OFFICE OF WILDFIRE TECHNOLOGY RESEARCH AND DEVELOPMENT

2025 Annual Report

Government Code Section 8586.8

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Wade Crowfoot, Secretary for Natural Resources | California Natural Resources Agency
Gavin Newsom, Governor | State of California

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Executive Summary

The Office of Wildfire Technology Research and Development (OWTRD) serves as the central organizing hub for the State government's identification of emerging wildfire technologies. The devastation caused by wildfires in California needs a variety of approaches to address the challenge, including the identification of new technologies. Some new technologies are bringing efficiencies to the efforts to prevent and mitigate wildfires.

In 2025, the OWTRD continued to work with public, private, and non-profit entities in the wildfire community who share a common interest in mitigating the effects of wildfires. The Wildfire Technology Research and Development Review Advisory Board (Advisory Board) advises the OWTRD and meets quarterly to review OWTRD activities. The 2025 Annual Report presents the findings of the Advisory Board for the calendar year.

This report includes updates on the areas of focus developed through extensive outreach across the fire industry, a summary of the activities of the OWTRD and Advisory Board, and other technological efforts in the wildfire community. Activities include legislation introduced to extend the repeal date of the OWTRD and Advisory Board by two years to January 1, 2031, a summary of the Dismounted Firefighter/Dismounted Resources Tracking Proof of Concept pilot, an overview of the FireSat Protoflight launch in March 2025, and description of significant upgrades to the CAL FIRE website integrating additional data into a more robust public incident page.

Legislative Mandate

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 (SB) 109 (Dodd, Ch. 239, Stats. 2021) to serve as the central organizing hub for the State government's identification of emerging wildfire technologies. The OWTRD is tasked with developing 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. SB 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 January 1, 2029. Assembly Bill (AB) 441 (Hadwick), which would extend the date of repeal of the OWTRD and Advisory Board to 2031, was introduced in the 2025-26 legislative session. AB 441 was held in the Senate in 2025 and may be acted upon in 2026.

Wildfire Technology Research and Development Review Advisory Board Members

- Secretary of the Natural Resources Agency, or their designee.
  - Designee*:* Lisa Lien-Mager, Deputy Secretary, Forest and Wildfire Resilience
- The Director of the Governor's Office of Emergency Services, or their designee.
  - Designee: Brian Marshall, Chief, Fire and Rescue
- The Director of the Department of Forestry and Fire Protection, or their designee.
  - Designee*:* Scott Gregory, Deputy Director, Technology
- One representative from academia involved in the field of wildfire research and technology development (Appointed by the Governor).
  - İlkay Altıntaş, University of California San Diego, Chief Data Science Officer
- One representative from the private wildfire response science, engineering, and technology industry (Appointed by the Governor).
  - Ronald Eguchi, ImageCat, President and CEO
- One representative from local government (Appointed by the Governor).
  - Ashish Kakkad, San Diego County Sheriff's Office, Chief Technology Officer,
- One member of the public employed as a first responder (Appointed by the Governor).
  - Andreas Johansson, Corona Fire Department, Fire Captain
- One member who is appointed by the Senate for a term of four years, who is involved in victim services.
  - Kendall Jarvis, Legal Aid of Sonoma County, Lead Disaster Relief Attorney
- 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.
  - (Vacant)

Introduction

Fire season is no longer a season; it is a year-round event. The calendar year 2025 started in an unusually busy manner. The Palisades and Eaton fires in Southern California started on January 7, 2025, and rank among the most deadly and destructive in California history. These two fires collectively burned 37,728 acres, destroyed 16,246 structures, and took 31 lives.[1] Due to their destructiveness, these fires received significant attention. Simultaneously, there were several other wildfire incidents. In the first four months of 2025, out of 50 wildfire incidents reported over 10 acres, only nine grew beyond 100 acres.[2] The overwhelming majority of fires are extinguished before they become major events.

CAL FIRE stops over 90% of fires in its jurisdiction before they get to 10 acres.[3] This demonstrates the hard work and coordination of first responders and the increasing effectiveness of the tools and technologies that support them.

Large wildfires continue to claim lives and cause billions of dollars in damage, reaffirming that prevention and mitigation of wildfires is a Statewide concern that requires public agencies and communities to work together. The OWTRD collaborates with entities that share a common interest in mitigating the damaging effects of wildfires and continued these efforts in 2025.

To fulfill its legislative mandate, the OWTRD continues to engage in the following:

- Interact with and receive recommendations from the Advisory Board.
- Consult with public, private, and non-profit entities working to identify and develop new technologies in the wildfire community.
- Coordinate with subject matter experts to provide input aimed at benefitting multi-agency wildfire related initiatives.
- Participate in wildfire technology focused conventions and other events related to relevant wildfire-related technologies.

The activities of the OWTRD are subject to review by the Advisory Board, which is convened four times per year and serves in an advisory capacity. The OWTRD supports the Advisory Board with meeting logistics and planning, meeting content development, and facilitation of robust discussions related to their various areas of expertise and priorities among Advisory Board Members.

The OWTRD compiles Advisory Board findings in the Annual Report delivered to the Office of the Governor and Legislature. The 2025 Annual Report presents the findings of the Advisory Board for the 2025 calendar year and includes updates on areas of focus and other efforts in the wildfire community. In addition, AB 441, which would extend the date of repeal of the OWTRD and Advisory Board from 2029 to 2031, was introduced in the 2025-26 legislative session and may be acted upon in 2026.[4]

Updates also include a summary of the Dismounted Firefighter/Dismounted Resources Tracking Proof of Concept pilot, the FireSat Protoflight launch in March 2025, and significant upgrades to the CAL FIRE website integrating additional data into a more robust public incident page.

The OWTRD meets with innovators in the wildfire technology community and maintains awareness of emerging technologies to provide end-user subject matter expertise to innovators. This uniquely positions the OWTRD to connect innovators with relevant organizations for collaboration. However, the OWTRD does not provide internal contacts to public, private, and non-profit entities for marketing or sales. Additionally, the OWTRD does not fund the development of external technologies.

Many new and emerging technologies in the wildfire industry fall short across several critical areas: they often lack reliability, interoperability with other systems, and cost-effectiveness. Many do not scale and require significant time and effort to implement and train personnel. Additionally, many solutions are designed without a meaningful human oversight component, limiting their practical utility in high-risk, dynamic environments. Of

the many individuals and organizations that submit ideas to the OWTRD, a small number are feasible for further study or engagement by the fire industry.

To ensure developing technology is helpful for end users, technology innovators must engage with end users to fully understand current challenges related to cost, scale, interoperability, training, and useful impact on current practices to make useful technology for the wildfire community. The OWTRD and the Advisory Board continue to interact with individuals and organizations innovating in the wildfire community with the intent of facilitating meaningful innovation toward preventing and mitigating wildfires.

Areas of Focus

The wildfire community is engaged in many efforts to prevent and mitigate the damaging effects of wildfire. The OWTRD focuses on emerging technologies that may serve a need within the wildfire community and could benefit from additional attention.

Areas of focus include:

- Enhanced Situational Awareness
- Firefighter Health and Safety
- Data Availability and Integration

Enhanced Situational Awareness
Enhanced situational awareness encompasses a large category of technologies that address topics such as last mile connectivity, dismounted resource tracking, and decision support tools.

Last mile connectivity remains a challenge. The ability to transmit voice and data to end users in remote areas is essential. Current technologies that expand beyond standard cellular networks can be cost prohibitive and lack the necessary coverage for large-scale incidents. Despite these challenges, the ongoing evolution and enhancement of low Earth orbit (LEO) satellites are making an impact on remote location communication. Fire agencies are deploying LEO technologies on mobile equipment and vehicles with some success establishing connections in remote areas on an as-needed basis.

The proliferation of LEO satellites has also enabled the development of limited “direct-to-cell” capabilities. Direct-to-cell technology works with existing cellular hardware, eliminating the need for new or additional equipment or system upgrades. Direct-to-cell services were employed by several telecommunications companies during the January 2025 Los Angeles area fires.[5] Capabilities are currently limited to the Short Message Service (SMS) Protocol on newer devices through a few service providers. Significant efforts are underway in the telecommunications industry to bring this technology to scale across multiple devices and providers to eliminate gaps in cellular network coverage in remote areas or where the terrestrial cellular network is damaged. The OWTRD anticipates these advances will

significantly transform capabilities for both last mile connectivity and dismounted resource tracking in the future.

Dismounted resource tracking continues to be an area of interest in fire technology. Many California fire agencies maintain awareness of motorized assets using Automated Vehicle Location (AVL) systems. However, quickly locating first responders via this method is only accurate if the first responders are within their apparatus. Once the fire apparatus arrives at the scene of an incident and receives an assignment that requires them to leave their apparatus, the most common way to obtain an updated location is to communicate via radio.

Realizing this gap, the OWTRD conducted a Dismounted Firefighter/Dismounted Resource Tracking Proof-of-Concept (POC) study in 2024, and concluding in 2025, using commercially available GPS transponder devices to locate first responders in remote areas. The goal was to maintain near real-time personnel location, operate independently of cellular networks, protect privacy, utilize off-the-shelf consumer grade hardware, and integrate with existing software platforms so no new software was required.

The POC utilized 11 CAL FIRE hand crews headquartered at the CAL FIRE Santa Clara and Tulare Units. Several types of GPS devices from several manufacturers were used. Each operates independently of cellular networks and can transmit near real-time locations from anywhere with an unobstructed view of the sky. Locations were then displayed on the Technosylva Tactical Analyst platform, a common operational picture and incident management tool.

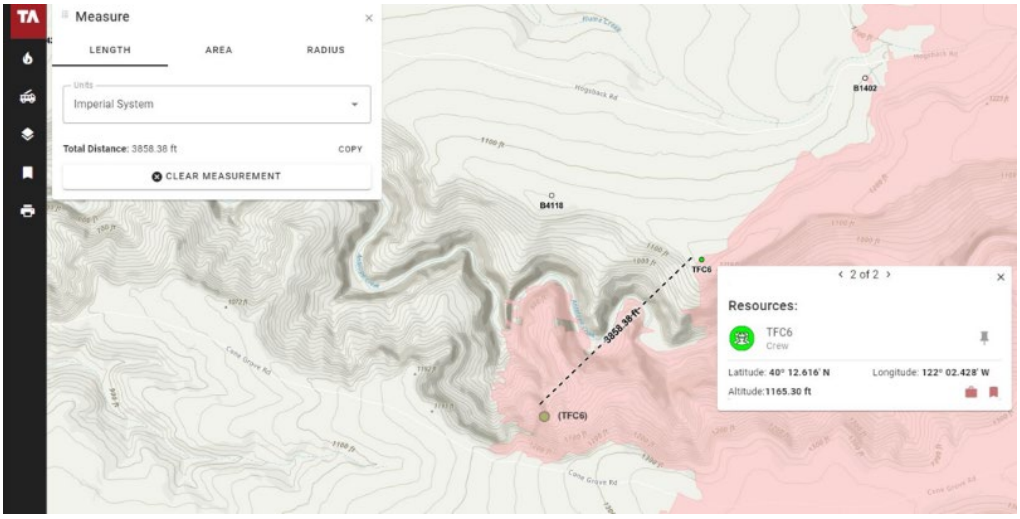

Figure 1 – Dismounted Resources Tracking - Tactical Analyst Screenshot

The POC goals were met and successfully demonstrated that agencies can use commercially available solutions for their needs based on their capacity to implement these tools. Factors that limit scaling of this technology across multiple agencies include the cost of procuring and maintaining additional hardware, service fees, and implementing new or

revised software platforms for firefighters to view the location of other firefighters. The addition of direct-to-cell capabilities in future years may mitigate some of these challenges.

The fire industry also utilizes many decision support tools including the ALERTCalifornia camera network, remote sensor equipped aircraft, and various satellite technologies.

Figure 2 – ALERTCalifornia logo

The ALERTCalifornia camera network has over 1,100 high-definition cameras positioned across the State, is highly utilized by first responders, and was recognized in 2023 as one of "The Best Inventions of 2023" by TIME Magazine.[6] The network continues to make improvements, including the addition of more cameras and significant improvements in its capabilities to detect fires and share information.

The California Governor's Office of Emergency Services (Cal OES) has operational oversight of the Fire Integrated Real-Time Intelligence System Program (FIRIS), an all-hazard resource with advanced sensors and substantial computing power mounted on crewed fixed-wing aircraft to provide information within minutes of arriving on the scene of an emergency incident anywhere in California. Collected data is directly shared with a ground-based fusion center that displays real-time incident data. This intelligence is quickly distributed to first responders on-scene, coordination leaders, policymakers, law enforcement, and others to make more effective decisions to protect life, property, and the environment.

Satellites are another important tool for detecting and monitoring fire activity. Several NASA geosynchronous satellites house an imaging instrument, the Moderate Resolution Imaging Spectroradiometer (MODIS), used by public and private organizations, that is a key instrument for thermal (heat) detection. The Visible-Infrared Imaging Radiometer Suite (VIIRS) is another key instrument on another NASA mission that measures sea and land surface temperatures. These instruments have revisit rates ranging from 12 to 48 hours. There are also many commercial companies who market their satellite imagery and data processing services based on a perceived need for more frequent refresh rates and higher resolution images.

The FireSat initiative is a philanthropic effort led by the Earth Fire Alliance. At full buildout, FireSat aims to have over 50 LEO satellites circling the globe to monitor hot spots and fire activity with a 20-minute revisit rate and higher image resolution than is currently available by satellite. CAL FIRE has been working with FireSat since its early stages. The Earth Fire Alliance, in partnership with Muon Space, launched a Protoflight satellite on March 15, 2025, with successful communication received a few hours later. The first images from the Protoflight were received in June 2025. In spring 2026, additional production satellites will be launched.

Figure 3 – Photographs of FireSat Protoflight and Launch, March 15, 2025, Source: Earth Fire Alliance

Firefighter Health and Safety

Enhanced situational awareness contributes significantly to first responders' well-being. Dismounted resource tracking is an important feature of first responder safety, as is the ability to get cellular network coverage into remote areas via direct-to-cell or another method. Wearable devices such as GPS transponders and personal cellular devices have tremendous potential to provide significant real-time location and health data such as heart and/or respiratory rates, blood oxygen levels, skin temperatures, and blood pressures. Access to this data assists incident leaders in effectively managing their personnel. Advancement of wearable device technology also presents challenges around capturing personally identifiable information and personal health data. Despite these challenges, there is interest among first responder agencies regarding the safety enhancements these technologies could advance.

Data Availability and Integration

Many variations of wildfire-related data are collected from different sources and organizations, and various methods are used to collect the data. However, the data and technologies used to collect, store, and utilize the data may be siloed, sensitive, or proprietary based on specific users or type of software. With ever-increasing data and technological complexity, the ability for accurate and timely data to be made available to end users for various needs and used on the software platforms of their choice is essential. In addition to making data available and usable, data quality, quantity, management practices, and standards are critical considerations to facilitate access to and efficient use of wildfire-related data.

Technologies utilized by first responders can be mission-critical, and the protection of internal systems and operations is paramount. Not all incident data is available publicly due to security and data quality reasons. When new data and platforms are developed,

first responders need and desire the use of data and technical standards to ensure technologies work together and the data generated is available, accurate, timely, and usable. Data standards ensure effective aggregation, sharing, and reuse of data assets. Technical standards ensure compatibility among different devices, product quality, and safety. Data and technology standards work together and play an important role in understanding and utilizing data and developing new technologies in the wildfire industry. Technologies developed for first responders often fail to conform to commonly used data and technology standards. These standards are crucial to ensure data and technology interoperability and accuracy to reduce system redundancy.

An example of a data standard is a shared vocabulary of definitions. Shared vocabularies by communities of practice enable data integration among and between systems used by organizations operating in different jurisdictions, knowledge networks, and domains of activity. Platforms and systems that implement a shared vocabulary reduce the time required to find, analyze, and update crucial information. There are efforts underway in the fire technology space to refine and standardize a shared vocabulary.

In addition to standards, a well-executed data strategy aligns industry operational priorities to the data that supports the priorities, and provides direction on how to plan, access, and synchronize data processes and operations across the industry. A data strategy also includes adopting policies and processes that support data management, governance, and quality, as well as adopting data and technical standards. A well formulated data strategy helps drive technology development by clearly defining industry priorities that technology solution developers can use to create solutions that incorporate established technical standards. This facilitates the integration and interoperability of different hardware and software tools and greater access to, and use of, industry data acquired from various sources. This dramatically improves achievement of operational priorities, including resource allocation efficiencies that lead to cost savings, reduced personnel fatigue, and the potential for greater automation.

In 2025 the Advisory Board discussed improvements made in data availability over the past several years and emphasized the importance of continuous improvement. The Advisory Board also noted the policy opportunity for agencies to set guidelines regarding what type of information is needed for CAL FIRE and other State and local government entities on their websites to make incident information more useful for all stakeholders.

CAL FIRE recognizes the importance of data availability and integration and continues to improve its capabilities. In the past year CAL FIRE has initiated robust website improvements that integrate several data sources for a comprehensive publicly accessible incident page. These changes were made in 2024 and 2025 to enhance the user experience and data availability on the CAL FIRE public website. Improvements include data integration into a single incident view, and the addition of three-dimensional mapping that includes evacuation zones, prescribed fire locations, and damage inspection data.

In April 2025, CAL FIRE launched “Ask CAL FIRE”, an AI-enabled virtual assistant that uses text messaging and web chat technology to automate customer service and increase citizen engagement, building relationships between CAL FIRE and California residents.

Other Technology Efforts within the Wildfire Community

Wildfire Science and Technology Commons
The Wildfire Science & Technology Commons (Wildfire Commons) initiative launched in 2024.[7] The Wildfire Commons is composed of team members from the University of California San Diego, the San Diego Supercomputer Center, and affiliate collaborators from the federal government, industry, and other collaborators. The initiative seeks to bring together a community of practice to break down the barriers that currently exist between wildfire-related data, models, and tools. They are working to accelerate technological innovations for open collaborations with the goal of a wildfire-resilient future.

Cal OES – Fire Integrated Real-Time Intelligence System (FIRIS)
FIRIS is an all-hazard resource with sensors and substantial computing power mounted on crewed fixed-wing aircraft to provide immediate enhanced information within minutes of arriving on the scene of an emergency incident anywhere in California.[8] Collected data is directly shared with a ground-based fusion center that displays real-time incident intelligence. This intelligence is quickly and simultaneously distributed in a common operating platform directly into the hands of first responders on-scene, coordination leaders, policymakers, law enforcement, and others to make more effective decisions to protect life, property, and the environment.

FIRESCOPE Emerging Information Technology Subcommittee (EIT)
FIRESCOPE stands for Firefighting Resources of California Organized for Potential Emergencies and is a Statewide partnership of State and local fire and rescue agencies.[9] The EIT is established to research, identify, share, and promote effective information technologies that can be used by fire and rescue agencies. The EIT 2025 work plan includes looking at AI solutions that improve fire services and an annual update of the latest technology solutions related to fire services.

NASA FireSense and ACERO
The NASA FireSense project is a five-year effort focused on making improvements in wildland fire management. NASA is working with operational agencies responsible for wildland fire management to mature and deliver NASA’s unique Earth science and technological capabilities.[10] NASA expects to fund select research projects to investigate four phases of wildland fire: pre-fire fuels conditions, active fire dynamics, post fire impacts, and air quality forecasting. The project began in 2023 and is expected to conclude in 2027-2028.

The NASA Advanced Capabilities for Emergency Response Operations (ACERO) project is advancing aviation technologies for first responders to keep pace with the growing threat of wildland fires.[11] ACERO is working to enable uncrewed aircraft systems to provide communications, monitoring, logistics, and suppression for wildland fires. The initiative includes efforts to safely integrate uncrewed aircraft into the airspace and timely information sharing. Currently, for the safety of crewed aircraft, uncrewed aircraft cannot fly when crewed aircraft are in the area. This initiative is exploring airspace management technologies that will share information between crewed and uncrewed aircraft and ground crews during wildfire incidents with the intent of enhanced situational awareness and reduced airborne hazards. The program tested a portable airspace management system on March 27 and 28, 2025. This added a three-dimensional view of the airspace rather than the standard two-dimensional view. Initial testing was conducted in early 2025 and additional testing is anticipated throughout 2025 into 2026.

Moore Foundation Wildfire Resilience Initiative
Launched in 2023, the Wildfire Resilience Initiative centers on three core strategies:
1) Improve and integrate early-fire detection, assessment, and response, to see fires earlier, even in more remote and lesser resourced geographies, and to know where and when to enable ecologically beneficial fire and where and when to respond quickly, safely, and effectively to safeguard communities, natural resources, and those on the front lines who are at risk. 2) Decrease community disaster risk through prioritized mitigations that matter, so fire-prone communities are less vulnerable to extreme wildfire events and better able to co-exist with beneficial fire by disrupting fire pathways into and within communities. 3) Strengthen stewardship through predictive ecology to reduce ecosystem vulnerability, harnessing ecologically beneficial fire and sustaining healthy, well-functioning ecosystems in the conditions we can anticipate in the future.[12]

Activities and Updates

The Advisory Board has a consensus that the areas of focus provide a solid foundation for their work; specifically, data availability and sharing that includes technology and data standards and maintaining awareness of major developments in fire technology.

The Advisory Board's focus on enhanced situational awareness continues to facilitate discussions and potential solutions related to data availability and expediency of data sharing related to active incident data sharing and post incident disaster inspections in local communities. In 2025 the following activities and updates occurred:

- Advisory Board engagement with public, private, and non-profit entities, including philanthropic organizations.
- Post incident data sharing and discussions related to the January 2025 fires in southern California and input on significant upgrades to the CAL FIRE website.
- Information sharing from other public agencies, including Cal OES.

OWTRD staff attended and provided presentations at several public meetings and conferences related to dismounted resource tracking and other developments in wildfire technology, including FireSat and the Wildfire Commons. The OWTRD also interacted with over 100 organizations and individuals through its technology intake and evaluation process, providing feedback to solution developers in all stages of product development. Innovators continue to reach out the OWTRD to share their concepts, prototypes, and in some cases, finished products, as they seek input on product development. Innovators have presented a wide variety of ideas, including autonomous ground-based and aerial vehicles, remote sensing technologies, drone swarms, cameras, and building product technologies. It is important to remember that many new or emerging technologies in the wildfire industry lack practical utility in high-risk, dynamic environments. Of the many individuals and organizations that submit ideas to the OWTRD, a small number are viable for further study or engagement by the fire industry.

Conclusion

CAL FIRE and the wildfire community have made significant improvements in wildfire prevention and mitigation over the past several years. Technology continues to play an important role in how California approaches this issue. Enhancements in mobile and satellite enabled applications, data integration, and publicly accessible information via CAL FIRE and other agency websites have improved the speed and quality of public engagement and information dissemination. Incident response challenges related to a changing climate, wind-driven fires, and difficult terrain remain.

Despite these challenges, fire prevention and mitigation activities in California are among the best in the world and continue to improve every year, and advances in technology will continue to increase capabilities and effectiveness. The OWTRD and Advisory Board will continue their work in serving as the central organizing hub for the State government's identification of emerging wildfire technologies as their contribution to these efforts.

Appendix A: Acronyms and Definitions

ACERO	NASA's Advanced Capabilities for Emergency Response Operations project; developing airspace management technologies to enable remotely piloted aircraft to effectively identify, monitor, and suppress wildfires.
AVL	Automated Vehicle Location. The ability to monitor the near real-time location of motorized resources.
FireSat	A fire satellite constellation sponsored by the Earth Fire Alliance, focused on fire. The first satellite launched in 2025 with plans for 50+ Low Earth Orbit satellites.
FireSense	A five-year NASA sponsored effort focused on improving American wildland fire management.
FIRIS	The Fire Integrated Real-Time Intelligence System, led by the Governor's Office of Emergency Services, utilizing sensors on fixed wing aircraft to quickly acquire and disseminate fire intelligence to first responders.
LEO	Low Earth Orbit. A region of space close to the Earth's surface, usually 100 to 1,200 miles.
MODIS	Moderate Resolution Imaging Spectroradiometer. A satellite-based sensor that can detect the thermal signature of fires or other hot spots.
SMS	Short Message Service. A text messaging service typically limited to 160 characters between mobile devices.
VIIRS	Visible Infrared Imaging Radiometer Suite, a satellite-based sensor that collects visible and infrared imagery of Earth used for tracking weather, wildfires, and changes in sea ice and vegetation.

Appendix B: Senate Bill 109

Senate Bill 109, published September 24, 2021, is reproduced below in full, for reference:

BILL TEXT

THE PEOPLE OF THE STATE OF CALIFORNIA DO ENACT AS FOLLOWS:

SECTION 1. The Legislature finds and declares all of the following:

(a) With approximately 40,000,000 residents, the State of California is the most populous state in the nation and has the third largest land area among the states (163,695 square miles).

(b) California faces arguably the most complex and severe wildfire disaster conditions in the nation that pose threats to our people, property, economy, and environment. These challenges and complexities grow in magnitude each year.

(c) Catastrophic wildfires pose an urgent threat to lives, property, and resources in California.

Seventeen of the 20 largest wildfires in California history have occurred since 2000, and 6 of the 7 largest wildfires occurred in 2020 alone.

(e) The escalating frequency and devastation caused by wildfires demand ongoing research and development of emerging wildfire technologies and tools to prevent, monitor, identify, and suppress wildfires developed by public, private, and nonprofit entities in order to protect lives and property from the effects of wildfires.

(f) It is in the best interest of the state that our wildfire preparedness and response infrastructure include and integrate the most effective and evidence-based scientific and technological perspectives and tools to address the wildfire threat facing California.

SEC. 2. Section 8586.8 is added to the Government Code, to read:

8586.8. (a) For purposes of this section, “office” means the Office of Wildfire Technology Research and Development.

(b) The Office of Wildfire Technology Research and Development is hereby established in state government within the Department of Forestry and Fire Protection to study, test, and advise regarding procurement of emerging technologies and tools in order to more effectively prevent and suppress wildfires within the state. The office shall serve as the central organizing hub for the state government’s identification of emerging wildfire technologies.

(c) The office shall be under the direct control of the Director of Forestry and Fire Protection.

(d) The office shall undertake, but is not limited to, the following activities:

(1) 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.

(2) Consult with public, private, and nonprofit entities in identifying new technologies tools, software, and other advances in wildfire preparedness and response.

(3) Make recommendations to state and local agencies on the most effective and useful technologies and tools for procurement.

(e) The office shall be subject to review by the Wildfire Technology Research and Development Review Advisory Board, which shall serve in an advisory capacity, and shall consist of the following nine members:

(1) The Secretary of the Natural Resources Agency, or their designee.

(2) The Director of the Office of Emergency Services, or their designee.

(3) The Director of the Department of Forestry and Fire Protection, or their designee.

(4) Four members who are appointed by the Governor for a term of four years each, as follows:

(A) One representative from academia involved in the field of wildfire research and technology development.

(B) One representative from the private wildfire response science, engineering, and technology industry.

(C) One representative from local government.

(D) One member of the public employed as a first responder.

(5) One member who is appointed by the Senate for a term of four years who is involved in victim services.

(6) 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.

(f) The board shall meet at least four times per year to review, analyze, and assess the activities and progress of the Office of Wildfire Technology Research and Development,

and to consult with public, private, and nonprofit entities regarding their interaction and responsiveness of the office.

(1) The findings and recommendations of the board shall be compiled and delivered to the office of the Governor and the Legislature as a report no later than January 1, 2024, and annually thereafter.

(2) The report developed by the board pursuant to this section shall be submitted in compliance with Section 9795.

(g) Members of the board shall serve without compensation, but they may be reimbursed for actual expenses incurred in connection with their duties.

(h) This section shall remain in effect only until January 1, 2029, and as of that date is repealed.

Endnotes

[1] Top 20 Deadliest California Wildfires, CAL FIRE Our Impact Webpage <Our-Impact/Fire-Statistics/Top 20 Deadliest.pdf> Accessed on 5/20/2025.
[2] CAL FIRE Incident Webpage, Accessed on 5/20/25.
[3] CAL FIRE Wildfire Activity Statistics (Redbook), Years 2020 – 2023, Table 11, Pg. 22.
[4] California Legislative Information <Legislature.CA.gov.bill.history.AB441> Accessed on 9/5/25.
[5] PC Magazine, T-Mobile -Cellular Starlink Helped 198,000 Users In Areas Hit by Wildfires <https://www.pcmag.com/news/t-mobile-cellular-starlink-helped-198000-users-in-areas-hit-by-wildfires. Accessed on 6/7/2025.
[6] Time Recognizes CAL FIRE AI and ALERTCalifornia as Best Invention of 2023. Press Release, Governor Gavin Newson, October 24, 2023. <Time Recognizes CAL FIRE AI ALERT CA as a best invention of 2023 > Accessed on 6/22/2025.
[7] Wildfire Science & Technology Commons (Wildfire Commons) <https://www.wildfirecommons.org/> Accessed on 6/5/2025.
[8] California Governor's Office of Emergency Services FIRIS Program. <Fire Integrated Real-Time Intelligence System Program (FIRIS)> Accessed on 6/20/2025.
[9] FIRESCOPE Emerging Information Technology Subcommittee (EIT). <Governance/Emerging-Information-Technology-Subcommittee> Accessed on 6/19/2025.
[10] NASA FireSense <FireSense Project> Accessed on 6/6/25.
[11] NASA Advanced Capabilities in Emergency Response Operations <ACERO Wildfires> Accessed on 6/6/25.
[12] Gordon and Betty Moore Foundation, Wildfire Resilience Initiative <Wildfire Resilience Initiative Strategy Detail> Accessed on 6/09/2025.