



Photo Credit: Dahlquist Photography

# Lahaina Fire Incident Analysis Report

Dr. Steve Kerber  
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Sept. 13, 2024



**Research  
Institutes**

**Fire Safety  
Research Institute**



## Research Institutes

- UL Research Institutes is a leading independent safety science organization.
- We sense and act on risks to public safety with bold hypotheses and objective investigations.
- Global footprint and a lineage dating back to the formation of Underwriters Laboratories (UL) in 1894 – with fire safety a catalyst.

## Fire Safety Research Institute

- FSRI is dedicated to addressing the world's unresolved fire safety risks and emerging dangers.
- As part of UL Research Institutes, we are committed to sharing our fire safety insights with everyone to advance UL's public safety mission of providing safe living and working environments for people everywhere.
- FSRI experts participate in firefighter fatality and near miss investigations by providing fire dynamics and fire suppression analysis.
- 200+ years of collective experience researching, responding to, managing, and recovering from major fire incidents around the globe.



# Objective

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Contracted by the Attorney General to conduct a comprehensive, independent analysis assessing the policies and performance of state and county agencies in preparing for and responding to the Maui wildfires.

**“I am committed to an independent, unbiased, and transparent investigation into the government actions during the fires.”**

Anne E. Lopez  
Hawai‘i Attorney General

# Lahaina Fire Reports

## Phase 1 Report

Published April 14, 2024

*Comprehensive Timeline Report* to describe the progression of the fire that destroyed much of Lahaina Town on August 8, 2023, and August 9, 2023, starting where the origin and cause investigation concludes.

### Output

Thorough timeline of how the fire incident unfolded from August 8, 14:55 to August 9, 08:30.

## Phase 2 Report

Published September 13, 2024

*Incident Analysis Report* will outline the systemic issues contributing to the fatal events of August 8-9, 2023, in Lahaina, including detail on how the lack of wildfire prevention, preparedness, and operational systems influenced the fire situation, evacuation efforts, and attempts to stop rapid progression.

### Output

Independent systems analysis of the events surrounding the fires, which includes findings and recommendations pertaining to each topic analyzed.

## Phase 3 Report

*Forward-Looking Report* to answer critical questions about “How do we prevent this from happening again?”

### Output

Best practices that incorporate additional data and recommendations for Hawai'i to act toward prevention.

# Framework of Analysis



Source: Wildland Fire Leadership Council.



## Resilient Landscapes

- Threats to natural resources
- Measures to reduce fuels



## Fire-Adapted Communities

- Laws
- Plans
- Budgets
- Programs
- Safety and preparedness of the built environment and its residents



## Safe, Effective, and Risk-Based Wildfire Response

- Informed decision-making
- Risk management
- Effective communication and coordination

# Systems Analysis

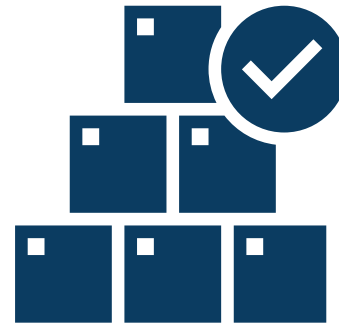


## 84

### Findings

Specific areas of interest that impacted pre-event conditions and activities and incident operations.

- Policies
- Procedures guidelines
- Decisions
- Organizations
- Actions
- Equipment



## 140

### Recommendations

Guidance for improving the conditions specified within each finding.

Reference Section	Relevant Department	Actionable Area	Finding	Recommendations
2.0 Analysis of Background	State of HI	Policy, Organization	1. Lack of state policy-making and investment addressing CalFire Strategy components.	1. Pursue integrated solutions using a multidisciplinary team to address the entire system of factors that influence wildfire risk and outcomes, including land use and suburban planning, agriculture, forestry and environmental protection, emergency response, emergency and fire response, and policy matters. Use the existing and established plans and studies as starting points for discussion and action. 2. Learn from states that already have existing advanced wildfire fighting policies and procedures in place that are more robust in their work on wildfire prevention, preparation, and response.
2.0 Analysis of Background	State of HI	Policy, Organization	2. Statewide wildfire prevention in the non-profit Hawaii Wildfire Management Organization (HWMO) without state funding.	1. Establish dedicated and sustained funding for HWMO to support the coordination and implementation of wildfire prevention and preparedness efforts, especially for communities and land owners.
2.0 Analysis of Background	State of HI	Policy	3. Lack of standardized and consistent wildfire data collection and reporting submissions to federal organizations.	1. Standardize wildfire data collection processes for all counties and require Incident Status Summary Form 200 completion for wildfire management reporting criteria. 2. Leverage the reporting system of the National Emergency Response Information System (NERIS) to institutionalize the reporting with single resources are available and focused in coordinating and supporting fire agencies in this new federal program.
2.0 Analysis of Background	MFO, MFC	Policy, Organization	4. The MFO and MFC did not initiate an AAR for the 2018 Lahaina Fire. NERIS did not initiate an AAR for the same incident.	1. MESA, the MFC, and the MFO should create policies that include incident parameters requiring an AAR to ensure findings are disseminated and changes required for improvement are implemented.
3.0 Weather	MFO, MFC, NWS, MESA	Policy, Organization, Preparedness	5. Activate extreme weather forecasts were provided to the chiefs and emergency managers prior to the August 2023 fire. However, insufficient staffing for extreme weather events and their resultant risk of adverse fire behavior was not standard.	1. Assign a point of contact within the MFO who is tracking weather conditions, and is disseminating that information to the rest of the department and partner agencies. 2. Establish standard operating procedures for fire flag and severe fire weather warning conditions, to include preparing and pre-positioning supplies, equipment, vehicles, and personnel in high-risk areas, reviewing clear and open lines of communication within and among agencies to address fire risk and coordinated deployment of resources, and communicating with the public to aid residents in transitioning the forecasted conditions and take into evacuation readiness. The California Fire Weather Annual Climbing Plan is a good place to start developing a fire flag plan.
3.0 Weather	State of HI, NWS	Research, Policy, Preparedness	6. There is little perceptible difference between Hawaii's fire flag criteria and a typical summer day, which may have contributed to the emergency manager's response to the forecast.	1. Engage federal partners to assist in refining fire flag criteria to be commensurate with comparable fire danger that is actionable by policymakers, emergency managers and responders, and the public. 2. MFA involves the weather, emergency manager's response to the forecast.
3.0 Weather	NWS, HSEMA	Policy, Organization, Preparedness	7. MFA involves the weather, emergency manager's response to the forecast.	1. Engage policymakers, emergency managers and responders, and the public with more frequent fire weather impact briefings. This will create understanding of the weather, while addressing the consistency of the risk.

Finding	Recommendations
3. A lack of RMMs in West Maui, and other high wildfire risk areas, limits the capability to determine where fire flag conditions may locally exist. The lack of resolution of the weather data and monitoring periods uncertainty at the local level due to the weather forecasts and fire flag warnings being based on data collected at the Honolulu airport, which is an Oahu (not Maui), it does not represent the conditions observed in the diverse and numerous microclimates across all high risk areas across the state, including Lahaina, and, therefore, serves as a point of reference for reference, at best for other regions.	1. Conduct and fund the investment for a strategic set of RMMs that can provide information with resolution across the microclimates of high fire risk locations in the state.
3. A lack of vegetation management programs, including policy, regulation development and enforcement, and funding support to address vegetation management needs across the variety of landscape types contributed to a prevalence of unmanaged vegetation on the wildland and urban areas impacted by the August 8, 2023, fire.	1. Develop comprehensive vegetation management programs that address the many types of land ownership and risk reduction needs, to include clearing vegetation, removing invasive species, and creating strategic fuel breaks. On public lands, funding for vegetation management must be commensurate with the personnel, equipment, and maintenance costs needed to strategically and consistently reduce risk. On private lands, a combination of tax incentives and penalties for active land management, as well as a robust and proactive defensible space code inspection and enforcement programs are needed. Such programs must be funded and staffed at a level appropriate to adequately ensure risk reduction measures are implemented and effectively mitigate the potential for fire initiation and rapid spread through unmanaged lands. 2. Establish specific governmental authorities, responsibilities, and goals for the management of vegetation fuels. Currently, authority to address vegetation hazards is covered by a range of responsibilities for the mayor and the chief to address any number of hazards. 3. Establish a system of penalties to address owners of agricultural land who are not participating in active agriculture or vegetation management. 4. Develop programs that support coordination and implementation of an "all hands, all levels" approach, where vegetation management programs and projects reduce risk across land ownerships, according to topography and adjacent fire behavior, rather than a segmented or siloed pattern. 5. Implement and expand use of targeted grazing for non-saline forage grass removal and fuels reduction at landscape scale.

# Lahaina Fire Tragedy

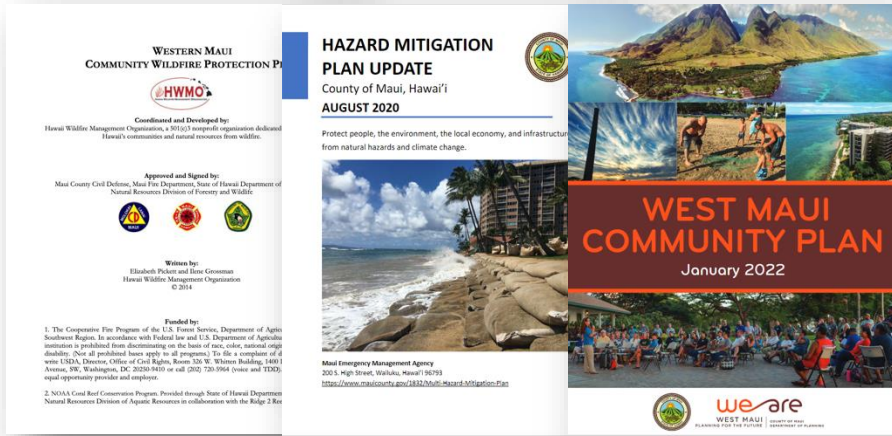
The events of August 8-9, 2023, underscore the importance of addressing well-documented fire risks.

The wildfire prevention, preparedness, and operational measures in place that day faced significant – sometimes unprecedented – challenges as the threat escalated.

This situation highlights opportunities to bolster resources and refine implementation strategies to better align response capabilities with known and emerging fire hazards.



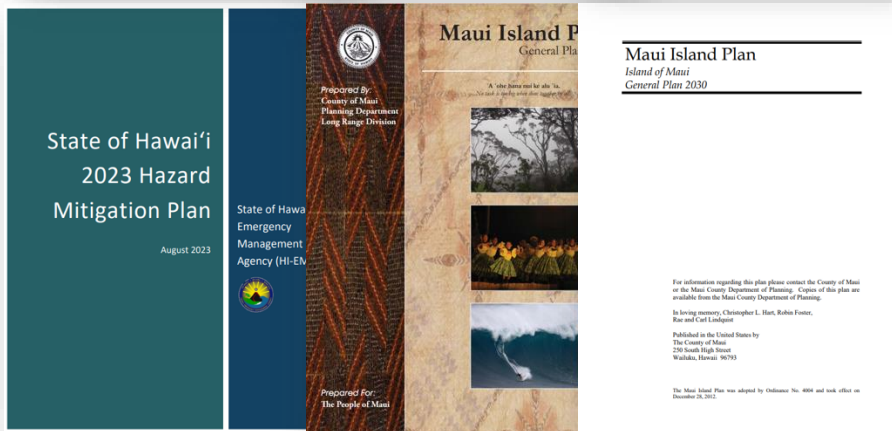
# Perception of Risk & Preparedness



Misconceptions about wildfire risk in Hawai'i



Lack of organizational structure around wildfire prevention and preparedness



Limited financial support



Insufficient or ineffective alerts prevented widespread communication



Minimal understanding of severe weather inhibited evacuation



# Infrastructure

- Community Planning
- Codes and Standards
- Transportation
- Public Utilities
- Vegetation Management



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# Incident Management & Coordination

- Preparedness for Extreme Events
- Unified Command Structure
  - Assisting and Cooperating Agencies
- Communications
  - Operations
  - EOC
  - Public
- Evacuation Challenges
- Fire Suppression Operations



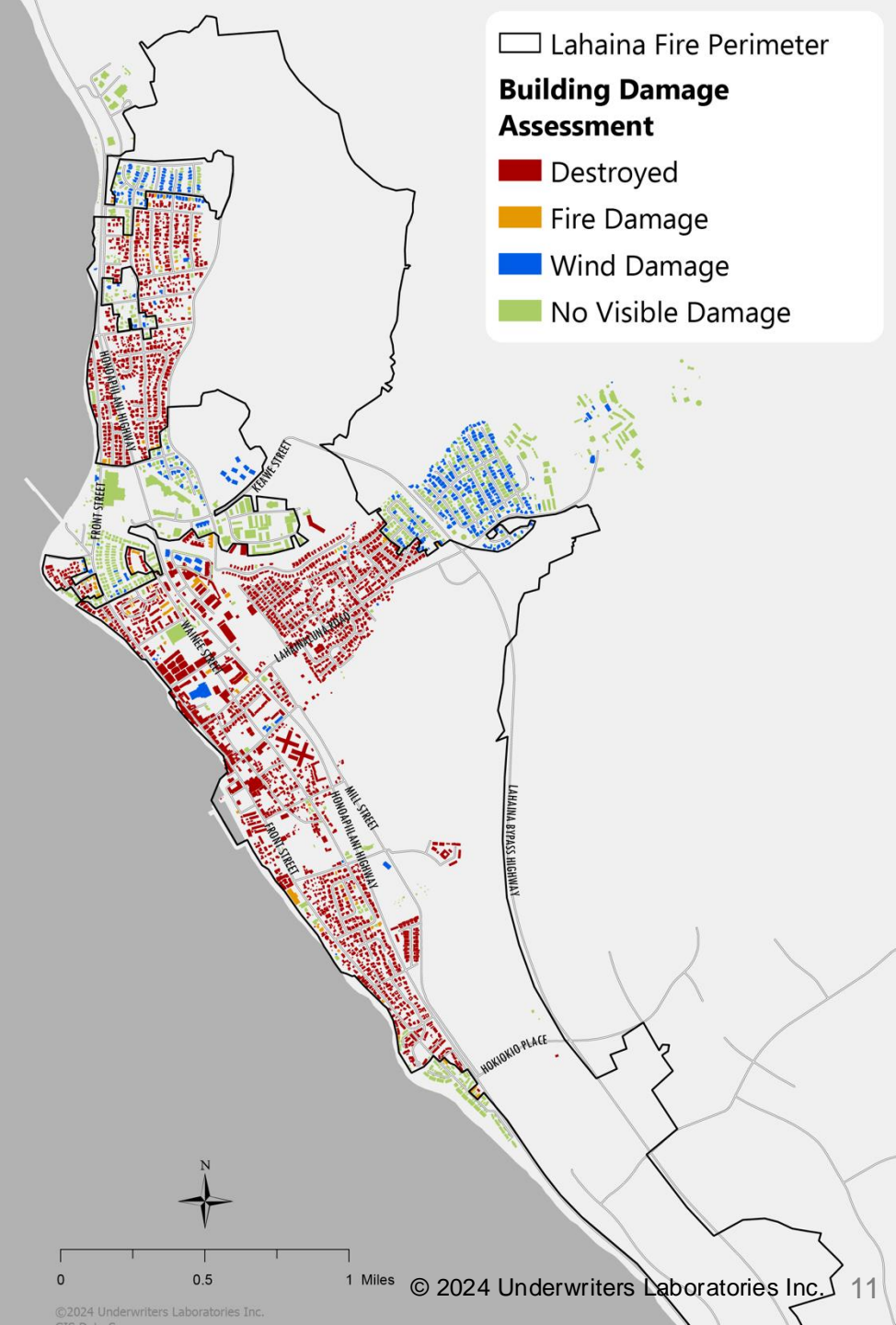
# Built Environment

## Lahaina Built Environment

- Building Construction
- Building and Fire Codes
- Building Density
- Adjacent Vegetation
- Vehicles and Roadways

## Structure Damage and Fire Spread Analysis

- Heat Transfer
- Fire Suppression and Defensive Actions



# Investigation Documents and Media Database

## Audio, Video, Photography and Documentation

- MPD Body Camera Footage
- 9-1-1 Dispatch Audio Files
- MPD and MFD Vehicle Location Data
- FSRI Damage Assessment Videos and Images
- Interviews with State and County Officials
- State, County, and Federal Documents
- Maui Emergency Operations Center Notes, Sign-in Sheets, Photographs, etc.

**850**  
Gigabytes



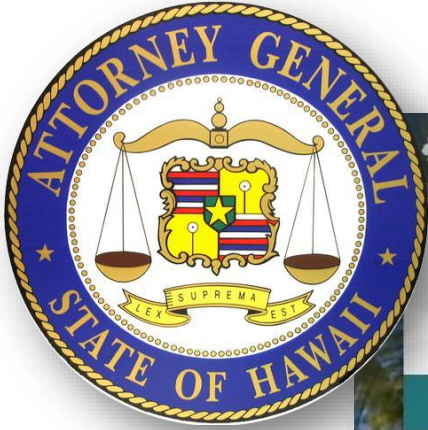
September 13, 2024

# Lahaina Fire Incident Analysis Report (Phase Two)



- A 518-page report detailing how extreme weather and unmanaged vegetative fuel coupled with limited wildfire prevention and preparedness created conditions that resulted in an urban conflagration that overwhelmed emergency responders.
- Intended for use by the people of Hawai'i to:
  - Learn the facts of the preparedness, prevention, and response efforts of government and private organizations involved
  - Understand where improvements are needed to prevent this tragedy from happening again
- Available online at:
  - [Report: https://ag.hawaii.gov/maui-wildfire-investigation-resources-page/](https://ag.hawaii.gov/maui-wildfire-investigation-resources-page/)
  - [fsri.org](https://fsri.org)
    - <https://doi.org/10.60752/102376.26858962>





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## PROTECTED: MAUI WILDFIRE INVESTIGATION RESOURCE PAGE 2ND

[Lahaina Fire Incident Analysis Report \(Phase Two\)](#)

[Investigation Documents and Media Database](#)

The Department of the Attorney General (Department) initiated this investigation, at the direction of Governor Josh Green, M.D., on Friday, August 11, 2023, for the purpose of reviewing state and county agencies response to the incident for the time period beginning at 2:55 p.m. HST on August 8, 2023, and concluding at 8:30 a.m. on August 9, 2023. The Department retained renowned fire experts, the Fire Safety Research Institute (FSRI), to conduct the investigation.

The Investigation Documents and Media Database contains approximately 850 gigabytes of video files, audio files, photographs, and documents relating to the August 8, 2023 Maui fires obtained by the Department and FSRI in connection with this investigation. Access to this database is being provided by the Department at no charge as a public service so that all of the people of Hawai'i may learn from the source documents regarding this tragedy.

Among other things, this database contains:

- Maui Police Department (MPD) body camera footage and other videos of the fire event;
- 911 dispatch audio files;
- Vehicle location data for MPD and MFD vehicles during the fire event;



State of Hawaii Attorney General

Anne E. Lopez

### DIVISIONS

- [Asset Forfeiture Program](#)
- [Child Support Enforcement Agency](#)
- [Crime Prevention and Justice Assistance Division](#)
- [Criminal Justice Division](#)
- [Hawaii Criminal Justice Data Center](#)
- [Hawaii Internet Crimes Against](#)



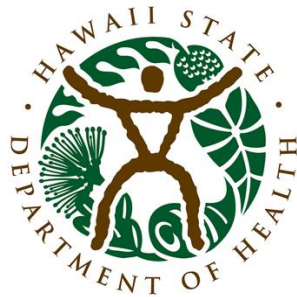
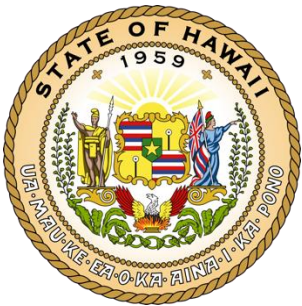
INVESTIGATION DATABASE



INVESTIGATION DATABASE

# Mental Health and Well Being

If you or someone you care about is struggling, there is help.



Adult Mental  
Health Division



- Hawai'i CARES at 988.
- Maui Nui Strong – Mental Health Resources
  - <https://www.mauinuistrong.info/resource-categories/mental-health>
- Hawai'i Heals Together – Secondary Trauma Education & Resources
  - <https://www.hawaiiheals.org/>
- Hawai'i UTelehealth
  - Call 808-375-2745, email [utele@hawaii.edu](mailto:utele@hawaii.edu) or visit [hawaiiutelehealth.org](http://hawaiiutelehealth.org).
- Disaster Distress Helpline
  - Call or text 1-800-985-5990 for free, confidential counseling and support 24/7.





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