

# Hawaiian Electric's Wildfire Safety Strategy

Wildfire Safety Strategy Working Group  
Meeting 1 – July 16, 2025



# Agenda

- Welcome
- Our Wildfire Safety Working Group
- Introduction to Hawaiian Electric's Wildfire Safety Strategy
- Four pillars of the Enhanced Wildfire Safety Strategy & breakout group discussions

Grid hardening  
and redesign

Situational  
awareness

Operational  
practices

Stakeholder and  
community partnerships

- Current status and next steps



# Welcome



# Hawaiian Electric's Wildfire Safety Working Group (WFS WG)

- **History:** Established following the 2024 Wildfire Safety Symposium to support the development of the Hawaiian Electric Wildfire Safety Strategy (WSS)
- **Participants:** Representatives from utilities, government agencies, research institutions, landowners, nonprofits and local communities
- **Purpose:** Share information, foster collaboration and discourse, gather feedback and strengthen community partnerships
- **Your role: Share best practices and local and industry knowledge to refine wildfire mitigation efforts**



# Ground Rules

- Chatham House Rule will apply – no personal or organizational attribution will be made to any comments/feedback provided during the meeting by any participant nor in written documentation. Recordings and/or artificial intelligence transcriptions of meetings are prohibited.
- Working group meetings, and other information exchanges are intended solely to provide an open forum for discussion purposes or means for the expression of various points of view in compliance with antitrust laws.
- Under no circumstances shall engagement activities be used as a means for competing companies to reach any understanding, expressed or implied, which tends to restrict competition, or in any way, to impair the ability of participating organizations to exercise independent business judgment regarding matters affecting competition or regulatory positions.
- Proprietary information shall not be disclosed by any participant during any industry engagement meeting or information exchange. In addition, no information of a secret or proprietary nature shall be made available to industry engagement participants.
- All proprietary information which may nonetheless be publicly disclosed by any participant during any industry engagement meeting or information exchange shall be deemed to have been disclosed on a non-confidential basis, without any restrictions on use by anyone, except that no valid copyright or patent right shall be deemed to have been waived by such disclosure.



2024

- Wildfire Safety Symposium – **APR. 10-11**
- Wildfire Risk Map – **JUL. 31**
- Wildfire Mitigation Strategies and Priorities – **AUG. 14**
- Future Operational Strategies and PSPS Enhancements – **AUG. 21**
- Metrics and Performance Tracking / WSS Content – **SEP. 5**
- Risk Model Deep Dive Sub-Group Mtgs 1 & 2 – **SEP. 26 & NOV. 6**
- Putting it All Together – **DEC. 12**
- .....
- Submit WSS to the PUC – **JAN. 10**

2025

**JUL. 16 Meeting 1** – Hawaiian Electric’s Wildfire Safety Strategy

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**JUL. 30 Meeting 2** – Public Safety Power Shutoffs

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**AUG. 13 Meeting 3** – Land Management

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**SEP. 24 Meeting 4** – Ingress/Egress

.....

**OCT. 15 Meeting 5** – Grid Hardening & Undergrounding



# Today's topics



Understanding wildfire risk

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Key mitigation activities

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Community engagement and preparedness

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Stakeholder and community partnerships



# Introduction to Hawaiian Electric's **Wildfire Safety Strategy**



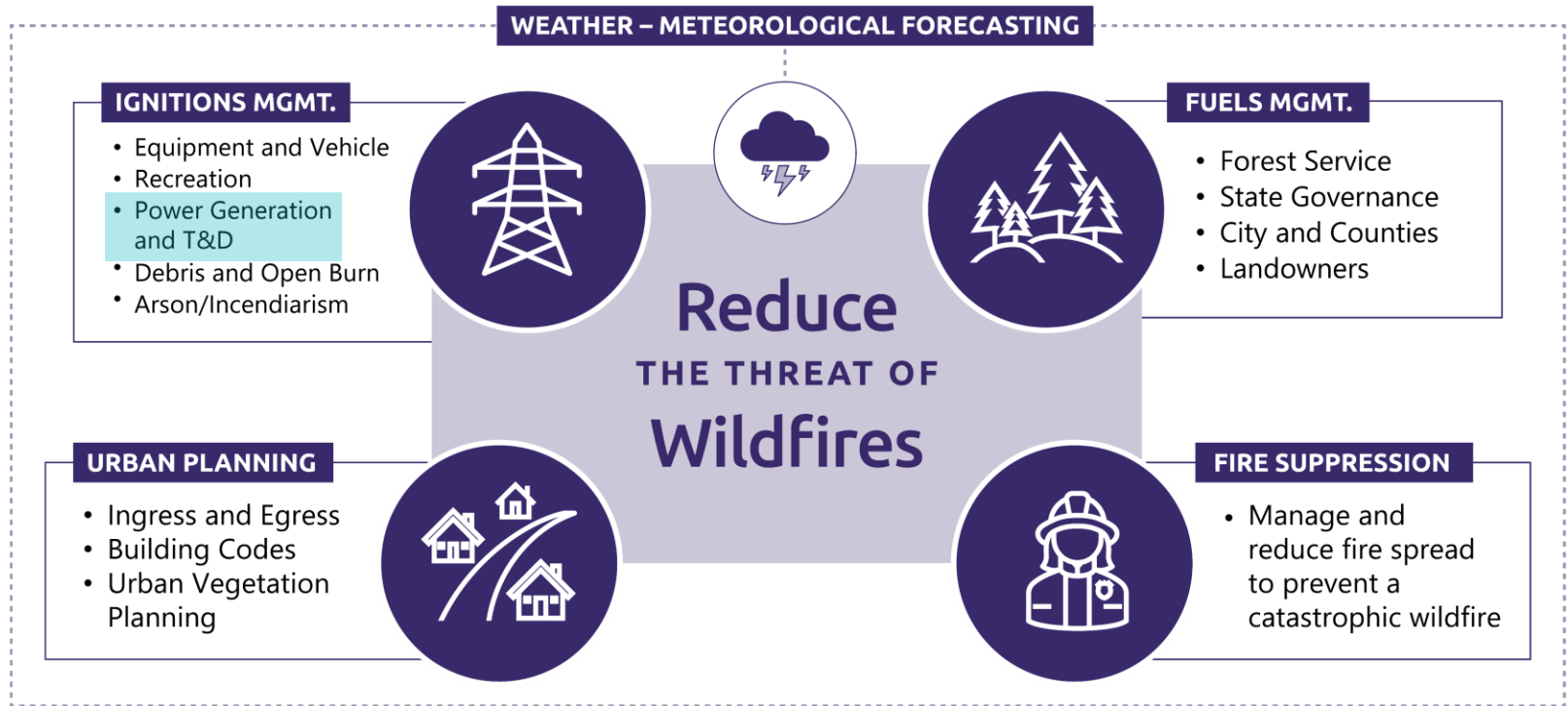
# WSS objectives

The main objective of Hawaiian Electric's 2025-2027 Wildfire Safety Strategy (WSS) is to minimize ignition risks from infrastructure through:

- **Identifying areas of high risk** and drivers of risk
- **Addressing drivers of risk** through a four-pillar approach to wildfire safety
- **Engaging with community members** and partners to inform our strategies, learn from and coordinate with each other
- **Continuously improving strategies** and implementation by identifying and tracking key metrics and data
- **Estimating costs and schedules** based on the information we have today in order to inform plans



# Collective approach



# Wildfire Safety Strategy development process

The WSS builds on past efforts and continues to evolve through ongoing review and updates.

Hawaiian Electric uses a dynamic risk assessment process—guided by new data, expert analysis and changing environmental conditions—to shape and refine its mitigation strategies.



# Recap of 2024 progress

Category	Initiative	Planned 2024	Actual 2024
Foundational Work	Detailed inspections of distribution & transmission circuits	210	226
	Hazard tree	300	367
	Trimming on PSPS circuits	0	20
	Level 1 inspections on PSPS circuits	0	41
	Expulsion fuse replacements	3,534	3,558
	New lightning arresters	1,071	680
Operational Changes	Substation relay settings changes (EFT)	210	213
	Distribution relay upgrades for EFT	10	10
Situational Awareness	Single-phase FCIs	3,433	3,177
	360° High-definition video cameras with AI	44	44
	Weather stations	52	53
Hardening	Wood pole replacements & upgrades	1,865	2,124
	Aluminum reconductor circuit miles	9.9	23.01
	Smart reclosers for PSPS circuits	11	11
	Pole testing	2,746	5,805
	KPF Switch Replacement	21	21



# Four pillars of the Enhanced Wildfire Safety Strategy





Grid hardening and redesign

Situational awareness

Operational practices

Stakeholder and community partnerships



# Four pillars of Enhanced Wildfire Safety Strategy

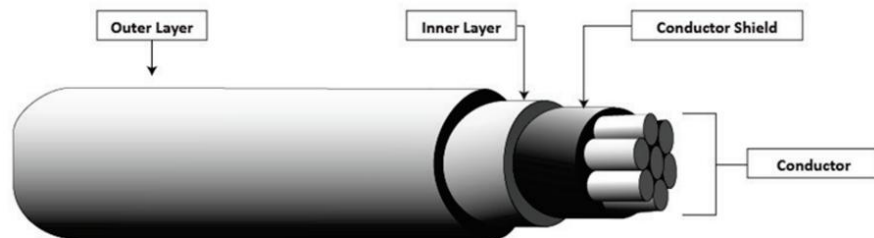
## 1. Harden and redesign the grid

- Upgrading infrastructure
  - Installation of covered conductors
  - Targeted undergrounding
  - Equipment replacements to enhance fire safety
- Improve reliability impacts
  - Resulting from safer operational practices already implemented



# Grid hardening and redesign – covered conductor

- ◆ Covered conductor helps to prevent contact between conductors or with objects. This helps to reduce the chance of an ignition.
- ◆ Unlike bare conductor, covered conductor involves conductor enclosed in a multi-layer sheath.
- ◆ Planning to replace about 15-70 miles of bare conductor with covered conductor on distribution lines in high risk areas



# Grid hardening and redesign – strategic undergrounding



- 51% of company distribution lines are underground
- We understand residents want power lines undergrounded.
- \$11M per mile vs \$1M per mile for overhead
- In some areas, less expensive tactics like covered conductor can be just as effective
- Permitting and environmental/cultural issues add significantly to timeline



# Grid hardening and redesign – wood pole replacements



# Grid hardening targets

Hardening mitigation	Current 2025-2027 targets
Covered conductor	<ul style="list-style-type: none"><li>Approximately <b>15-70 miles</b> on high-risk distribution circuits</li></ul>
Initial targeted undergrounding	<ul style="list-style-type: none"><li>TBD number of circuit miles, pending feasibility studies</li><li>Initially, ~<b>2 miles in Lahaina</b></li></ul>
Expulsion fuse replacements	<ul style="list-style-type: none"><li><b>100%</b> of fuses replaced in HWRA and MWRA (approximately <b>13,600 fuses</b>)</li></ul>
Arrester replacements	<ul style="list-style-type: none"><li><b>100%</b> of arresters replaced in HWRA and MWRA (approximately <b>2,600 arresters</b>)</li></ul>
Cellon-treated and poly-filled pole replacements	<ul style="list-style-type: none"><li>On pace to complete replacement of cellon poles in 11 years (approximately <b>648 poles</b>)</li></ul>
Transmission/sub-transmission line hardening	<ul style="list-style-type: none"><li>Harden <b>19 circuit miles</b> on high-risk transmission circuits</li></ul>



# Four pillars of Enhanced Wildfire Safety Strategy

## 2. Expand and improve situational awareness

- Deploy weather stations
- Deploy AI-assisted cameras and spotters
  - Improve real-time fire weather monitoring and early identification of potential ignitions
- Implement a Watch Office
- Implement an operational wildfire risk model
  - Inform real-time operational decision making



# Wildfire risk mapping

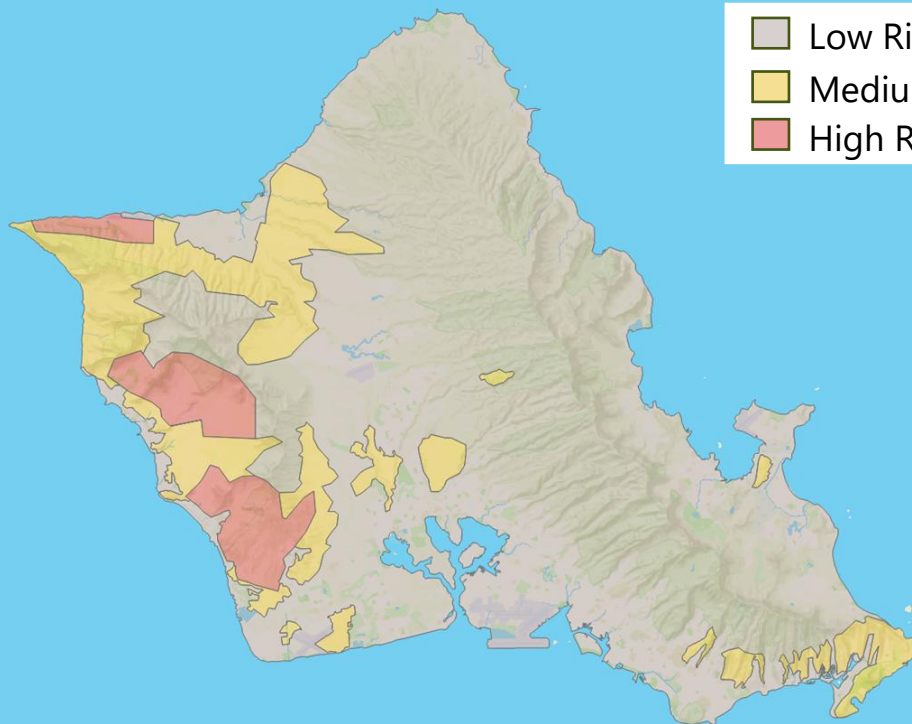
- Created to identify risks of wildfire from electrical infrastructure and to inform wildfire mitigation actions
- Maps identify at-risk wildland-urban interface communities
- Evaluate data to categorize communities into **high**, **medium**, or **low risk**:
  - Historical fire occurrence
  - Fuel conditions on the landscape and surrounding community
  - Human and economic values associated with the community
- Used to inform the prioritization of activities and guide operational activities like vegetation management and asset inspection programs



# Wildfire risk maps based on utility equipment ignition potential



O'ahu



- Low Risk Area
- Medium Risk Area
- High Risk Area



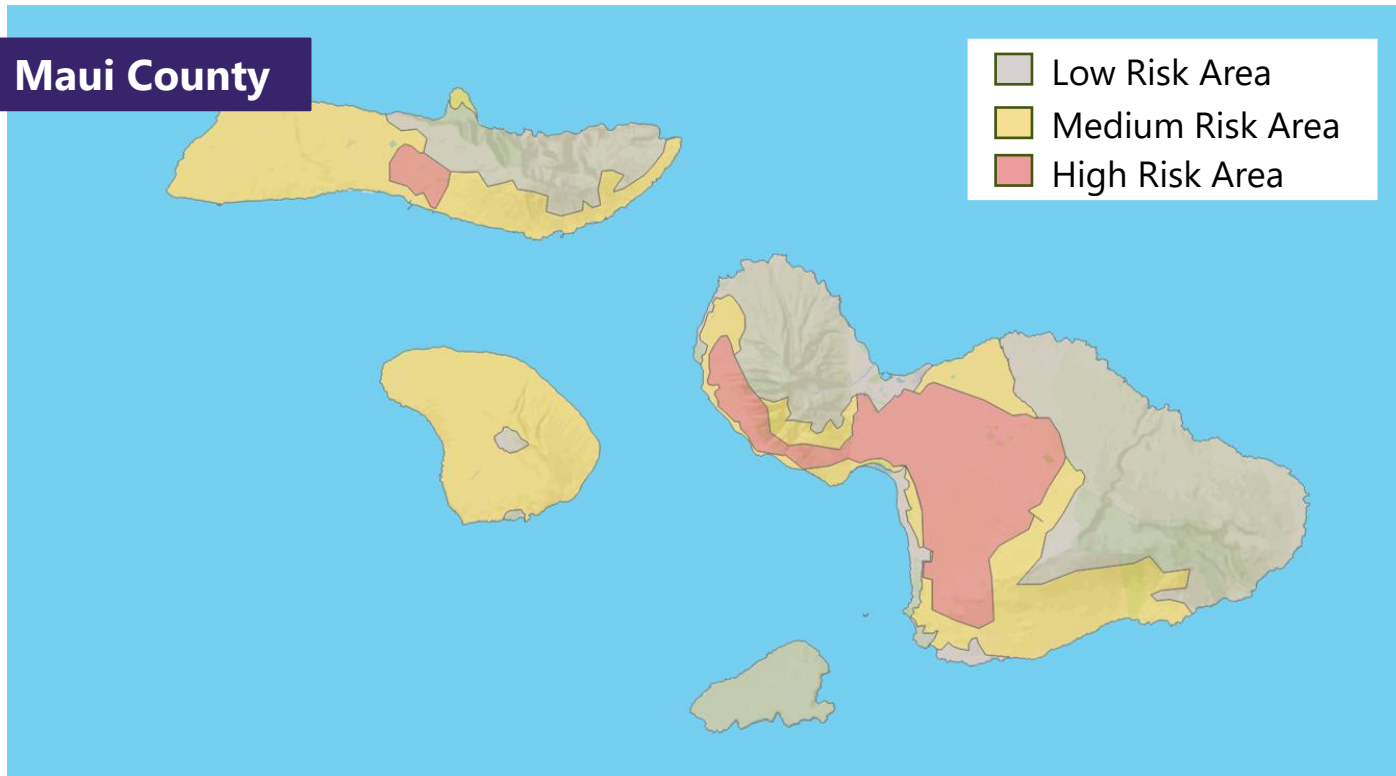
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# Wildfire risk maps based on utility equipment ignition potential



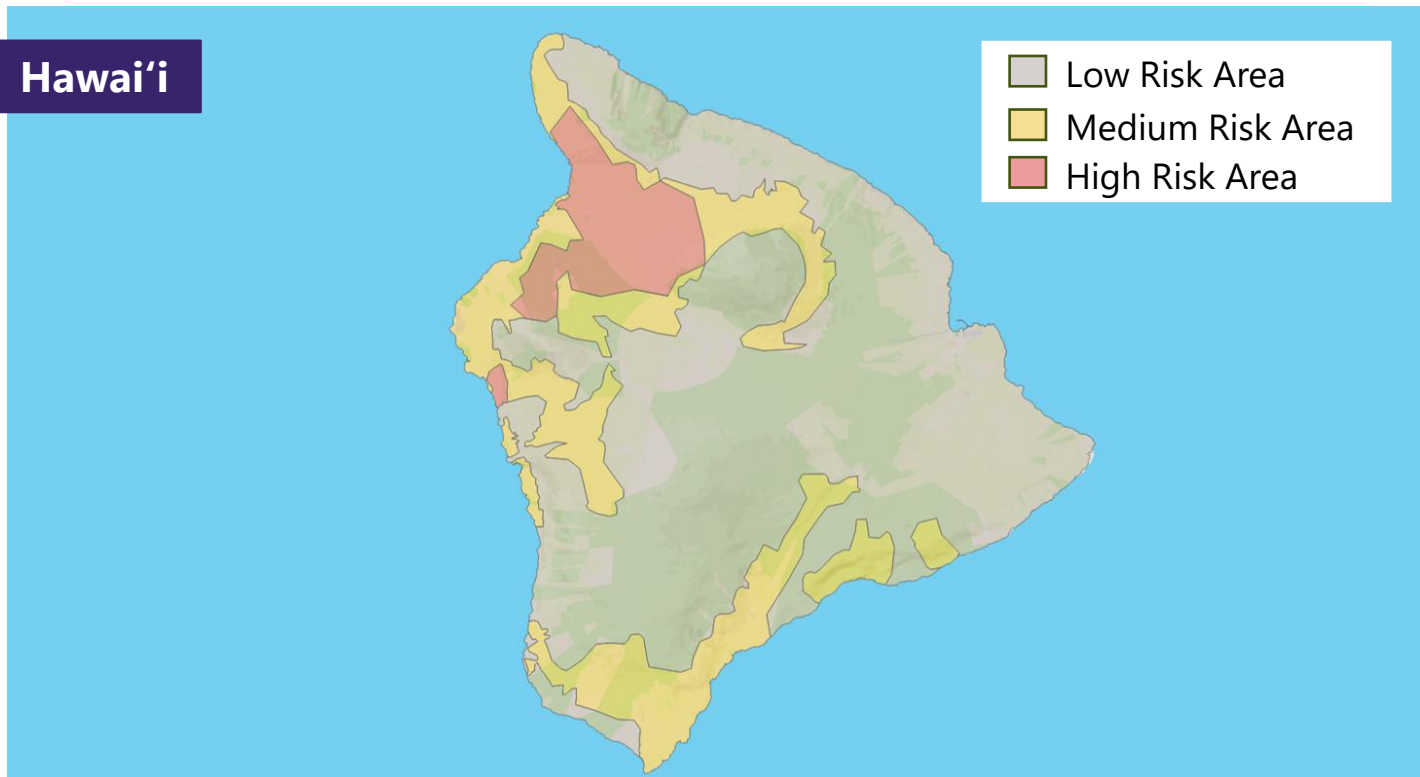
## Maui County



# Wildfire risk maps based on utility equipment ignition potential



Hawai'i



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# Situational awareness – weather stations and video cameras with AI



# Situational awareness - watch office

The image displays four screenshots of a wildfire watch office software interface, arranged in a 2x2 grid. Each screenshot shows a map of Hawaii on the left and a grid of camera feeds on the right. The top-left screenshot is labeled 'ALL' and shows a grid of 12 camera feeds. The top-right screenshot is labeled 'ACTIVE' and shows a grid of 4 camera feeds. The bottom-left screenshot is labeled 'AI' and shows a grid of 12 camera feeds. The bottom-right screenshot is labeled 'ANOMALIES' and shows a grid of 4 camera feeds, with a detailed view of an anomaly in the bottom right corner.



# Situational awareness resources

## AI-enabled Video Cameras



<https://alertwest.live>

## Weather Stations



<https://viewer.synopticdata.com/map>

## Real-Time Fire Info & Alerts



<https://www.watchduty.org>



# Situational awareness targets

Situational Awareness Scope	Current 2025-2027 Targets
Weather stations	<ul style="list-style-type: none"><li>• <b>Deploy additional weather stations</b> as necessary (locations TBD based on wildfire risk modeling) to support PSPS program evolution</li></ul>
Video cameras	<ul style="list-style-type: none"><li>• <b>Install additional standard camera stations</b> and mini cameras to achieve desired viewshed of high and medium risk areas</li></ul>
Watch Office	<ul style="list-style-type: none"><li>• <b>Build Watch Office staff</b> and meteorological capability, training and office space</li></ul>
Wildfire risk model for operations and forecasting	<ul style="list-style-type: none"><li>• <b>Acquire forecasting tools</b> to inform operational decisions on EFT, reclose block and PSPS</li></ul>
Fuel sampling program	<ul style="list-style-type: none"><li>• <b>Inform and update risk models</b> with state of vegetation and fuels</li></ul>



# Four pillars of Enhanced Wildfire Safety Strategy

## 3. Improve operational practices

- Use EFT settings and PSPS with advanced weather monitoring
  - Reduce ignition risks
- Enact restoration procedures in areas with elevated wildfire risk
- Expand vegetation management programs
- Expand annual inspection of electrical assets in the highest-risk areas



Grid hardening  
and redesign

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# Operational Practices – vegetation management



# Operational Practices – inspections in high-risk areas prioritize mitigation/hardening work



# Vegetation management and asset inspection in wildfire risk areas

Operational Mitigation	Current 2025-2027 Targets
Inspection and Routine Vegetation Management in Risk Areas and Mid-Cycle Inspection for Hazard Trees	1) 12-18 month routine for HWRA, MWRA as prioritized, (2) Mid-cycle on as-needed basis for hazard tree and radial clearance for specified areas, (3) Facility clearance substation and poles
Vegetation Management QA/QC	90% compliance of QA/QC of 25-30% of all work performed in HWRA and MWRA including Level 1 inspections, Radial Clearance and Hazard Tree Removal and consistently document all findings.
Detailed Inspection of Assets	Complete annual HWRA inspections; 3-year cycle for MWRA; 5-year for LWRA. Test & treat on 10-year cycle
Asset Inspection QA/QC	5% of all poles



Grid hardening and redesign

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# Operational practices – fast trip & block reclose



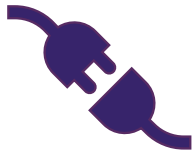
**Protective “fast trip” sensors can quickly stop the flow of electricity if a disturbance is detected.**

*Customers may experience longer duration and more frequent outages than in the past.*





# Public Safety Power Shutoff



Public Safety Power Shutoff (PSPS) program was launched on **July 1, 2024**, ahead of the dry summer months. A PSPS is a process electric utilities use to deactivate power in high-risk conditions for safety purposes. It is different from the “fast trip” safety measure.



One of many wildfire safety measures to help reduce the risk of wildfires. It is the **last line of defense** to help protect communities and property in high-risk areas during periods of heightened wildfire risk.



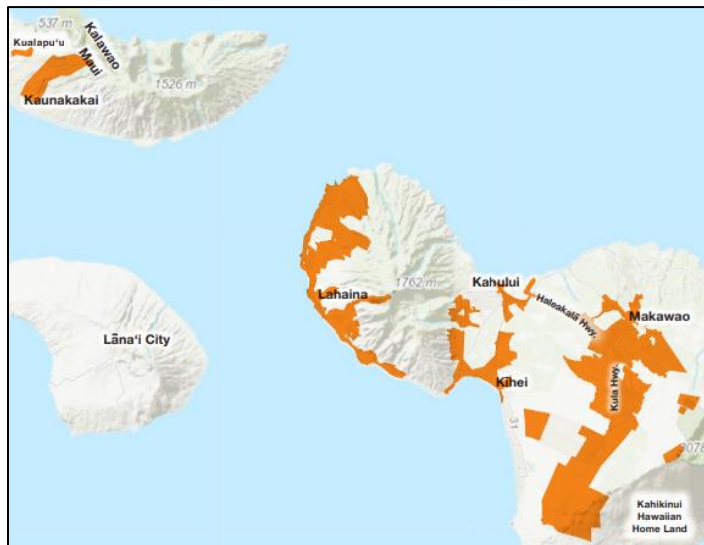
May be triggered by extreme weather conditions, such as strong winds and low humidity, that could exacerbate wildfire hazards by damaging power lines and impacting power infrastructure and any surrounding dry vegetation.



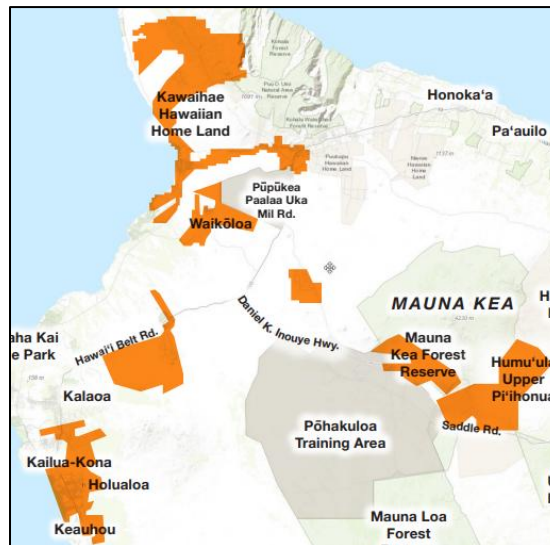
# PSPS estimated outage areas



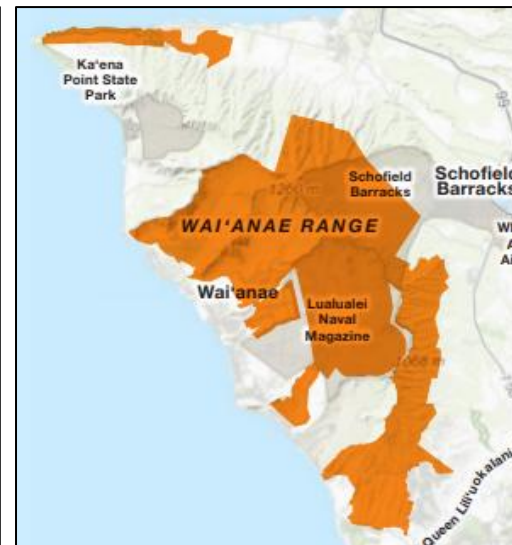
## Maui County



## Hawai'i Island



## O'ahu



Online search feature to determine if an address is within the company's PSPS area: [hawaiielectric.com/pspsmaps](http://hawaiielectric.com/pspsmaps)



# Inputs and criteria for considering a PSPS

- ▶ Fire weather (NWS Red Flag Warning, Fire Weather Watch, High Wind Warning with low humidity, field observations and data) triggers Hawaiian Electric Incident Management Team to **stand up to evaluate** conditions to determine whether to call a PSPS
- ▶ **3 primary criteria for declaring PSPS** (*keeping in mind that every situation is unique*)

**Persistent  
drought  
conditions**

**Wind gusts  
45 mph and higher**





**Relative humidity  
below 45%**

## **Important to know**

- ◆ NWS Red Flag Warning **DOES NOT** automatically trigger PSPS
- ◆ Red Flag Warnings have been issued in only 5 of the past 10 years
- ◆ Wind gusts above 45 mph are rare in most areas in summer months



# What happens before, during and after Public Safety Power Shutoff

	PSPS Alert	Happening	Restoration begins	Restoration complete
<b>WHEN:</b>	24–48 hours before a possible PSPS 	During a PSPS 	When it's safe 	PSPS is over 
<b>WHAT:</b>	Weather data, including statements from the National Weather Service, indicate conditions for heightened wildfire risk, and we are considering a PSPS. <b>We'll do our best to provide advance notice, but if conditions are suddenly hazardous we may have to shut off your power with little or no notice.</b> Activate your emergency plan, keep your home survival kit handy and pay attention to notifications from Hawaiian Electric and its emergency partners.	Power is shut off only in high wildfire risk areas for the safety of the community. We'll do everything we can to provide regular updates across multiple media platforms during the event.	Once the fire weather threat has ended, crews will begin patrolling, looking for downed lines and other hazardous conditions. Crews will restore power once it's safe, which may take hours or even days depending on the location and extent of damage.	The immediate threat has passed and power has been restored. But we'll continue to monitor conditions so we can keep our customers and communities safe.
<b>HOW YOU MAY HEAR FROM US:</b>	Email, Text, Hawaiian Electric Mobile App, Public Safety Notification, Social Media, Hawaiian Electric Website, News Media (TV, radio, websites)			



# Addressing reliability

- **Safety is our top priority**
- There are **tradeoffs between wildfire mitigation and reliability**, as some safety strategies to reduce wildfire risk (like PSPS and fast trip) can lead to **more frequent and longer outages**
- Initiatives to mitigate impacts to reliability
  - Deploying fault indicators
  - Sectionalizing switches
  - Deploy risk model for more granular operations of PSPS and EFT
  - Covered conductor and undergrounding
  - Inspections and vegetation management
- When outages occur, we are **focused on rapidly restoring power** as soon as it is safe to do so



# Operational practice targets

Operational Mitigation	Current 2025-2027 Targets
EFT: Enable circuits with settings only	<ul style="list-style-type: none"><li>• <b>Complete implementation of EFT</b> on medium risk circuits consistent with risk model (<b>40 circuits</b>)</li></ul>
EFT: Upgrade circuit breaker relays to microprocessor	<ul style="list-style-type: none"><li>• <b>Install relay upgrades</b>, as needed, to support EFT enablement (<b>approximately 10 upgrades</b>)</li></ul>
EFT: Install remote-control line reclosers	<ul style="list-style-type: none"><li>• <b>Deploy up to 117 reclosers</b> as needed on the distribution system to implement enhanced fast trip or reduce reliability impacts to customers</li></ul>
EFT: Add SCADA* to substations to remotely enable EFT	<ul style="list-style-type: none"><li>• <b>Enable SCADA at up to 12 distribution substations</b> to enhance EFT schemes</li></ul>
Sectionalizing switch installations (transmission and sub-transmission)	<ul style="list-style-type: none"><li>• <b>Inform and update risk models</b> with state of vegetation and fuels</li></ul>

\*SCADA = Supervisory Control and Data Acquisition



# Four Pillars of Enhanced Wildfire Safety Strategy

## 4. Strengthen stakeholder and community partnerships

- Engage partners and the public through tailored outreach and collaborative events
  - Wildfire Safety Symposium
  - Wildfire Safety Working Group

From January through October 2024, Hawaiian Electric participated in more than

**100** in-person and virtual public outreach events 

on Maui, Moloka'i, O'ahu, and Hawai'i Island.



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# Community engagement

## Tailored engagement across islands:

- Emergency Preparedness Fairs (East O’ahu, Lanikai, Windward Coast)
- Moloka’i Resource Fair
- PSPS Workshops and Education (Leeward Coast, Maui County, Upcountry)
- Waimea Fall Festival and seniors’ presentation
- He Ala Pono Electric Vehicle and Sustainability Fair
- Hawai’i County Civil Defense Disaster Preparedness Fair (Hilo)

## Hawai’i Island



## Maui County



## O’ahu





# Stakeholder and community partnership targets and goals

- Develop innovative ways to reach those who are unable to attend community events or meetings
- Continue to strengthen relationships with key partners and join them at events and meetings
- Expand the network of partners who can advise and collaborate with Hawaiian Electric to keep communities safe
- Continue to emphasize the importance of emergency preparedness throughout the year





# Community engagement for preparedness

- Emphasis on PSPS public awareness
  - Help PSPS communities prepare
  - Listen to concerns and questions
  - Educate on the process of initiating a shutoff and restoring power





# Stakeholder and community partnerships

Hawaiian Electric is making efforts to build and sustain partnerships with:

- Fellow utilities
- Emergency responders
- Government agencies
- Researchers and community-based organizations



# Current status and next steps



# 2025 WSS progress

Hardening Mitigation	2024	June 2025 YTD	Current 2025-2027 Targets
Single Strand Copper Replacement	23 miles	12 miles of 18 mile target	Complete 21 miles of single strand copper replacement
Covered Conductor		Began planning of 75 miles	Complete 56 miles on high risk distribution circuits
Expulsion fuse replacements	3,558	2,800 of 8,588 target	100% of fuses replaced in HWRA and MWRA (approximately 13,600 fuses)
Arrester replacements	680	952 of 1,481 target	100% of arresters replaced in HWRA and MWRA (approximately 2,600 arresters)
Wood pole replacement and upgrades	2,214	871 of 1,381 target	
Cellon-treated and poly-filled pole replacements	N/A	Prioritizing lists of poles	On pace to complete replacement of cellon poles in 11 years (approximately 648 poles)
Transmission/sub-transmission line hardening	N/A	Began planning of 19 miles	Harden 19 circuit miles on high risk transmission circuits
KPF Switch Replacement	21	20 of 60 target	Complete replacement of 64 switches



# Next Steps

**Docket No. 2025-0156:**  
Proceeding to Review Hawaiian Electric's Wildfire Mitigation Plan

**Approval, Accept,  
Modify, Reject** →

**Docket No. 2025-0263**  
Proceeding to seek cost recovery of incremental wildfire costs

DOE funding through IJJA GRIP,  
Round 1 for T&D Resilience Program  
(\$95M matched by Hawaiian Electric)

Potentially securitization through Act  
258 (future Commission proceeding)

Event	Deadline
Motions to Intervene or Participate	February 19, 2025
Public Meeting	April 23 and 24, 2025
Parties', Intervenor's, and Participants' Technical Conference(s)	June 24-25, 2025
Rolling information requests ("IRs") to Hawaiian Electric	Present to July 3, 2025
Hawaiian Electric's responses to IRs	10 days after receipt of IRs
Parties' Statements of Position ("SOP")	August 8, 2025
Hawaiian Electric's Reply Statement of Position, if necessary	August 27, 2025





Mahalo for your time.

[HAWAIIANELECTRIC.COM/WILDFIRESAFETY](https://www.hawaiianelectric.com/wildfiresafety)