



Metrics and Performance Measurement Wildfire Safety Working Group

September 5, 2024

Agenda

Recap of Last Meeting

Wildfire Safety Strategy (WSS) Scope

Proposed Performance Metrics

Group Discussions

Next Steps

Recap of Last Meeting

Recap of Last Working Group Meeting

Purpose

- Review and solicit feedback on operational strategies and PSPS enhancements

Summary

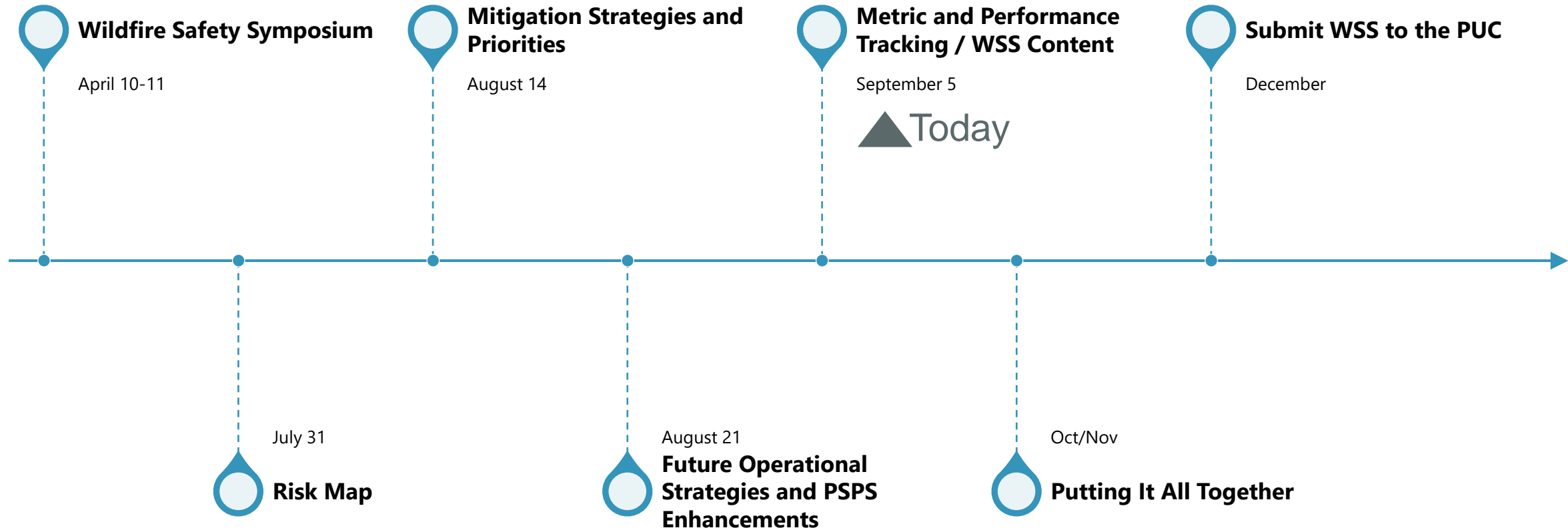
- Reviewed current operational practices and PSPS program
- Discussed future considerations for improving operations strategies (i.e., fast trip and PSPS enhancements)
- National Weather Service presented process for issuing and forecasting red flag warnings and historical wildfire events in Hawai'i
 - Discussed benefit of Hawaiian Electric's deployment of weather stations
- Presented Hawaiian Electric's weather station and camera deployment strategy and its benefits

WG Webpage – Meeting

Materials and Notes Available:

<https://www.hawaiianelectric.com/safety-and-outages/wildfire-safety/wildfire-safety-working-group-documents>

Wildfire Safety Working Group Timeline



WSS Scope and Contents

Legislative Considerations

Last legislative session, the legislature considered SB2922, which sought to:

- Create a process to develop and submit wildfire protection plans to the Public Utilities Commission for approval and allow the recovery of related costs and expenses through securitization.
- Require public utilities to report wildfires potentially caused by or occurring in connection with their operations.

Overview of Current WSS Content

The Company developed the WSS outline in alignment with SB2922 SD2 HD3 and comments provided by the Commission in its testimony on the bill.

- This bill version made it to conference committee last legislative session, and it (or something similar) might again be considered in the 2025 legislative session.
- See WSS Outline Document (separate handout)

Survey Results

Working Group Survey Results

11 Respondents

- Participants either agree or strongly agree that the working group has been useful
- More clarity on PSPS program, future enhancements, communication and interagency coordination
- Involve other agencies and other key stakeholders to present their plans
- Additional information on risk and risk models

Performance Metrics

Today's Objectives



Review proposed performance metrics under consideration



Seek feedback on performance metrics, challenges, opportunities and additional considerations



Alignment of Metrics with SB2922

Key activities to establish based on last session's version of SB2922 SD2 HD3:

Processes

Processes to monitor and track the implementation of the wildfire protection plan.

Methodologies

Methodologies to monitor and measure the effectiveness of the wildfire protection plan and identify areas for improvement.

Quality Assurance

Quality assurance practices to evaluate the effectiveness of electrical line and equipment inspections, carried out under the wildfire protection plan.

Performance Metrics Process

Measure Progress

Track implementation of planned wildfire risk mitigation activities and their annual targets.

Measure Effectiveness

Measure effectiveness of implemented strategies by tracking reduction in risk events and customer impact in high fire risk areas.



Continuous Improvement

Continuously incorporate lessons learned and adjust ongoing efforts to manage and mitigate wildfire risks effectively.

Lessons Learned & Feedback

Lessons learned from past events, advancements in technology, and feedback from stakeholders will be systematically collected and analyzed.

Measuring Wildfire Risk Reduction Progress and Effectiveness in the State

Core Concept 4: Everyone plays a role

**Everyone has a role
in adapting to wildfire**



Land
Stewards

Residents

Policy-makers
& Community
Leaders

Emergency
responders

Planners
Developers
Utilities

Source: HWMO, Hawaiian Electric Wildfire Safety Symposium, April 2024

Core Concept 2: Wildfire risk can be reduced

**There is a lot we can do to
reduce wildfire occurrence, fire spread, & severity**



Reduce ignitions



**Manage land &
reduce fuel**



**Make homes & towns safer
& ignition-resistant**

Are there examples from other agencies or orgs that track risk reduction metrics in Hawaii?
What metrics can be tracked at a societal level to track Hawaii's vulnerability to wildfires?

Performance Metrics for Utility Wildfire Safety Strategy

Effectiveness

Key performance indicators:

1. Reduction in Risk Events in risk areas:
 - Percentage reduction in potential ignitions events – such as wire down events and outages on primary distribution conductor – weather and high fire risk area normalized.
2. Customer Impact from PSPS:
 - Frequency, scope, and duration of PSPS events.
 - Total number of customers impacted by PSPS.

These are weather and overall size of a PSPS area dependent.

Progress

Track WSS planned activities and annual targets:

1. Track activities by:
 - Category (e.g., distribution and transmission)
 - Activity (e.g., areal inspection and undergrounding)
2. 3-year targets:
 - 3-year plan: 2025 to 2027.
 - Clearly defined 3-yr target (e.g., Complete detailed ground inspections on XX miles of distribution lines in Hawaiian Electric's asset registry as of January 1, 2028).

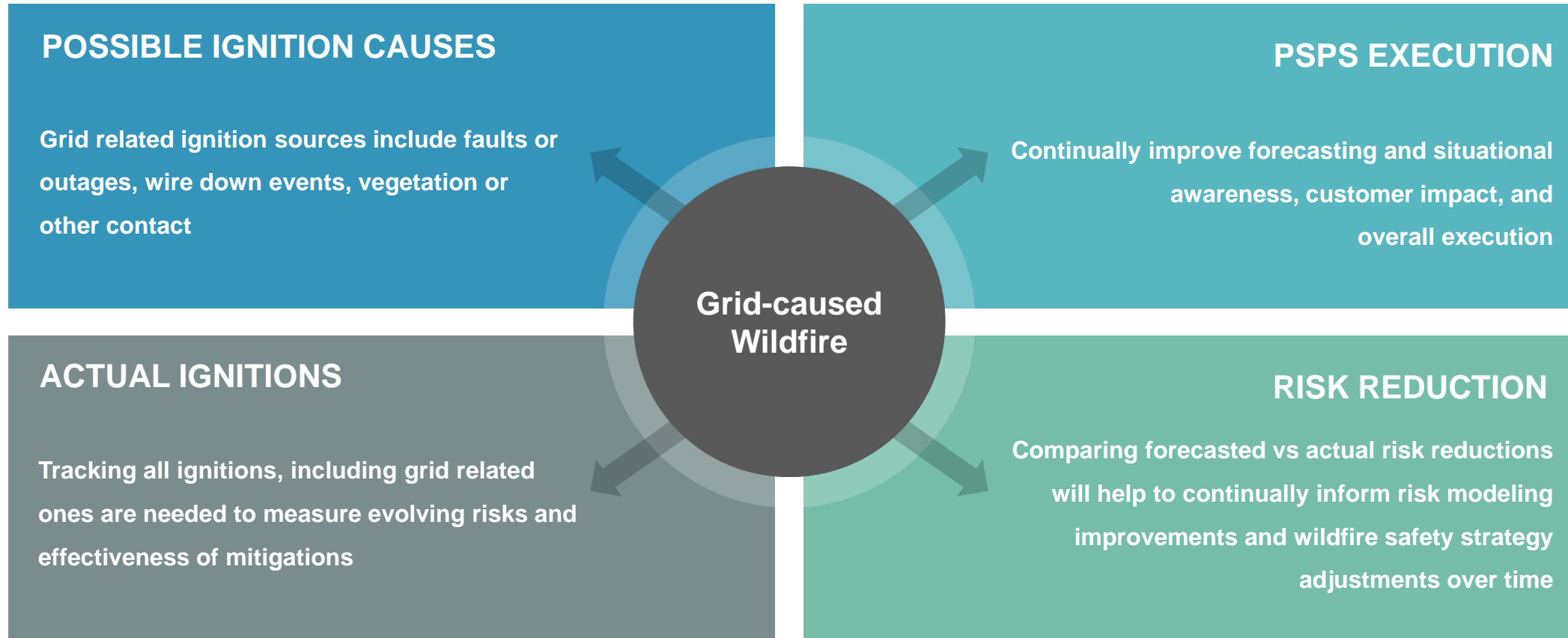
Measure Progress

Metrics that measure the progress of the implementation of the WSS over the three-year program (2025-2027)

Category & Activity	Target & Unit
Enhanced Powerline Safety Settings (EPSS)	% of targeted circuits implemented
Asset Inspections - Ground	Complete ground inspections on XX circuits in high and medium risk areas
Asset Inspections - Aerial	Complete aerial inspections on XX circuits in high and medium risk areas
System Hardening – Covered Conductor	Replace CC miles of bare wire with covered conductor
System Hardening – Undergrounding	Underground UU miles of overhead conductor.
System Hardening –Sectionalizing Devices	Install and commission XX sectionalizing devices.
System Hardening – Expulsion Fuses / Lightning Arrestors	Replacement of EE expulsion fuses / LL lightning arrestors with fire-safe models
System Hardening – Small Wire	Rebuild SS miles of small wire.
Vegetation Management – Line Clearing	XX miles, XX trees
Vegetation Management – Hazard Tree Removal	XX miles, XX trees
360-degree Cameras w/AI	Install XX cameras, XX% coverage in risk areas
Weather Stations	Install XX stations

Measuring Wildfire Mitigation Effectiveness

Categories of performance metrics that track the effectiveness of the mitigations planned and implemented



System Performance Metrics

Hawaiian Electric is considering to measure the efficacy of implemented WSS activities and operational performance using the following metrics:

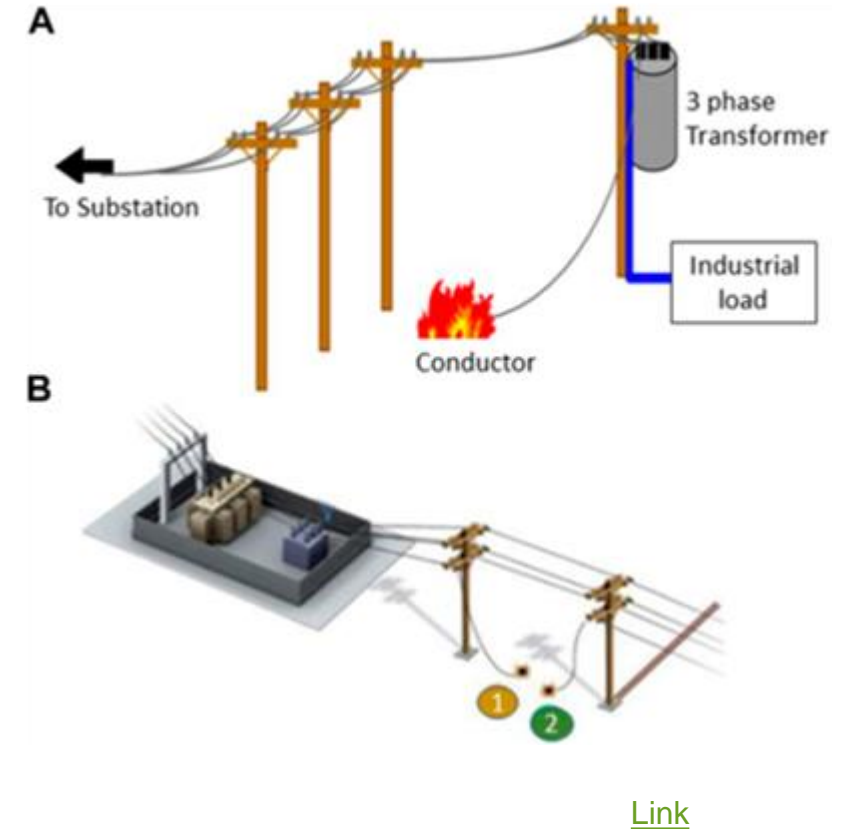
- Number of utility caused ignitions in elevated risk areas
- Number of wire downs in elevated risk areas
- Number of non-planned outages in elevated risk areas
- Frequency of PSPS events (number of events)
- Duration of PSPS events (in customer minutes)
- Number of circuits de-energized due to PSPS events
- Total number of customers impacted by PSPS

Potential Ignition Causes (Grid Related)

System Performance Metrics

- Used for baselining and tracking system performance that are linked to specific risk drivers
 - Tracking faults and outages on a more granular basis
- *Example*
 - Specific location and cause of faults regardless of whether ignitions have occurred, including those that cause wire-down events

Goal is to provide comparisons year over year on risk reductions while factoring in weather variability



Ignition Tracking

Requires 1-2 years to baseline data in order to develop reduction targets as mitigations are deployed

Ignitions Associated with Grid Infrastructure

- Track specific location and causes, where available
- Supports analysis of conditions that cause ignitions, and if trends are increasing or decreasing
- Information provides additional insights to continually improve risk models

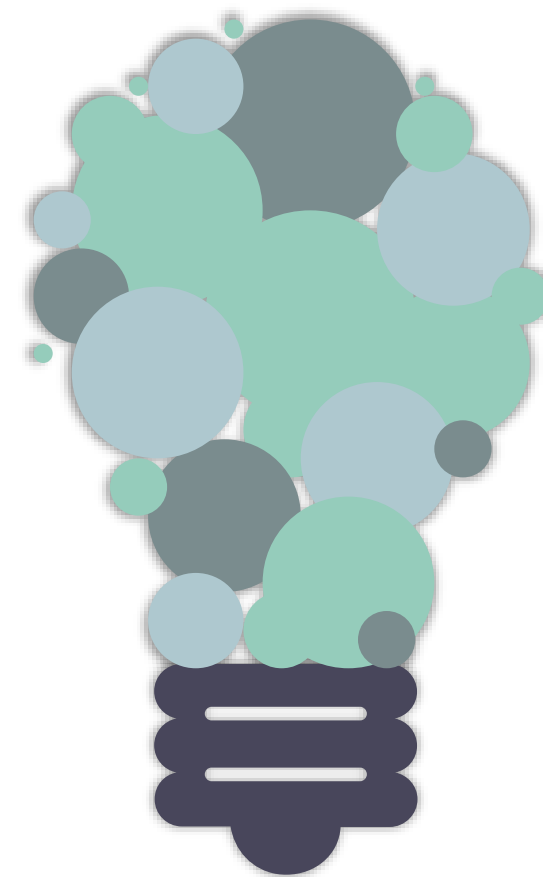
Non-Grid Related Ignitions

- Supports better understanding of worsening or improving conditions
- Leads to additional improvements in fire spread modeling

System Performance Metrics

Group discussion

- What system performance metrics need more clarification, and what might be missing?
- Besides grid-caused ignitions, what other causes should be actively measured?



PSPS Metrics

Hawaiian Electric aims to track execution of PSPS and customer engagement activities, while continuously seeking opportunities for improvements that further lower risks and improve safety



Notification Delivery

Tracking the number of notifications to customers that were delivered



PSPS Event Information

Tracking total duration of outage

Frequency of PSPS events

Total number of customers impacted



Customer Engagement

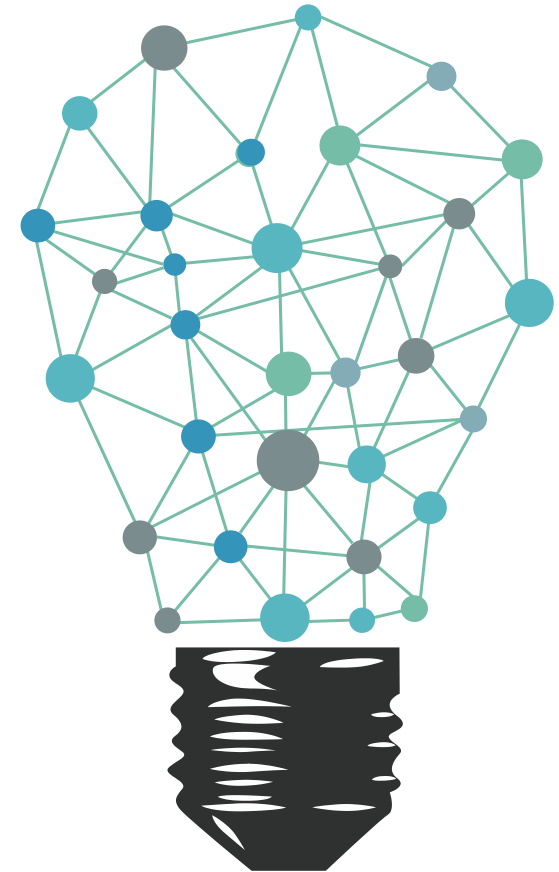
Evaluating effectiveness of communication to customers about wildfire safety and PSPS.

Tracking the deployment of customer programs to support during PSPS events.

PSPS Metrics

Group discussion

- Are there PSPS metrics that need further clarification?
- Are there any additional opportunities for collaboration between Hawaiian Electric and stakeholders to measure the performance and effectiveness of the PSPS program?



Risk Reduction

Risk reductions can be forecasted and compared with actuals as mitigations are deployed

Baseline risks include an evaluation of safety, reliability, and financial risks

- Number of unplanned outages, utility caused ignition events, and wire down events.

Reductions in risk are based on estimated effectiveness of mitigations

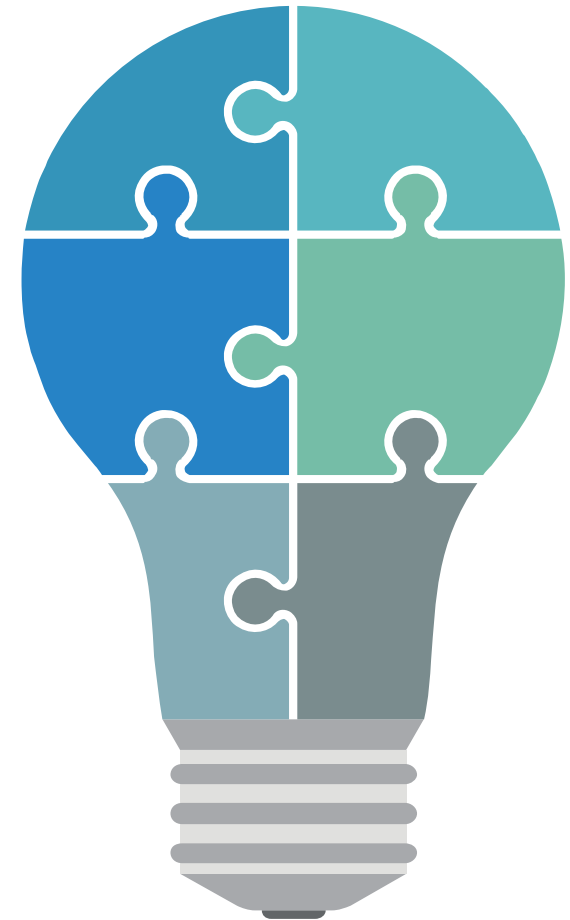
- Undergrounding essentially provides 100% wildfire risk reduction and eliminates the vegetation management cost - but requires significant investment.
- Covered conductor may reduce ignitions per # of faults.

Actual reductions are based on the amount of mitigations deployed, and further confirmed by improvements in system performance metrics

Risk Reduction Metrics

Group discussion

- Are there any risk reduction measures and metrics that need clarification or are missing?
- Are there opportunities for joint collaboration to work on risk reductions that are shared between Hawaiian Electric and stakeholders?



Key Points

- Defining of metrics to track implementation of activities as planned in WSS.
- Measure effectiveness of implemented activities using previously identified baselines, such as reduction in the number of outages, ignitions, and frequency/duration of PSPS events.
- Hawaiian Electric is working to identify an effective ignition tracking process to more effectively track risk reduction of wildfire from implemented mitigation strategies.
- Lessons learned and stakeholder feedback will be implemented to continuously improve system performance and customer experience.



Next Steps



**Next Meeting
TBD**



**Feel free to provide any additional
feedback**

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WFS WG Webpage: <https://www.hawaiianelectric.com/safety-and-outages/wildfire-safety/wildfire-safety-working-group-documents>



Mahalo!
