



Photo Credit: Dahlquist Photography

Hawaii State Legislature Brief

Derek Alkonis
October 29, 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.
- 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.





The Woolsey Fire (Malibu, California, 2018) emphasizes how far and how fast embers can travel in high winds.

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 outlines 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.

Pre-Fire Conditions: Lahaina PM Fire



Looking west down Lahainaluna Road from Luakini Street.
Source: Google Earth (2019)



Image captured at 13:46

Report Figure 4.2.3.4 August 8, 2023, at 13:46 Civilian photo of roof damage, looking west down Lahainaluna Road from Luakini Street. (Inset: represents camera operator's approximate visual scope.)



Before the
Lahaina PM Fire



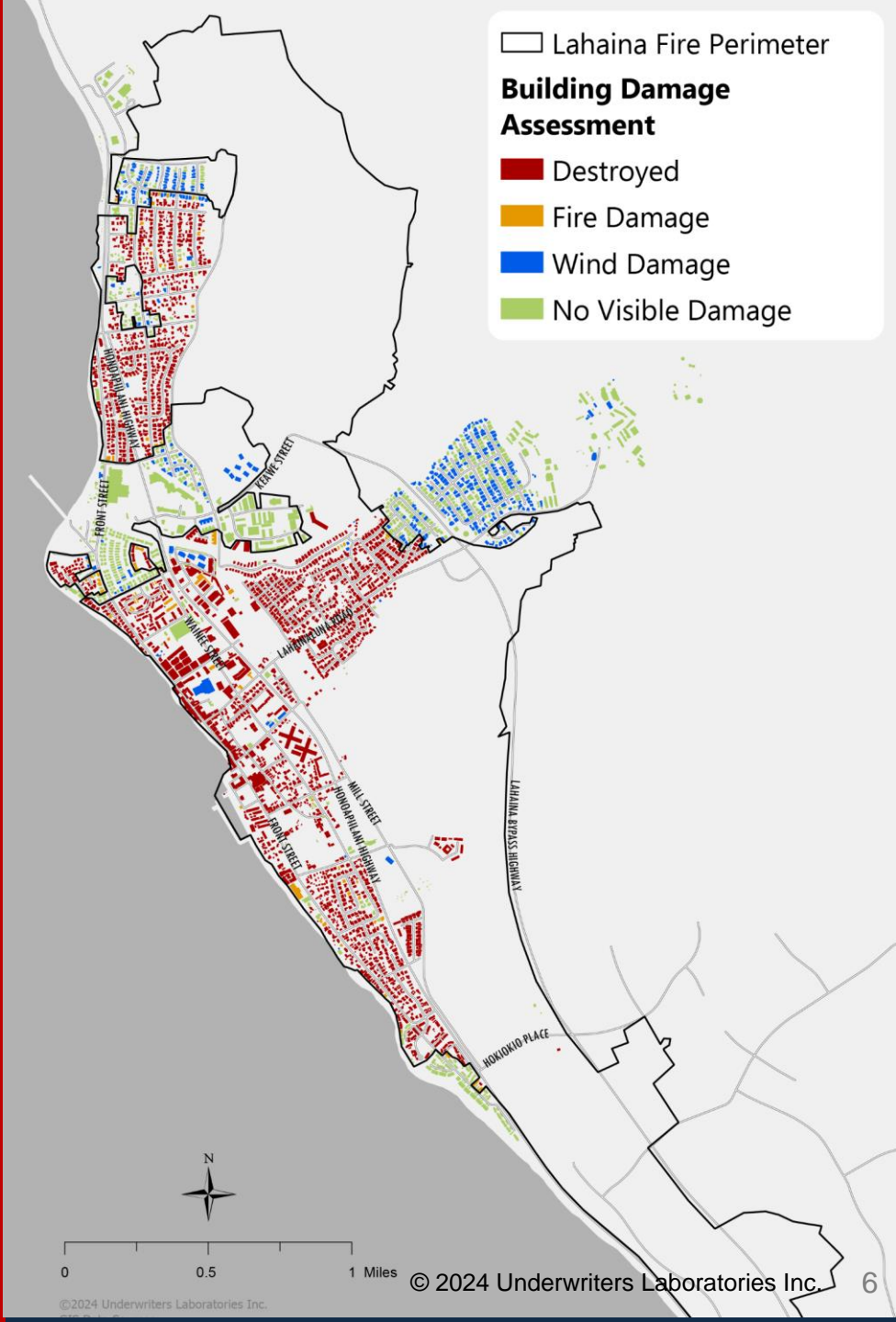
Built Environment

Lahaina Built Environment

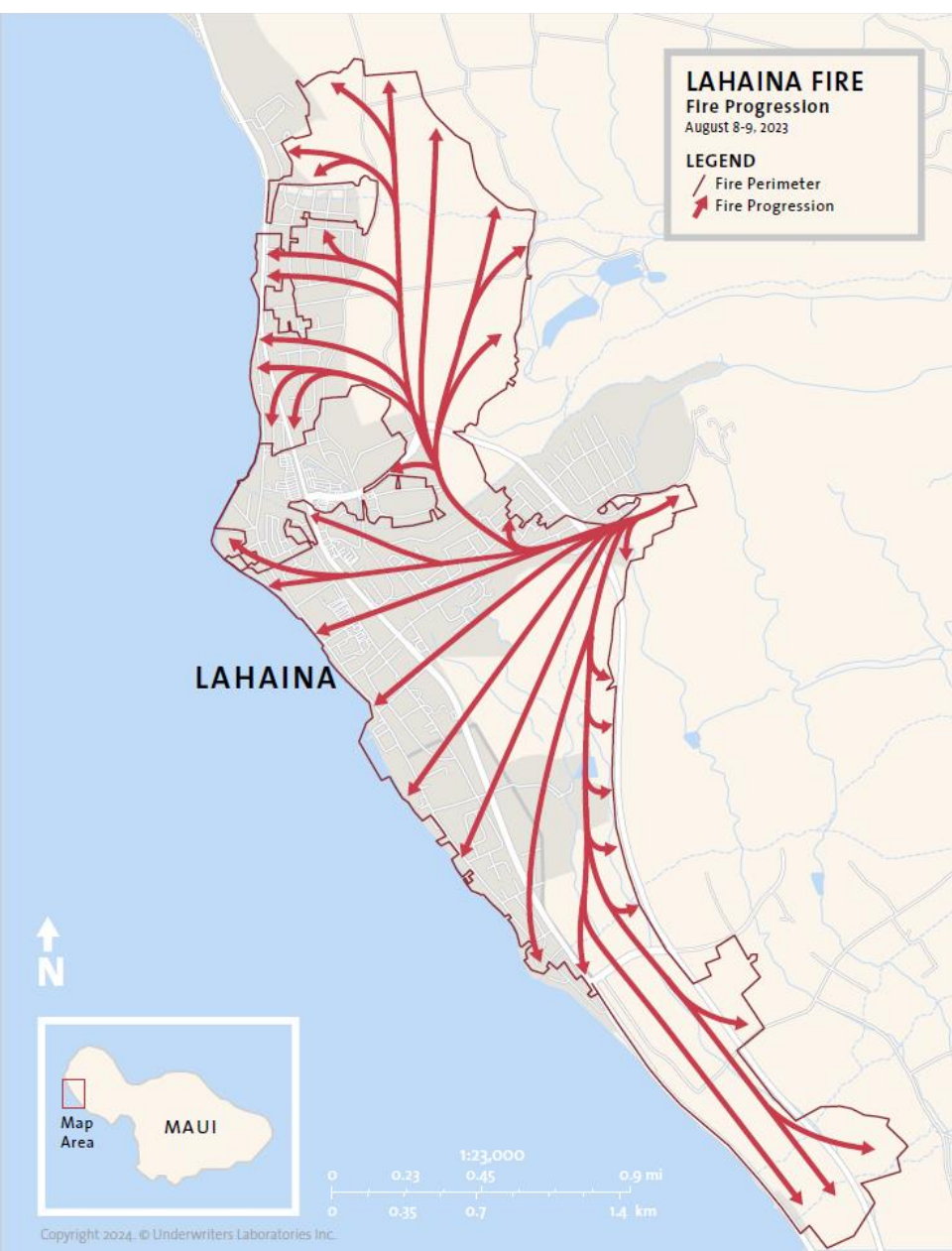
- Building Construction
- Building and Fire Codes
- Building Density
- Adjacent Vegetation
- Vehicles and Roadways

Structure Damage and Fire Spread Analysis

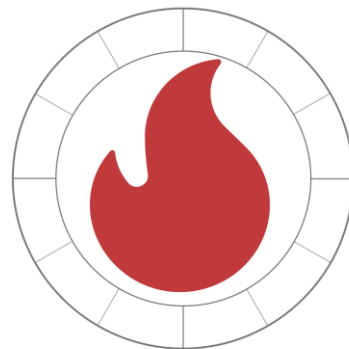
- Heat Transfer
- Fire Suppression and Defensive Actions



Lahaina PM Fire Progression



Report Figure 4.3.1.1
Comprehensive fire progression map of the greater Lahaina and western Maui areas. Arrows indicate the general direction of fire spread based on the data collected



Lahaina PM fire
August 8, 2023 14:55 to
August 9, 2023 08:30

Animation of Report Figure 4.3.1.2
Fire progression map of western Maui with detailed data from various sources.

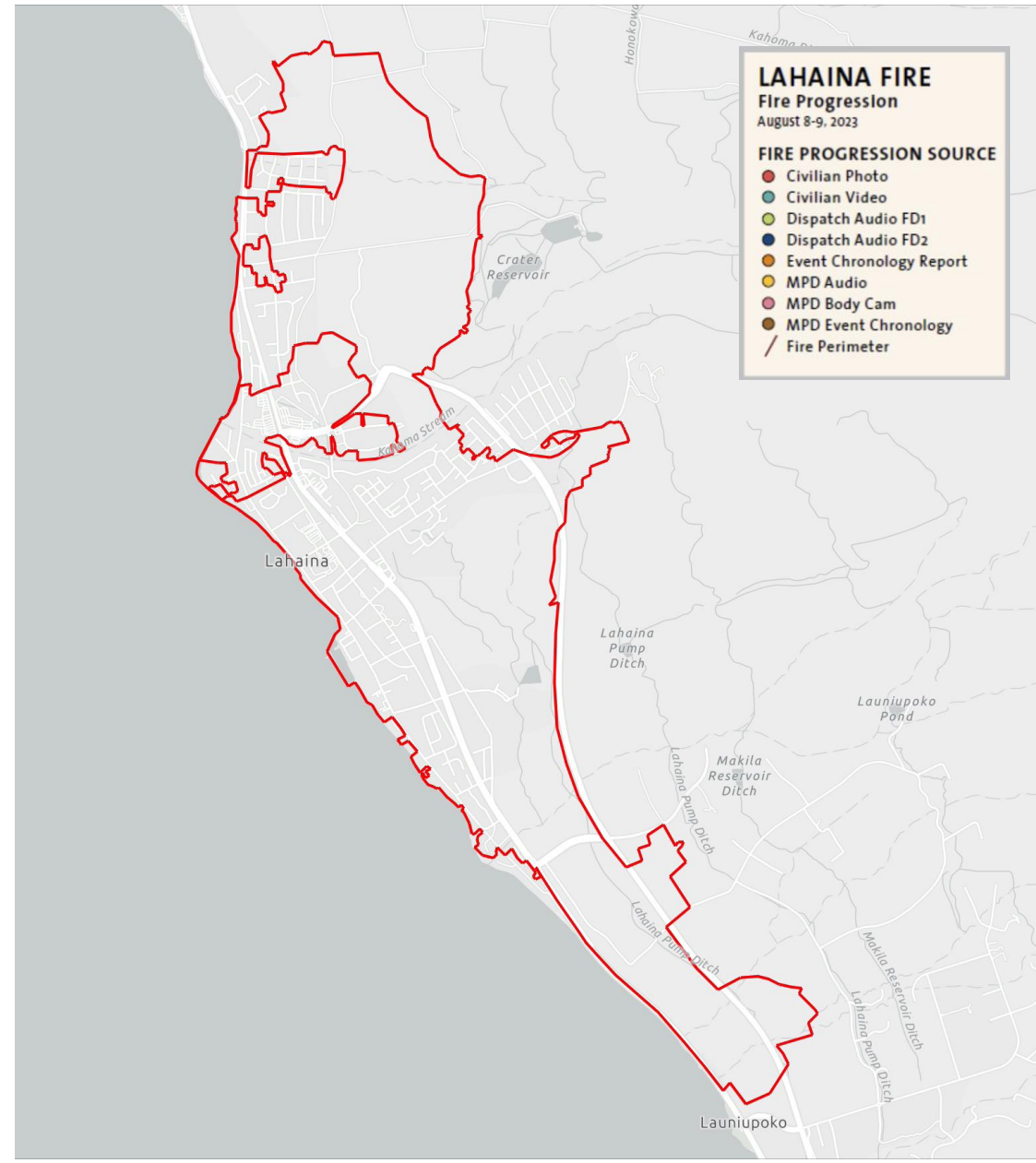




Photo Credit: Dahlquist Photography

Lahaina Fire Incident Analysis Report

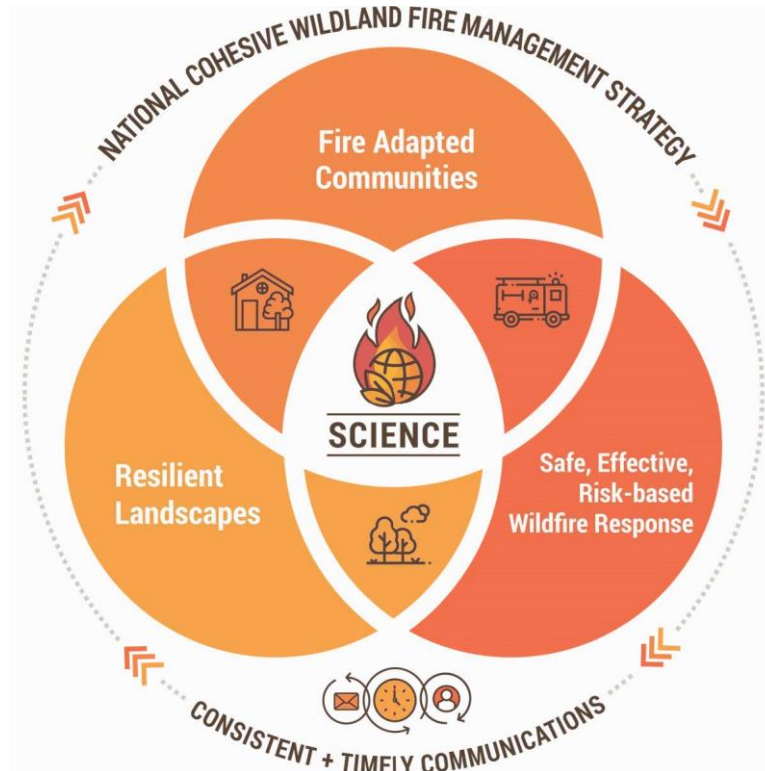
Dr. Steve Kerber
Derek Alkonis
Sept. 13, 2024



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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

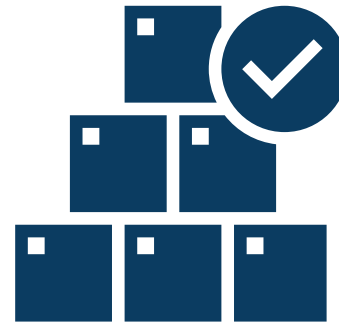
Systems Analysis



84 Findings

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

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



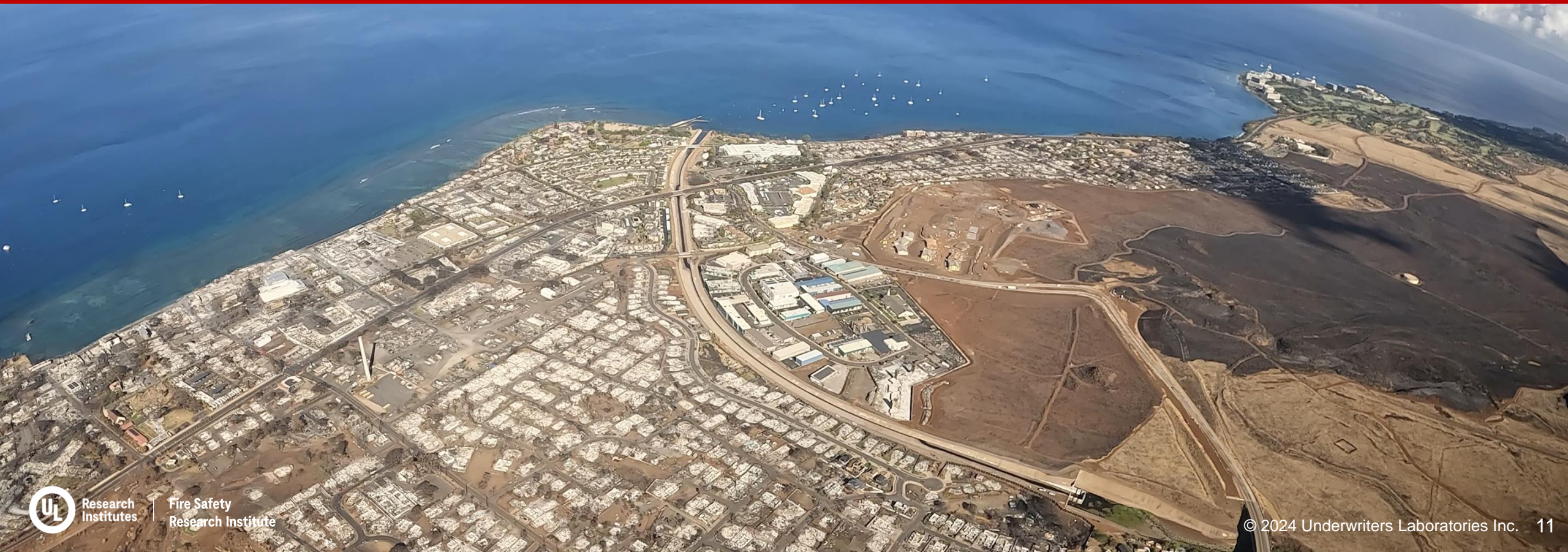
140 Recommendations

Guidance for improving the conditions specified within each finding.

Reference Section	Relevant Department	Affected Area	Finding	Recommendations
2.0 Analysis of Background	State of HI	Policy, Organizational	1. Lack of state policy existing and investment addressing CalFire Strategy components.	1. Pursue integrated solutions using a multi-disciplinary team to address the entire system of factors that influence wildfire risk and outcomes, including land use and subdivision planning, agriculture, forestry and environmental protection, emergency response, economics and the reports, and policy-makers. Use the meeting and established plans and studies as starting points for discussion and action. 2. Learn from states that already have existing advanced wildfire mitigation policies and procedures in place that are more mature in their work on wildfire prevention, preparedness, and response.
2.0 Analysis of Background	State of HI	Policy, Organizational	2. Statewide wildfire prevention is led by 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 at-risk areas. 3. Lack of standardized and consistent wildfire data collection and report submissions to federal organizations.
2.0 Analysis of Background	State of HI	Policy	3. Lack of standardized and consistent wildfire data collection and report submissions to federal organizations.	1. Standardize wildfire data collection process for all counties and require Incident Status Summary, Form 200 completion for wildfire meeting reporting criteria. 2. Leverage the impending release of the National Emergency Response Information System (NERIS) to institutionalize the reporting when state resources are available and focused for reviewing and supporting the agencies in this new federal program.
2.0 Analysis of Background	NIFF, NIFFI	Policy, Organizational	4. The NIFF and NIFFI did not initiate an AAR for the 2018 Lahaina Fire. NIFFI did not finalize an AAR for the same incident.	1. NIFFA, the NIFF, and the NIFFI should create policies that include incident parameters requiring an AAR to ensure findings are disseminated and changes required for improvement are implemented.
3.2 Weather	NIFF, NIFFI, NIFFA, NIFFC, NIFFD, NIFFE, NIFFF, NIFFG, NIFFH, NIFFI, NIFFJ, NIFFK, NIFFL, NIFFM, NIFFN, NIFFO, NIFFP, NIFFQ, NIFFR, NIFFS, NIFFT, NIFFU, NIFFV, NIFFW, NIFFX, NIFFY, NIFFZ	Policy, Organizational, Preparedness	5. Actionable extreme weather forecasts were provided to the public and emergency managers prior to the August 2023 fire. However, additional staffing for extreme weather events and their resultant risk of extreme fire behavior was not adequate.	1. Assign a point of contact within the NIFF who is handling weather conditions, and disseminating that information to the rest of the department and across partner agencies. 2. Establish standard operating procedures for Red Flag and severe fire weather warning conditions, to include preparing and prioritizing requests, required, critical, and announced high-risk areas, verifying clear and open lines of communication with and among agencies to address for rapid and coordinated deployment of resources, and communicating with the public and incident command to disseminate the forecasted conditions and take into account resources. The California Fire Weather Annual Reporting Plan is a good place to start developing a forecast plan.
3.2 Weather	State of HI	Research, Policy, Preparedness	6. There is little perceptible difference between Hawaii's Red Flag criteria and a typical western flag, which may have contributed to the emergency manager's response to the forecast.	1. Engage federal partners to assist in refining Red Flag criteria to be commensurate with appropriate fire danger that is applicable to practitioners, emergency managers and the public.
3.2 Weather	NIFF, NIFFA	Policy, Organizational, Preparedness	7. NIFFI should be weather forecasters to the end emergency managers should occur on a more frequent basis.	1. Engage practitioners, emergency managers and the public with more frequent weather forecast briefings. This will provide understanding of the weather while allowing the community of the risk.

Enhancing Wildfire Readiness in the State of Hawai'i

10 Highest Priorities - Key Actions from the Lahaina Fire Incident Analysis Report (Phase Two)



Ensure an organizational structure that supports a coordinated process

Priority 1

Action Planning & Accountability

Facilitation of process to plan and implement subsequent priorities

Priority 2

State Fire Marshal

Complete process to hire State Fire Marshal;
Identify and hire an interim leader to facilitate action planning toward system components (below).

Lead agency assigned to develop & implement action plan

**Priority 3
Wildfire Education
Programming**

**Priority 4
Communication Systems**

**Priority 5
Utilities Risk Reduction
& Planning**

**Priority 6
Fire Weather**

**Priority 7
Evacuation**

**Priority 8
Codes & Standards**

**Priority 9
Wildfire Response
Preparedness**

**Priority 10
Vegetation & Land
Management**

Priority 1 - *Action Planning and Accountability*

State agencies to prepare a preliminary action plan for addressing Phase Two Findings and Recommendations pertaining to their areas of responsibility.

- Department of Land and Natural Resources - Division of Forestry and Wildlife (DLNR-DOFAW)
- Hawai'i Building Code Council (HBCC)
- Hawai'i Public Utilities Commission (HPUC)
- State Fire Council (SFC)
- Office of Planning Sustainable Development (OPSD)
- Hawai'i Emergency Management Agency (HI-EMA)
- Hawai'i Department of Law Enforcement (DLE)
- Hawai'i Department of Transportation (DOT)
- Commission on Water Resource Management (CWRM)

Findings and Recommendations

- Finding 1 (page 303)
Recommendations 1 and 2

Priority 2 - *State Fire Marshal*

Department of Labor and Industrial Relations (DLIR) to recruit and hire State Fire Marshal (SFM). SFM (or interim leader) to work closely with SFC to prepare an action plan for addressing Phase Two Findings and Recommendations related to:

- Codes, standards and zoning
- Vegetation management
- Wildfire data collection
- Mutual aid response
- Firefighter training and operations standards (including private contractors)

Findings and Recommendations

- Finding 3 (page 303)
Recommendations 1 and 2
- Finding 9 (page 304)
Recommendations 1, 2, 3 and 4

Note: Priority 2 is already in progress from the last legislative session. Status of the hiring process is unknown.

Priority 3 - *Wildfire Education Programming*

Provide educational programming for the diversity of audiences across the state regarding wildfire preparedness and develop and implement a plan for ongoing financial support for this programming.

Programming to include:

- Mitigation best practices
- Defensible space and vegetation management
- Fire weather and fire behavior
- Evacuation

Findings and Recommendations

- Finding 11 (page 305)
Recommendation 1
- Finding 13 (page 305)
Recommendation 1
- Finding 18 (page 306)
Recommendation 4
- Finding 37 (page 309)
Recommendation 1
- Finding 39 (page 309)
Recommendation 1
- Finding 75 (page 316)
Recommendations 2 and 3

Priority 4 - *Communication Systems*

HI-EMA and SFM to assess the resiliency and functionality of communication systems and the All-Hazard Outdoor Warning Siren System (OWSS), and establish redundant public alerting and warning processes, including best practice messaging guidance.

Findings and Recommendations

- Finding 36 (page 309)
Recommendation 1
- Finding 37 (page 309)
Recommendation 1
- Finding 75 (page 316)
Recommendations 1 and 2

Priority 5 - *Utilities Risk Reduction and Planning*

HPUC and SFM to work with public utilities (electric and water) to identify immediate improvements to vegetation management programs to protect infrastructure from wildfire and enhance resiliency, and to provide guidelines for supporting incident management and operations.

Findings and Recommendations

- Finding 29 (page 308)
Recommendation 1
- Finding 31 (page 308)
Recommendation 1
- Finding 56 (page 311)
Recommendation 1

Priority 6 - *Fire Weather*

DLNR-DOFAW, SFC, and SFM to support National Weather Service (NWS) in improving weather forecasting and historical record keeping by ensuring remote automatic weather stations (RAWS) are positioned in high wildfire danger areas statewide.

Findings and Recommendations

- Finding 5 (page 303)
Recommendation 2
- Finding 6 (page 303)
Recommendation 1
Note: this can be expanded to installing more RAWS in West Maui and other wildfire prone areas since two (2) RAWS have been positioned in Lahaina.
- Finding 7 (page 303)
Recommendation 1
- Finding 8 (page 304)
Recommendation 1

Priority 7 - *Evacuation*

HI-EMA, DLE, DOT, and OPSD to coordinate with county law enforcement, fire, emergency management, and planning agencies in preparing a standardized format for documenting and executing evacuation plans for high wildfire risk areas.

Findings and Recommendations

- Finding 16 (page 306)
Recommendation 1
- Finding 17 (page 306)
Recommendation 1
- Finding 18 (page 306)
Recommendations 1 and 3
- Finding 19 (page 306)
Recommendations 1 and 2
- Finding 71 (page 314)
Recommendations 1 and 2
- Finding 72 (page 315)
Recommendations 1, 2, 3, 4, 5 and 6
- Finding 76 (page 316)
Recommendations 1, 2, and 3

Priority 8 - *Codes and Standards*

SFM, (HBCC), and SFC to evaluate and work toward improving codes and standards review and adoption processes. Jointly ensure organizational structures are appropriately staffed to efficiently adopt current codes and standards addressing the state's wildfire threat to the built environment.

Findings and Recommendations

- Finding 14 (page 305)
Recommendation 3
- Finding 15 (page 306)
Recommendation 1
- Finding 77 (page 316)
Recommendation 2
- Finding 78 (page 316)
Recommendation 1
- Finding 80 (page 316)
Recommendation 2

Priority 9 - *Wildfire Response Preparedness*

SFM, SFC, HIEMA, and DLNR-DOFAW to improve the coordination of wildfire preparedness and response of emergency responders across all agencies and private contractors to ensure the effective and efficient use of shared resources and to provide expectations for incident management organization.

Findings and Recommendations

- Finding 40 (page 309)
Recommendation 2
- Finding 41 (page 310)
Recommendation 1
- Finding 42 (page 310)
Recommendation 1
- Finding 43 (page 310)
Recommendation 1

Priority 10 - *Vegetation and Land Management*

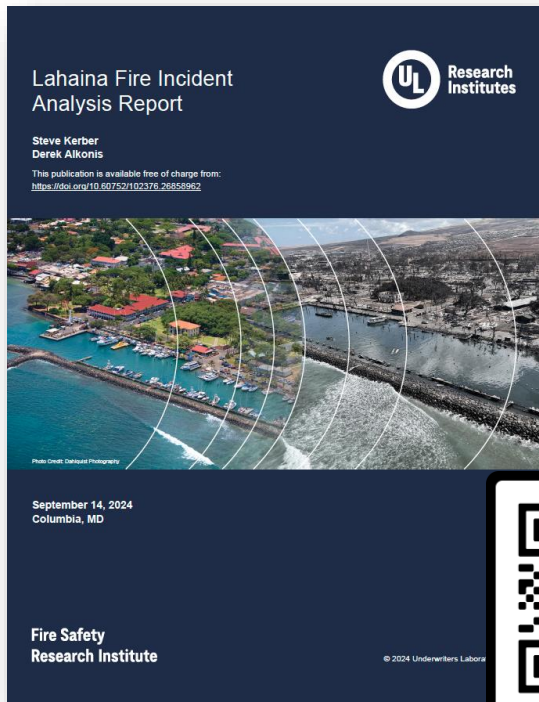
Identify the state agency responsible for vegetation management of non-conservation areas and establish a framework for land owners to follow for responsible land management. Appropriate agencies to lead this effort include those with experiences in natural resource and land management, zoning, education, and enforcement.

Findings and Recommendations

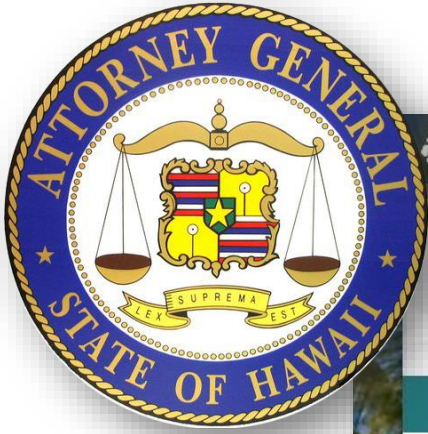
- Finding 9 (page 304)
Recommendations 1, 2, 3, 4, and 5
- Finding 10 (page 305)
Recommendations 1, 2 and 3
- Finding 11 (page 305)
Recommendation 1
- Finding 12 (page 305)
Recommendations 1 and 2
- Finding 13 (page 305)
Recommendations 1, 2, and 3
- Finding 78 (page 316)
Recommendation 1

September 13, 2024

Lahaina Fire Incident Analysis Report (Phase Two)



- A 518-page report detailing how extreme weather and unmanaged vegetative fuel coupled with a lack of 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://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

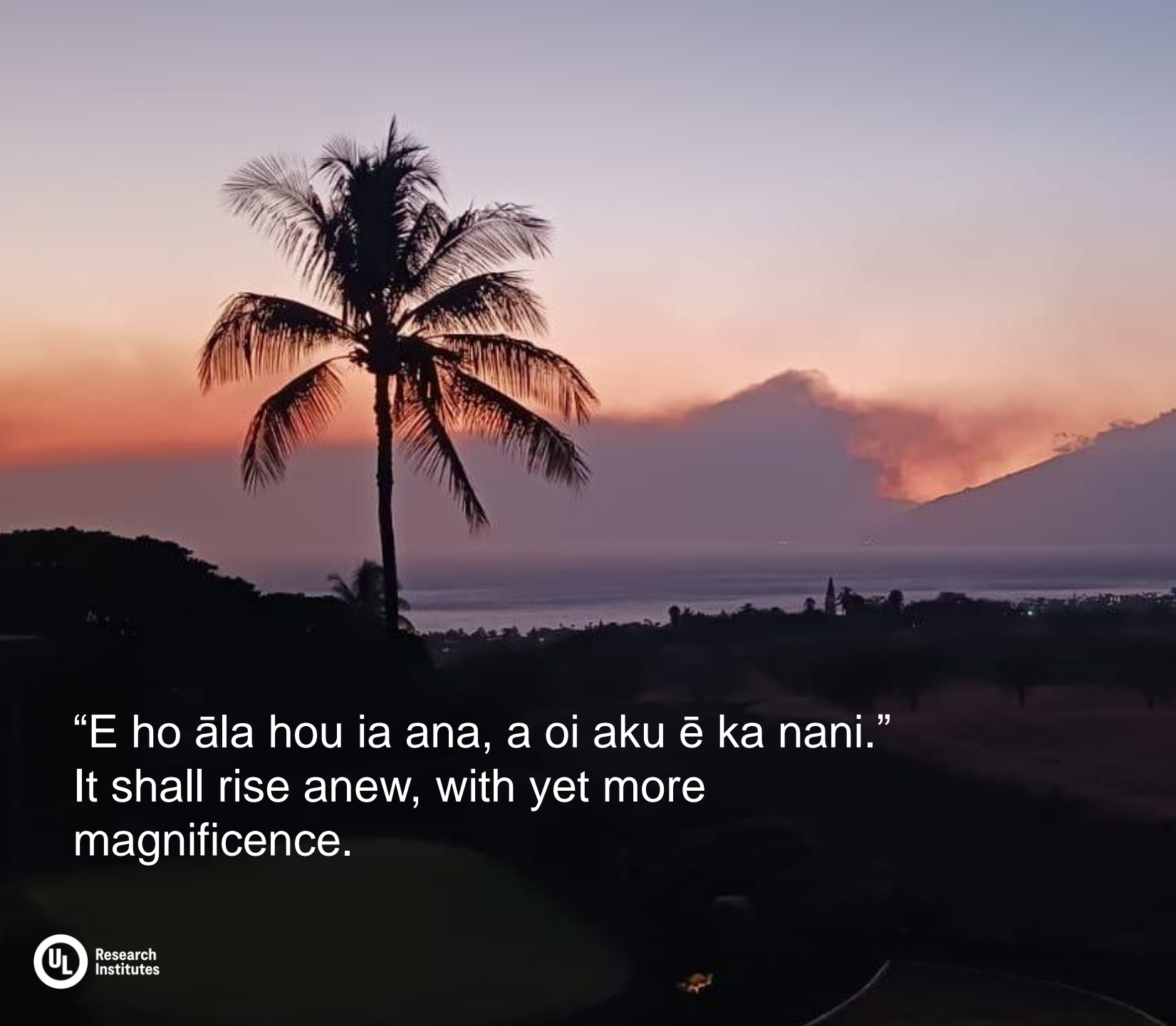
- [Asset Forfeiture Program](#)
- [Child Support Enforcement Agency](#)
- [Crime Prevention and Justice Assistance Division](#)
- [Criminal Justice Division](#)
- [Hawaii Criminal Justice Data Center](#)
- [Hawaii Internet Crimes Against](#)



INVESTIGATION DATABASE



INVESTIGATION DATABASE



“E ho āla hou ia ana, a oi aku ē ka nani.”
It shall rise anew, with yet more
magnificence.



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