

Date of Hearing: April 7, 2025

ASSEMBLY COMMITTEE ON EMERGENCY MANAGEMENT

Rhodesia Ransom, Chair

AB 270 (Petrie-Norris) – As Amended April 3, 2025

SUBJECT: Department of Forestry and Fire Protection: autonomous firefighting pilot project

SUMMARY: Requires the Department of Forestry and Fire Protection (CAL FIRE) to establish a pilot project to provide a testbed firefighting helicopter equipped with autonomous aerial suppression technology and the necessary activities, as specified, to make the helicopter operational. Specifically, **this bill:**

- 1) Requires CAL FIRE to establish a pilot project that equips California with the nation's first testbed firefighting helicopter equipped with autonomous aerial suppression technology and the associated configuration, familiarization, and training activities necessary for operation.
- 2) Requires CAL FIRE to invite local, state, tribal, and federal fire agencies and personnel to participate in the familiarization and training activities of the pilot project.
- 3) Requires CAL FIRE, no later than 60 days after the pilot project concludes, to convene leading fire professionals in California, as specified, to assess the performance of the pilot project and determine how to incorporate autonomous aerial suppression technology into existing state wildfire mitigation efforts if the pilot project meets its objectives.
- 4) Makes declarative and legislative findings, as specified.

EXISTING LAW:

1. Establishes Cal FIRE within the California Natural Resources Agency, and establishes various programs for the prevention and suppression of wildfires at Cal FIRE, as provided. (Public Resources Code § 701)
2. Requires the CAL FIRE Director to use eligible federal funds to supplement appropriated state funds dedicated for the purpose of replacing CAL FIRE's aging helicopter fleet (Public Resources Code § 4148).
3. Establishes the Office of Wildfire Technology Research and Development within Cal FIRE. (Government Code § 8586.8)
4. Provides the Office of Wildfire Technology Research and Development shall serve as the central organizing hub for the state government's identification of emerging wildfire technologies and is under the direct control of the Director of Forestry and Fire Protection. (Government Code § 8586.8)
5. Provides the Office of Wildfire Technology Research and Development shall undertake, but is not limited to, the following activities:

- (a) Develop a balanced, multimodal research and development program designed to identify, research, test, and evaluate emerging technologies and tools designed to improve the state's preparation for, and response to, wildfires in the state, including, but not limited to, fire retardants and ground, aerial, mobile, portable, communication, predictive modeling, software, or stationary equipment used for California's wildfire preparedness and by first responders.
- (b) Consult with public, private, and nonprofit entities in identifying new technologies tools, software, and other advances in wildfire preparedness and response.
- (c) Make recommendations to state and local agencies on the most effective and useful technologies and tools for procurement. (Government Code § 8586.8)

FISCAL EFFECT: Unknown. A fiscal committee has not heard this bill.

COMMENTS:

Purpose of the bill: According to the author, "By incorporating the use of autonomous aerial firefighting technology into our state's existing wildfire response efforts, AB 270 will revolutionize the way we approach wildfire management and emergency response. With the power of autonomy and AI, both crewed and uncrewed missions can be carried out with unmatched precision and efficiency. By empowering pilots and fire agencies with these cutting-edge tools, we are ensuring faster, safer, and more effective responses to wildfires and other critical emergencies—24/7. This innovation will not only modernize our response efforts but also playing a vital role in safeguarding lives, property, infrastructure, and our environment."

Equity Impact: According to the author's office, "This bill would create additional emergency response resources that will allow our fire safety crews to safely and efficiently fight wildfires in all communities, including underserved, rural, and marginalized communities."

Anticipated Time and Cost: In an interview with Politico, the author stated the pilot project would last 3 years and cost \$15 million.

Background: The only autonomous firefighting technology currently offered on the market is through a partnership between Sikorsky, a Lockheed Martin company, and Rain, an autonomous aerial wildfire containment technology startup backed by Tesla, SpaceX, and Solar City. The product operates by integrating artificial intelligence (AI) into a Black Hawk helicopter for wildfire suppression. The AI system autonomously pilots the aircraft, determines optimal water drop locations, and conducts refilling operations. The helicopter can operate autonomously or with a crew at any time of day. However, current AI capabilities are limited to using an external water bucket with just over 300 gallons capacity. Rain stated a water tank with a greater capacity is in development yet remains in the simulation phase and has not been tested in real-world conditions. They also noted that helicopters can be piloted with or without AI and still used for regular helicopter missions.

Wildfire Background: Wildfires are a severe and growing threat to lives, property, and infrastructure in California. The confluence of a changing climate, urbanization, and constraints on forest management has added urgency to the need to enhance our strategy to address this threat. In Cal FIRE's 2020 Fire Siege Report, the Director states, "At the end of 2020, we closed the book on, arguably, the worst fire year ever experienced on the west coast, and specifically in

California. Since 2015, the term “unprecedented” has been used year over year as conditions have worsened, and the operational reality of a changing climate sets in.

According to data from CAL FIRE, 15 of California's 20 most destructive fires have occurred in the past decade. Collectively, these most recent fires have resulted in 180 deaths and the loss of 57,483 structures (homes, outbuildings, and commercial properties).

While fewer wildfires threatened California in 2023 due to the increased number of weather events and atmospheric rivers, the vegetative growth from the significant rainfall contributed to devastating wildfires in 2024 and 2025. In 2024, the Park Fire became the fourth-largest fire in California's history. Despite aggressive initial attack suppression efforts, the fire rapidly expanded, ultimately consuming 429,603 acres across Butte and Tehama counties. The Park Fire led to the destruction of 709 structures and damage to 54 others, prompting widespread evacuations and the temporary closure of Lassen Volcanic National Park. In 2025, Los Angeles County experienced two of the most destructive wildfires in history (discussed below).

As the state continues adapting to climate change, including the increasing likelihood of extreme Fire Weather Index conditions, it will be essential to establish programs and policies that help reduce the risk of loss during a fire.

2025 Los Angeles Fires: In January 2025, Los Angeles County experienced the second and third most destructive fires in California history: the Palisades Fire and Eaton Fire. AccuWeather estimates these fires' total damage and economic loss to be between \$250 billion and \$275 billion.

At its height, the fires placed an estimated 331,335 people on an evacuation advisory, with nearly 192,000 residents facing mandatory evacuation and roughly 140,000 subject to warnings. The blazes burned a combined 37,469 acres and leveled entire communities in the Pacific Palisades and Altadena neighborhoods of LA County.

The Eaton Fire became the second most destructive fire in California history after destroying 9,418 buildings, 1,074 structures damaged, and 17 confirmed civilian fatalities. The Palisades Fire is the third most destructive fire in state history, with 6,837 structures destroyed, 973 structures damaged, and 12 confirmed civilian fatalities.

As firefighters were battling the largest conflagrations, additional fires broke out in the Los Angeles area. Crews were able to stop the forward spread and contain the blazes. These fires included the Lidia, Archer, Woodley, Sunset, Kenneth, Hurst, and Auto fires, which burned close to 2,400 acres between them. Two weeks after the initial fires, the Hughes Fire began near Castaic Lake in northern Los Angeles County on January 22 and grew to over 10,000 acres. Firefighters fully contained the fire on January 30 after covering 10,425 acres.

CAL FIRE Aviation Program: CAL FIRE's aviation program is critical in wildfire response, deploying a fleet of air tankers, helicopters, and uncrewed aerial systems (UAS) to support ground crews, enhance situational awareness, and improve firefighting efficiency. With over 60 fixed-wing and rotary aircraft, CAL FIRE operates the world's largest civil aerial firefighting fleet, responding to thousands of fires each year while aiming to contain 95% of wildfires to 10 acres or less.

The fleet includes Grumman S-2T Airtankers, Bell UH-1H Super Huey Helicopters, Sikorsky S-70i Helicopters, North American OV-10A (& 1 D Model) Bronco Air Tactical Aircraft and C-130 Hercules Airtankers. Strategically stationed at 14 air tanker bases, 10 CAL FIRE helitack bases, and one joint base with the San Diego County Sheriff, these aircraft can reach fires in the most remote State Responsibility Area (SRA) within approximately 20 minutes.

In 2020, CAL FIRE formalized a UAS and Emerging Technologies Division and continues to integrate autonomous aircraft capabilities into real-time wildfire suppression efforts, requiring deployment and coordination with existing air and ground operations. CAL FIRE currently operates over 180 UAS statewide to support all-hazard emergency incident response and continues to expand capacity in the wildland fire suppression arena to include critical needs such as aerial ignition and payload delivery.

Modular Aerial Fire Fighting Systems (MAFFS): The Modular Airborne Firefighting System (MAFFS) was established in 1971 as a collaboration between the U.S. Forest Service and the Department of Defense to integrate military C-130 aircraft into national wildfire response efforts. When contracted airtankers are unavailable or fully committed, California can use MAFFS-equipped C-130s to provide additional aerial firefighting support to strengthen wildfire suppression efforts.

Office of Wildfire Technology Research and Development : The Office of Wildfire Technology Research and Development (OWTRD) was established within the California Department of Forestry and Fire Protection (CAL FIRE) by Senate Bill 109 (Dodd, Ch. 239, Stats. 2021) to serve as California's central organizing hub for identifying emerging wildfire technologies. The OWTRD has developed a balanced multimodal research and development program designed to identify, research, test, and evaluate emerging technologies and tools designed to improve the State's preparation for, and response to, wildfires within the State. Senate Bill 109 also established the Wildfire Technology Research and Development Advisory Review Board (Advisory Board). The Advisory Board is required to submit its findings annually to the Governor and Legislature beginning in January 2024 and every year thereafter until the scheduled date of repeal, January 1, 2029.

Advisory Board Members:

- Secretary of the Natural Resources Agency, or their designee.
- The Director of the Office of Emergency Services, or their designee.
- The Director of the Department of Forestry and Fire Protection, or their designee.
- One representative from academia involved in the field of wildfire research and technology development (Appointed by the Governor).
- One representative from the private wildfire response science, engineering, and technology industry (Appointed by the Governor).
- One representative from local government (Appointed by the Governor).
- One member of the public employed as a first responder (Appointed by the Governor).
- One member who is appointed by the Senate for a term of four years who is involved in victim services.
- One member who is appointed by the Assembly for a term of four years who is involved in the protection of privacy and civil liberties.

According to Cal FIRE, “In 2023, the Office prioritized recruitment, hiring, and training of personnel, and created a bespoke database and management system to support its work. The Office conducted internal outreach within CAL FIRE and external outreach with federal and local agencies, private vendors, academic institutions, and other relevant entities to raise awareness of its mission and identify priority areas of focus related to emerging technologies. Current focus areas include last-mile connectivity, dismounted firefighter location, enhanced situational awareness, firefighter health and safety, and data availability and integration. The Office conducted evaluations and field tests in these areas, including in Jackson Demonstration State Forest in Mendocino County, and expects to work with the Advisory Board to fine-tune these focus areas in the coming year.” The office is also now prioritizing Artificial Intelligence (AI) and IoT (internet of things) technology. AI can be used to improve wildfire suppression by detecting fires early, predicting their occurrence, analyzing satellite imagery and environmental data, providing real-time mapping and tracking, guiding firefighting efforts, deploying AI-powered drones for aerial surveys, and aiding in post-fire analysis and restoration. IoT improves wildland firefighting by enhancing situational awareness, firefighter safety, and resource management through connected technologies. IoT capabilities are only expected to grow as this technology continues to emerge and be implemented in this field.

Additionally, the office developed business processes for capturing, screening, and evaluating prospective emerging technologies, which will inform product development and innovation by communicating the specific needs of the wildfire industry to entities developing emerging technologies.

CALFIRE and Cutting Edge Firefighting Technology Partnerships and Collaborations:

CAL FIRE is collaborating with the Federal Aviation Administration (FAA), National Aeronautics and Space Administration (NASA), industry stakeholders, and various commercial and private emerging technology organizations to integrate autonomous operations throughout California, the national airspace, the wildland fire environment, and low earth orbit.

ALERTCalifornia: Run by the University of California San Diego, the ALERTCalifornia program is a network of over 1,144 monitoring cameras and sensor arrays (as of January 2025) that provide real-time data that informs public safety decisions. In response to increasing wildfire frequency and severity, ALERTCalifornia collaborated with CAL FIRE and DigitalPath to develop an AI-based wildfire detection system. This system, deployed in all 21 CAL FIRE Dispatch Centers, enhances early fire detection, tracks fire behavior, and improves situational awareness for evacuation planning. During its first season, the AI detected over 1,200 fires, identifying incidents faster than 911 calls more than 30% of the time. The technology is particularly effective in remote areas and nighttime conditions. ALERTCalifornia also collects and analyzes data on the broader impacts of wildfires, including post-fire debris flows, flooding, erosion, and air and water quality effects. This information contributes to a deeper understanding of wildfire consequences and informs long-term mitigation and recovery efforts. Additionally, this program was recognized by *TIME* as one of the best inventions of 2023.

AI Fire Modeling: Since 2019, CAL FIRE has partnered with Technosylva, a wildfire science and technology company, to run predictive analytics through AI-powered simulations. The system analyzes historical fire data, weather patterns, and vegetation types while integrating satellite and weather station data to model fire behavior and identify

potential hotspots. These insights help allocate resources more efficiently, implement preventive measures in high-risk areas, and improve wildfire response planning.

Satellites and AI: In December 2024, CALFIRE announced a collaboration with the Earth Fire Alliance on an initiative called FireSat to deploy a network of 52 satellites in low Earth orbit to enhance wildfire detection, mapping, monitoring, and forecasting. Equipped with high-definition cameras and AI-powered image processing, this satellite constellation will provide updated images multiple times an hour, allowing fire managers to track fires in near real-time and detect fires as small as a pickup truck. Beyond firefighting, the system will also contribute to research on the broader environmental impacts of wildfires.

Portable Airspace Management System: In March 2025, the National Aeronautics and Space Administration (NASA), under their Advanced Capabilities for Emergency Response Operations (ACERO) project, announced a successful demonstration of their Portable Airspace Management System (PAMS), a wildland fire technology that enables firefighting aerial operations at night and in low visibility conditions. Using airspace management software and communication tools, PAMS enables real-time flight coordination and prevents mid-air collisions. CAL FIRE collaborated with NASA by attending various testing events and giving feedback on PAMS functionality and integration into operations as well as offering improvements.

Double Referral: Should this bill be approved, it will be referred to the Assembly Committee on Privacy and Consumer Protection.

Prior and Related Legislation:

SB 896 (Dodd), Chapter 928, Statutes of 2024. The Generative Artificial Intelligence Accountability Act establishes guidelines for the use of generative AI within state government operations, as specified.

AB 609 (Papan, 2023) would have required Cal FIRE to submit a report to the Legislature that assesses the feasibility to conduct an evaluation of innovative new aerial firefighting technologies. (Held on the Senate Appropriations Committee Suspense File)

SB 109 (Dodd) Chapter 239, Statutes of 2021 established, within Cal FIRE, the Office of Wildfire Technology Research and Development and the Advisory Review Board to conduct research and testing on emerging technologies to prevent, predict, and fight wildfires.

AB 275 (Petrie-Norris) of this session, would require the Office of Emergency Services to establish, on or before December 31, 2026, a working group to study the feasibility of making the SoCal Edison-funded Quick Reaction Force firefighting helitanker program permanent (Currently in Assembly Committee on Emergency Management)

Arguments in Support: The California Forestry Association writes in support, “New technologies that allow for early detection and suppression, are especially valuable in minimizing the impacts of wildfire on the natural environment and wildfire-vulnerable communities that millions of Californians call home. The rapid advances in AI and drone technologies are revolutionizing many aspects of our everyday lives and show the potential to enhance disaster preparedness,

response, and recovery. By establishing a pilot program, AB 270 will incorporate this promising new technology into California’s firefighting toolbox.”

Arguments in Opposition: Oakland Privacy writes in opposition, “We do not support the deployment of AI – and particularly not technologies with significant privacy and security risks – on communities without prior consent. However if the legislature desires to proceed with making Californians be beta testers for autonomous firefighting helicopters without more community conversations, we ask for clearly defined goals, metrics, reporting, and transparency .The term “testbed” needs to be defined, and we recommend it be replaced with “sandbox” which provides a platform to test nascent technologies in a controlled environment.”

REGISTERED SUPPORT / OPPOSITION:**Support**

California Forestry Association

Opposition

Oakland Privacy

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