generation of a composite map  
24 that can be used by the Secretary concerned to  
25 model the effectiveness of treatments in the

1           burned area to prevent flooding, erosion, and  
2           landslides under a range of weather scenarios.

3           (c) USE.—The Secretary concerned shall use, to the  
4 maximum extent practicable, the Database in developing  
5 recommendations for emergency stabilization treatments  
6 or modifications to drainage structures to protect values-  
7 at-risk following a large wildland fire.

8 **SEC. 12. RESEARCH FOR EFFECTIVENESS AND STANDARDS.**

9           (a) IN GENERAL.—To assess the effectiveness of fire  
10 protection strategies, the Secretary of Commerce, acting  
11 through the Director of the National Institute of Stand-  
12 ards and Technology (referred to in this section as the  
13 “Secretary”), shall—

14           (1) establish a national team to collect data fol-  
15 lowing wildfires in the wildland-urban interface; and

16           (2) implement a research plan to link economic  
17 outcomes with wildfire mitigation actions by—

18           (A) understanding the relative contribution  
19 of fuels configuration, weather, and terrain;

20           (B) quantifying the cost of providing the  
21 current level of fire protection;

22           (C) understanding the losses resulting  
23 from wildfires in the wildland-urban interface;  
24 and

1 (D) using performance metrics to assess  
2 the effectiveness of current designs, materials,  
3 and technologies.

4 (b) RESPONSE-TIME THRESHOLD.—The Secretary  
5 shall develop optimal time-to-response standards for a  
6 firefighting agency to reach a wildfire in the wildland-  
7 urban interface.

8 (c) COORDINATION; PARTNERSHIPS.—In carrying  
9 out this section, the Secretary shall—

10 (1) coordinate with the Secretaries; and

11 (2) partner with administrators of firefighting  
12 agencies that protect communities from wildfires.

13 **SEC. 13. PREDICTING WHERE WILDFIRES WILL START.**

14 (a) IN GENERAL.—The Secretaries, in coordination  
15 with the Administrator of the National Aeronautics and  
16 Space Administration, acting through the Director of the  
17 Jet Propulsion Laboratory, and the Secretary of Energy,  
18 through the capabilities and assets located at the National  
19 Laboratories, shall establish and maintain a system to pre-  
20 dict the locations of future wildfires for fire-prone areas  
21 of the United States, to be known as the “Fire Danger  
22 Assessment System” (referred to in this section as the  
23 “System”).

24 (b) COMPONENTS.—The System shall use a combina-  
25 tion of soil moisture levels, precipitation patterns, topog-

1 raphy, fuels growth and availability, ignition risks, and  
2 temperatures to calculate probabilities of wildfires igniting  
3 or burning in fire-prone areas of the United States.

4 (c) USE.—Not later than May 1, 2019, the Secre-  
5 taries shall use the System for purposes of developing any  
6 wildland fire potential forecasts.

7 **SEC. 14. STUDY ON AIRCRAFT OPERATING AT NIGHT.**

8 (a) STUDY.—Not later than September 30, 2019, the  
9 Secretaries shall conduct a study to determine the feasi-  
10 bility of operating aircraft at night when managing  
11 wildland fires.

12 (b) PARTNERSHIPS.—In carrying out this section, the  
13 Secretary may enter into a cooperative agreement with the  
14 Center of Excellence for Advanced Technology Aerial Fire-  
15 fighting.

16 **SEC. 15. TERMINATION OF AUTHORITY.**

17 The authority provided by this Act terminates on the  
18 date that is 10 years after the date of enactment of this  
19 Act.

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