



Department of Interior - Office of Aviation Services - March 19, 2019

S.47- John D. Dingell, Jr. Conservation, Management, and Recreation Act

SEC. 1114. Wildfire Technology Modernization

This informational document provides language from the **Wildfire Technology Modernization Section** of the [subject bill](#), signed on March 12, 2019.

Where applicable, notes related to previous Interior and interagency work and accomplishments in the field of Unmanned Aircraft Systems (UAS) and wildfire are included for general awareness.

Embedded hyperlinks provide access to reference documents, all of which are available on the publicly accessible [DOI UAS Website](#) and [attendant pages](#).

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SEC. 1114. WILDFIRE TECHNOLOGY MODERNIZATION.

(a) Purpose.--The purpose of this section is to promote the use of the best available technology to enhance the effective and cost-efficient response to wildfires--

- (1) to meet applicable protection objectives; and
- (2) to increase the safety of--
 - (A) firefighters; and
 - (B) the public.

(b) Definitions.--In this section:

- (1) Secretaries.--The term ``Secretaries'' means--
 - (A) the Secretary of Agriculture; and
 - (B) the Secretary.

(2) Secretary concerned.--The term ``Secretary concerned'' means--

- (A) the Secretary of Agriculture, with respect to activities under the Department of Agriculture; and
- (B) the Secretary, with respect to activities under the Department of the Interior.

(c) Unmanned Aircraft Systems.--

(1) Definitions.--In this subsection, the terms ``unmanned aircraft'' and ``unmanned aircraft system'' have the meanings given those terms in section 44801 of title 49, United States Code.

(2) Establishment of program.--Not later than 180 days after the date of enactment of this Act, the Secretary, in consultation with the Secretary of Agriculture, **shall establish a research, development, and testing program**, or expand an applicable existing program, **to assess unmanned aircraft system technologies, including optionally piloted aircraft, across the full range of wildland fire management operations** in order to accelerate the deployment and integration of those technologies into the operations of the Secretaries.

NOTE: In [2015, Interior published a 2015-2020 UAS Integration Strategy](#) that covered wildfire (traditionally 35% of Interior's flight hours) as well as UAS use across the rest of its diverse mission portfolio. This strategy will be updated for 2021-2026 in 2020. In 2015, DOI and USDA Forest Service (USDA-FS) developed, signed (by 8 SES's in DOI & USDA-FS), and began implementing a comprehensive [UAS Technology Research, Development, and Test Plan](#). Multiple flight test demonstrations of new wildfire UAS technology were successfully conducted: [2015 Paradise Fire BVLOS Test](#), [2015 Tepee Springs Fire Mapping Test](#), [2015 Boise \(Lucky Peak Helibase\) Optionally-Piloted Aircraft Demonstration](#) (follow-on from [2014 OPH test at the NYS FAA UAS Test Site](#)).

These were followed-on with similar development and [flight test demonstration initiatives in aerial ignition in 2016](#). Interior, in collaboration with USDA-FS also conducted operational flight tests of small UAS in 2016 ([North Fire UAS Testing and Evaluation Report](#)) and 2017 ([Boundary Fire UAS Test and Evaluation Report](#), [Young Fire Test and Evaluation Report](#), [Umpqua North Fire Complex Report](#)).

In 2018, [follow-on aerial ignition tests](#) were conducted ([Taylor Creek Fire Operational Test and Evaluation Field Report](#)). Interior's Office of Aviation Services (OAS) also conducted successful [flight tests of emergency equipment delivery](#) from a UAS that could be used to aid injured firefighters.

Also in 2018, Interior conducted operational evaluations of [first-ever contracted UAS on wildfire](#), publishing a [briefing paper on the results](#) and representative [mission video](#).

NOTE: Relative to Optionally Piloted Aircraft (OPA), in 2017 OAS examined and published a paper on the [Relationship of Fire Discovery Times on the Timeliness of Aerial Firefighting Support](#) that examined the opportunity for OPA to provide expanded Initial Attack capabilities outside traditional aerial firefighting hours. In 2018, OAS published a comprehensive background information paper on OPA: [A Primer on a Potentially Game-Changing Technology that Promises to Save Lives, Property, and Money in Wildland Fire](#).

(3) Expanding use of unmanned aircraft systems on wildfires.— In carrying out the program established under paragraph (2), the Secretaries, in coordination with the Federal Aviation Administration, State wildland firefighting agencies, and other relevant Federal agencies, shall enter into an agreement under which the Secretaries shall **develop consistent protocols and plans for the use on wildland fires of unmanned aircraft system technologies**, including for the development of real-time maps of the location of wildland fires.

NOTE: In 2011, DOI published its first [dedicated UAS policy \(OPM-11\)](#), which [supplemented existing Interior aviation policy, most of which was applicable to both manned and unmanned aircraft](#).

In 2013, the [FAA officially accepted the DOI UAS pilot written knowledge test as a means of complying with FAA requirements](#). Interior's knowledge test went on to inform development of the FAA Part 107 knowledge test.

In 2015, [FAA granted expanded UAS operating authority in Class G airspace](#). This authority was [updated in 2017](#).

Also in 2015, the FAA also granted Interior [Beyond Visual Line of Sight \(BVLOS\) authority within a Temporary Flight Restriction \(TFR\) during emergency situations supporting fire and search and rescue operations](#).

In 2016, based on the results of previous research, test, and evaluation flights, [Interior, USDA-FS, and State partners](#) developed and first published the [Interagency Fire Unmanned Aircraft Systems Operations Guide](#). It is regularly updated based on operational feedback from the field and the results of follow-on research, test, and evaluation efforts.

In 2018, [FAA expanded Interior's authority to include provisions for Extended Visual Line of Sight \(EVLOS\) and BVLOS operations in Class G airspace](#). The positive impacts of this authority were outlined in the briefing paper: [Positive Impacts of DOI's Expanded VLOS-EVLOS-BVLOS Authorities](#).

In 2018, [USDA-FS officially accepted Interior's Office of Aviation Services \(OAS\) remote pilot training and approval as well as Interior's approval of unmanned aircraft for use by USDA-FS](#). [USDA-FS also approved OAS UAS Inspector Pilots as Interagency Unmanned Aircraft Inspector Pilots](#) in 2018.

From [2015-2018, Interior successfully conducted 2,237 UAS flights on 274 individual wildfires](#). 2019 projections are for 3,000 UAS flights on 500 wildfires.

(d) **Location Systems for Wildland Firefighters.--**

(1) In general.--Not later than 2 years after the date of enactment of this Act, subject to the availability of appropriations, the Secretaries, in coordination with State wildland firefighting agencies, shall jointly develop and operate a tracking system (referred to in this subsection as the ``system'') to remotely locate the positions of fire resources for use by wildland firefighters, including, at a minimum, any fire resources assigned to Federal type 1 wildland fire incident management teams.

(2) Requirements.--The system shall--

(A) use the most practical and effective technology available to the Secretaries to remotely track the location of an active resource, such as a Global Positioning System;

(B) depict the location of each fire resource on the applicable maps developed under subsection (c) (3);

(C) operate continuously during the period for which any firefighting personnel are assigned to the applicable Federal wildland fire; and

(D) be subject to such terms and conditions as the Secretary concerned determines necessary for the effective implementation of the system.

(3) Operation.--The Secretary concerned shall--

(A) before commencing operation of the system--

(i) conduct not fewer than 2 pilot projects relating to the operation, management, and effectiveness of the system; and

(ii) review the results of those pilot projects;

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

(C) establish procedures for the collection, storage, and transfer of data collected under this subsection to ensure--

(i) data security; and

(ii) **the privacy of wildland fire personnel.**

NOTE: In response to the [2015 Presidential Memorandum: Promoting Economic Competitiveness While Safeguarding Privacy, Civil Rights, and Civil Liberties in Domestic Use of Unmanned Aircraft Systems](#), Interior published a [Privacy Impact Assessment specifically for UAS](#), designed to provide transparency and protect privacy.

In 2018, OAS developed and published the concept paper: [In Your Hand and On Demand – A Concept for Enhanced Awareness, Effectiveness, & Safety](#) that outlined the concept of using currently available technology and UAS operating authorities to provide wildland firefighters and incident managers with enhanced situational awareness, effectiveness, and safety.

(e) Wildland Fire Decision Support.--

(1) Protocol.--To the maximum extent practicable, the

Secretaries shall ensure that wildland fire management activities conducted by the Secretaries, or conducted jointly by the Secretaries and State wildland firefighting agencies, achieve compliance with applicable incident management objectives in a manner that--

(A) minimizes firefighter exposure to the lowest level necessary; and

(B) reduces overall costs of wildfire incidents.

(2) Wildfire decision support system.--

(A) In general.--The Secretaries, in coordination with

State wildland firefighting agencies, shall establish a system or expand an existing system to track and monitor decisions made by the Secretaries or State wildland firefighting agencies in managing wildfires.

(B) Components.--The system established or expanded under subparagraph (A) shall be able to alert the Secretaries if--

(i) unusual costs are incurred;

(ii) an action to be carried out would likely--
(I) endanger the safety of a firefighter; or
(II) be ineffective in meeting an applicable suppression or protection goal; or
(iii) a decision regarding the management of a wildfire deviates from--
(I) an applicable protocol established by the Secretaries, including the requirement under paragraph (1); or
(II) an applicable spatial fire management plan or fire management plan of the Secretary concerned.

(f) Smoke Projections From Active Wildland Fires.--The Secretaries shall establish a program, to be known as the ``Interagency Wildland Fire Air Quality Response Program'', under which the Secretary concerned--

(1) to the maximum extent practicable, shall assign 1 or more air resource advisors to a type 1 incident management team managing a Federal wildland fire; and
(2) may assign 1 or more air resource advisors to a type 2 incident management team managing a wildland fire.

(g) Firefighter Injuries Database.--

(1) In general.--Section 9(a) of the Federal Fire Prevention and Control Act of 1974 (15 U.S.C. 2208(a)) is amended--

(A) in paragraph (2), by inserting `` , categorized by the type of fire'' after ``such injuries and deaths''; and

(B) in paragraph (3), by striking ``activities;'' and inserting the following: ``activities, including--

``(A) all injuries sustained by a firefighter and treated by a doctor, categorized by the type of firefighter;

``(B) all deaths sustained while undergoing a pack test or preparing for a work capacity;

``(C) all injuries or deaths resulting from vehicle accidents; and

``(D) all injuries or deaths resulting from aircraft crashes;''.

(2) Use of existing data gathering and analysis organizations.--Section 9(b)(3) of the Federal Fire Prevention and Control Act of 1974 (15 U.S.C. 2208(b)(3)) is amended by inserting `` , including the Center for Firefighter Injury Research and Safety Trends'' after ``public and private''.

(3) Medical privacy of firefighters.--Section 9 of the Federal Fire Prevention and Control Act of 1974 (15 U.S.C. 2208) is amended by adding at the end the following:

``(e) Medical Privacy of Firefighters.--The collection, storage, and transfer of any medical data collected under this section shall be conducted in accordance with--

``(1) the privacy regulations promulgated under section 264(c) of the Health Insurance Portability and Accountability Act of 1996(42 U.S.C. 1320d-2 note; Public Law 104-191); and

``(2) other applicable regulations, including parts 160, 162, and 164 of title 45, Code of Federal Regulations (as in effect on the date of enactment of this subsection).''.

(h) Rapid Response Erosion Database.--

(1) In general.--The Secretaries, in consultation with the Administrator of the National Aeronautics and Space Administration and the Secretary of Commerce, shall establish and maintain a database, to be known as the ``Rapid Response Erosion Database'' (referred to in this subsection as the ``Database'').

(2) Open-source database.--

(A) Availability.--The Secretaries shall make the Database (including the original source code)--

(i) web-based; and

(ii) available without charge.

(B) Components.--To the maximum extent practicable, the Database shall provide for--

(i) the automatic incorporation of spatial data relating to vegetation, soils, and elevation into an applicable map created by the Secretary

concerned that depicts the changes in land-cover and soil properties caused by a wildland fire; and

(ii) the generation of a composite map that can be used by the Secretary concerned to model the effectiveness of treatments in the burned area to prevent flooding, erosion, and landslides under a range of weather scenarios.

(3) Use.--The Secretary concerned shall use the Database, as applicable, in developing recommendations for emergency stabilization treatments or modifications to drainage structures to protect values-at-risk following a wildland fire.

(4) Coordination.--The Secretaries may share the Database, and any results generated in using the Database, with any State or unit of local government.

(i) Predicting Where Wildfires Will Start.--

(1) In general.--The Secretaries, in consultation with the Administrator of the National Aeronautics and Space Administration, the Secretary of Energy, and the Secretary of Commerce, through the capabilities and assets located at the National Laboratories, shall establish and maintain a system to predict the locations of future wildfires for fire-prone areas of the United States.

(2) Cooperation; components.--The system established under paragraph (1) shall be based on, and seek to enhance, similar systems in existence on the date of enactment of this Act, including the Fire Danger Assessment System.

(3) Use in forecasts.--Not later than 1 year after the date of enactment of this Act, the Secretaries shall use the system established under paragraph (1), to the maximum extent practicable, for purposes of developing any wildland fire potential forecasts.

(4) Coordination.--The Secretaries may share the system established under paragraph (1), and any results generated in using the system, with any State or unit of local government.

(j) Termination of Authority.--The authority provided by this section terminates on the date that is 10 years after the date of enactment of this Act.

(k) Savings Clause.--Nothing in this section--

(1) requires the Secretary concerned to establish a new program, system, or database to replace an existing program, system, or database that meets the objectives of this section; or

(2) precludes the Secretary concerned from using existing or future technology that--

(A) is more efficient, safer, or better meets the needs of firefighters, other personnel, or the public; and

(B) meets the objectives of this section.