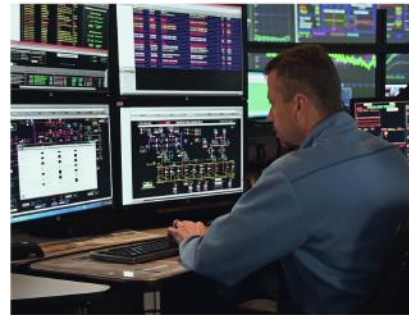


2023 Oregon Wildfire Mitigation Plan

UM 2207 - WMP Workshop

March 14, 2023



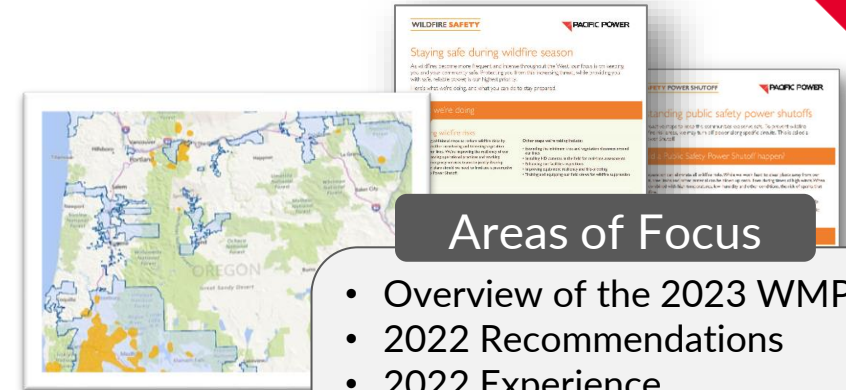
Agenda

Purpose: Provide an Overview & Initiate Evaluation of Pacific Power's 2023 WMP filed on December 30, 2023

Plan Development & Journey

Wildfire Mitigation Plan, Elements & Progress

- Baseline Risk Assessment
- Inspection & Correction
- Vegetation Management
- System Hardening
- Dynamic Risk through Situational Awareness
- PSPS Program & Preparedness
- Wildfire Safety Engagement

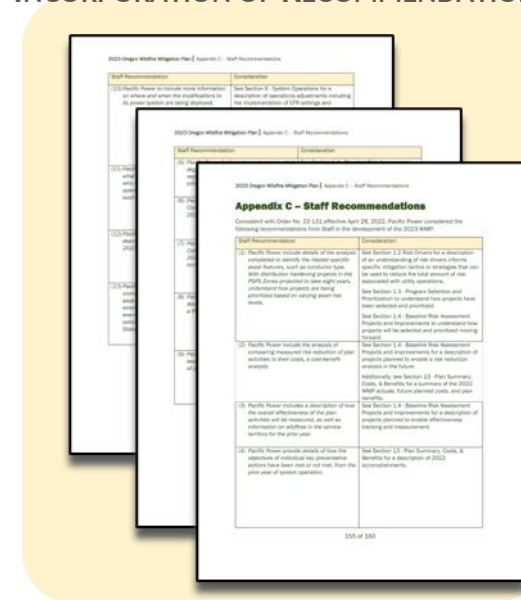


Areas of Focus

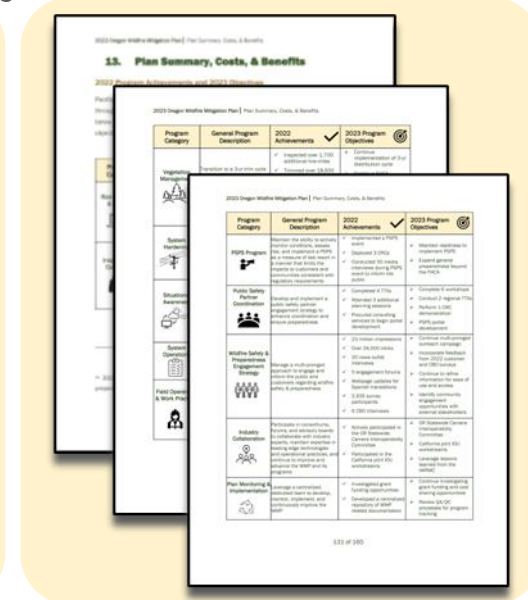
- Overview of the 2023 WMP
- 2022 Recommendations
- 2022 Experience
- 2022 Activities / Progress
- Impacts to Future Years



APPENDIX C INCORPORATION OF RECOMMENDATIONS



SECTION 13 2022 PROGRESS & 2023 TARGETS



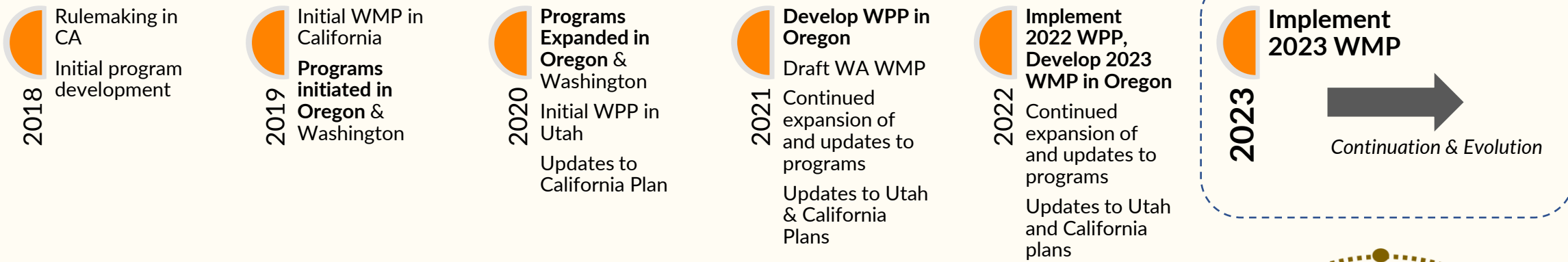


Plan Development

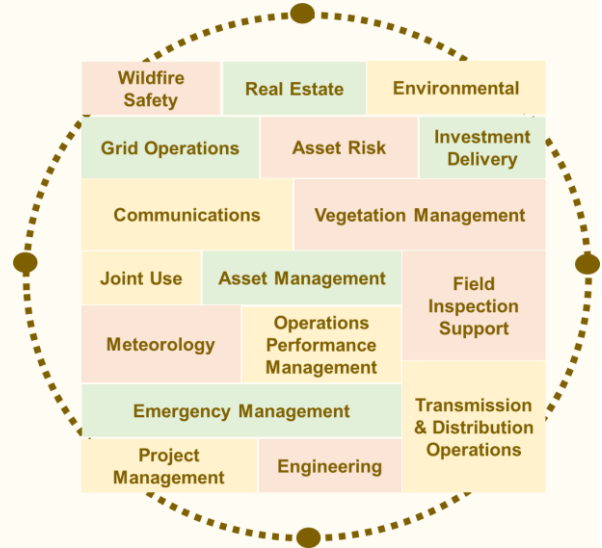
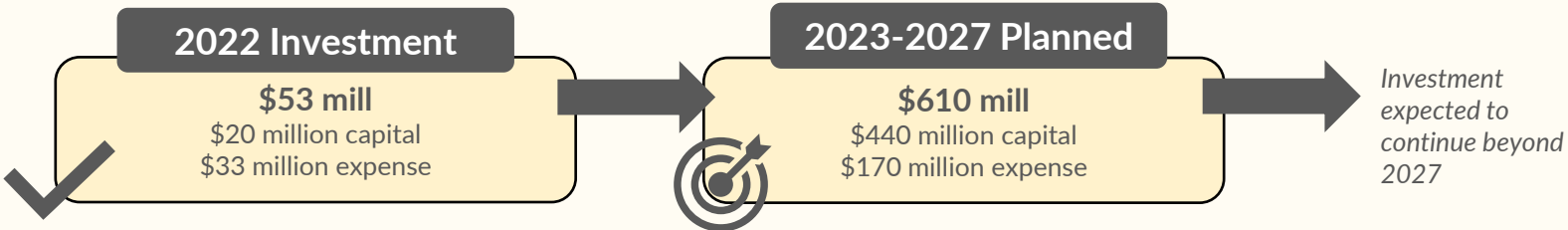
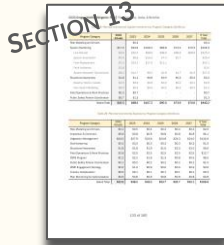
Presenter: Amy McCluskey, Mng. Director of Wildfire Safety & Asset Management

Plan Development & Journey

- Pacific Power’s 2023 Wildfire Mitigation Plan (WMP) builds upon many years of experience, program development, and formal rulemaking and process across various states:



- The plan reflects a comprehensive approach to mitigating the risk of utility related wildfire by combing input from multiple business units, subject matter experts, and industry practices
- The 2023 WMP includes long term, multi-year investment:



Plan Foundation & Elements

Situationally aware of environmental risks

- Baseline risk modeling to inform strategic programs and investments
- Dynamic seasonal risk modeling to inform operational protocols
 - ✓ Meteorology department and weather forecasting
 - ✓ Fire weather condition monitoring
 - ✓ Fire modeling

Resilient system to limit potential for ignition

- Enhanced inspection programs and accelerated correction of certain conditions
- Enhanced vegetation management practices
- Deployment of covered conductor / line rebuilds

Rapid response to fault events

- Deploy more sensitive protective coordination equipment
- Replace fuse locations with non-expulsion equipment
- Implement operational strategies during fire risk periods
- Installation of new fault indicators





Baseline Risk Mapping

Presenter: Kevin Benson, Director of Asset Risk

Baseline Risk Mapping

In terms of compliance with, OAR 860-024-0018, FHCA = HFRZs

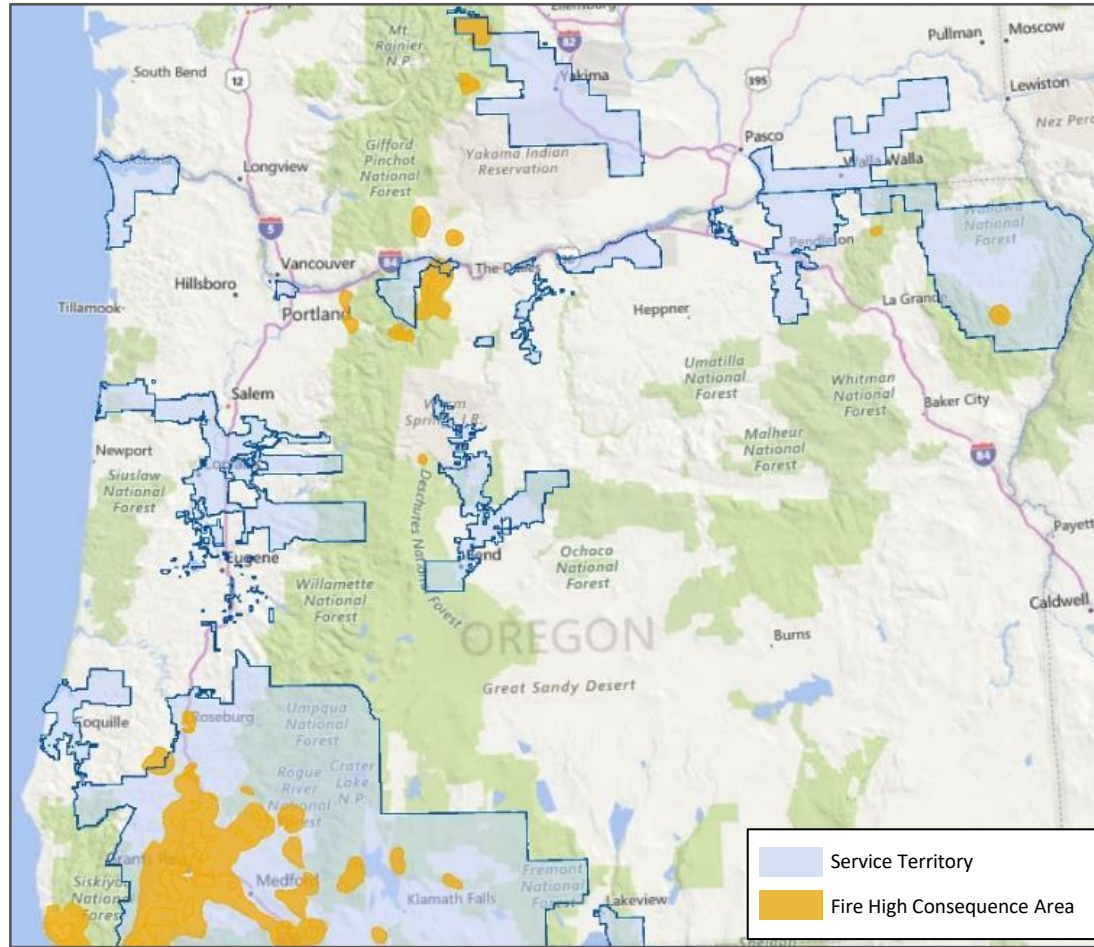
General Stats

PacifiCorp provides electricity to approximately **630,000 Oregon customers** via **290 substations**, **20,000 miles** of distribution lines, and about **3,000 miles** of transmission lines across nearly **21,000 square miles**

System Wide Initiatives

- ✓ Weather Stations
- ✓ Situational Awareness
- ✓ Operational Protocols
- ✓ Community Education and Outreach

Oregon Service Territory



FHCA

Heightened Risk of Wildfire
 Approximately **2,700 miles** or 16% of all **overhead lines** are located within the FHCA
2,300 miles of overhead distribution in the FHCA
400 miles of overhead transmission in the FHCA

Programmatic Shifts

- ✓ Increased Frequency of Asset Inspections
- ✓ Accelerated Condition Correction
- ✓ Enhanced Vegetation Management



Extreme Risk

Extreme Risk of Wildfire

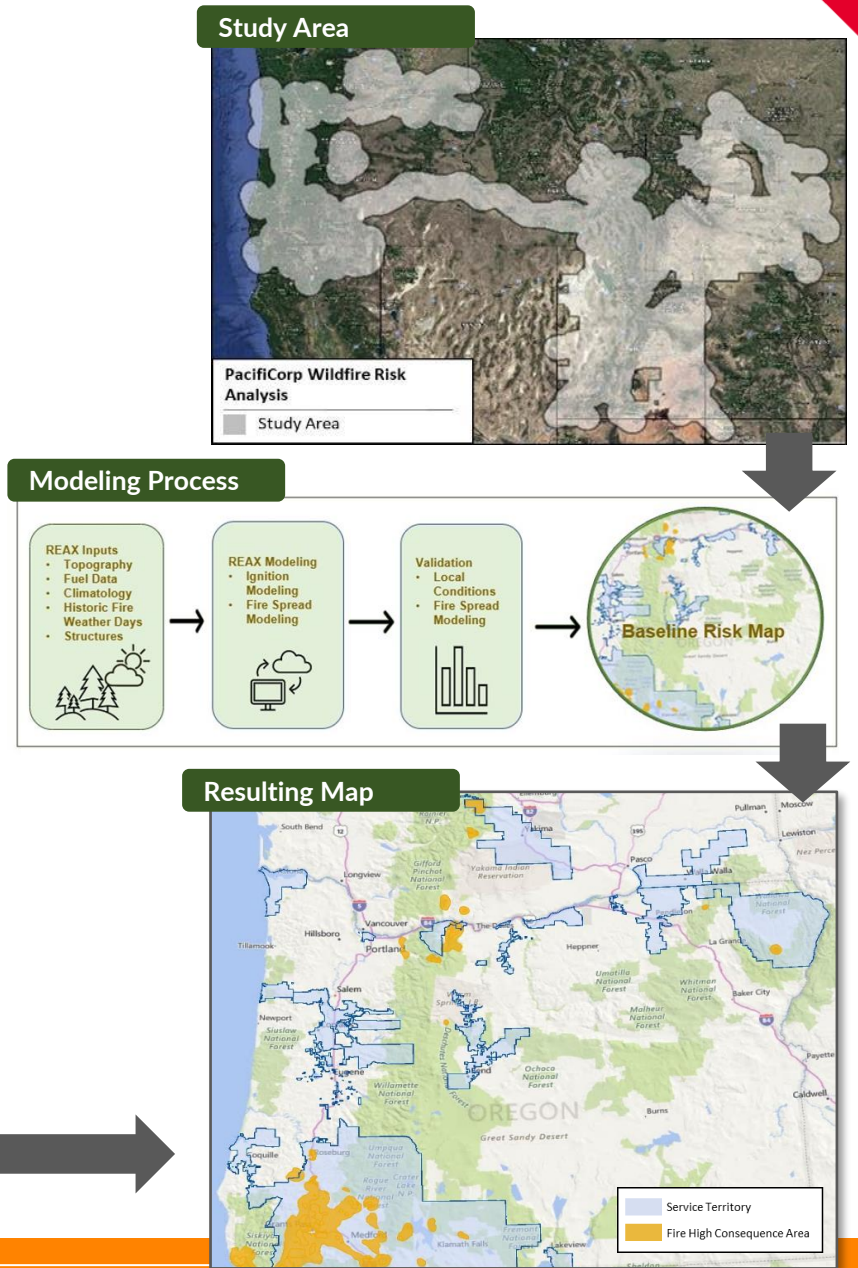
Approximately **590 miles** or 5% of all **overhead distribution lines** are planned for prioritized system hardening (2023-2027)

Prioritized System Hardening

- ✓ Covered Conductor
- ✓ Advanced Protection and Control
- ✓ Expulsion Fuse Replacements

Baseline Risk Mapping (Current)

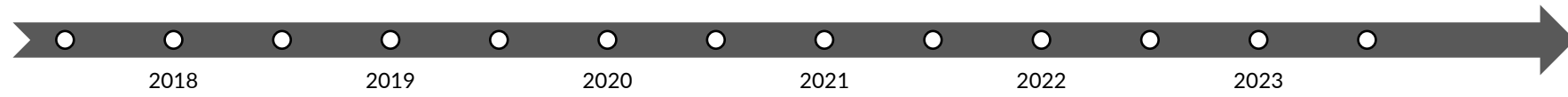
Baseline Risk Assessment Mapping



Patterned after the multi-year, iterative process in California

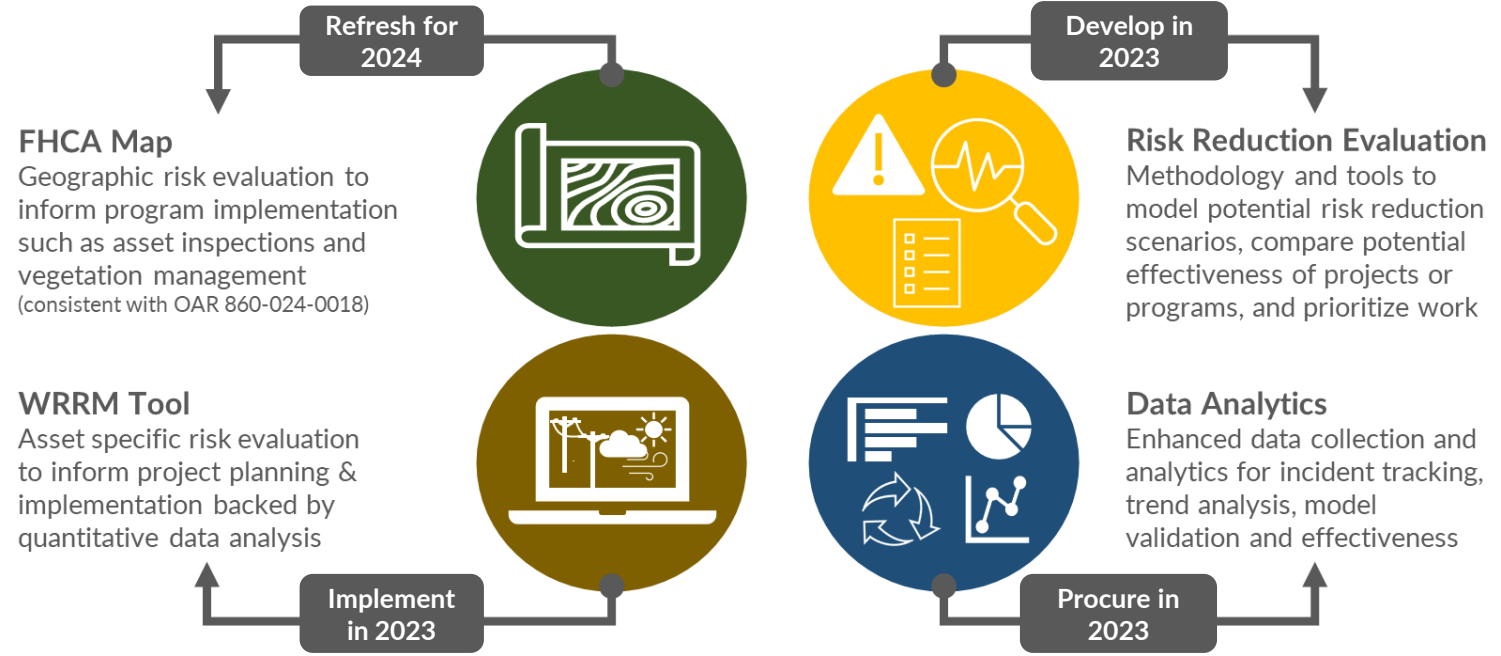
FHCA Map Development

Programs Implemented informed by FHCA (~5 years)
Inspection & Corrections • Vegetation Management • System Hardening

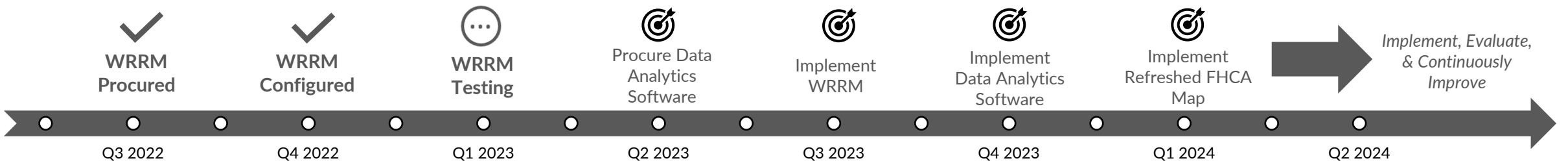
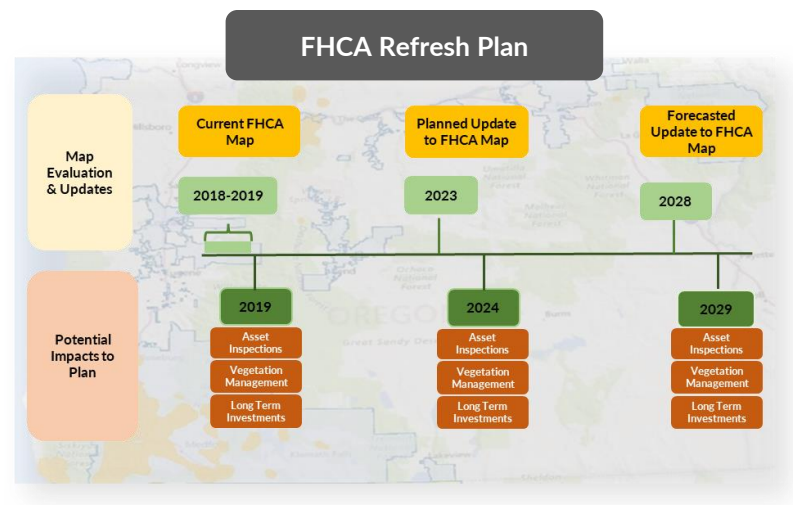


Baseline Risk Framework (Future)

Baseline Risk Assessment Framework



New WMP Section 1.4
Key updates, projects, and investments to advance baseline risk assessment capabilities and align with Staff Recommendations #3, #4, #5, #17, & #18.





Inspection & Corrections

Presenter: Jon Connelly, Director of Asset Management

Inspections & Corrections

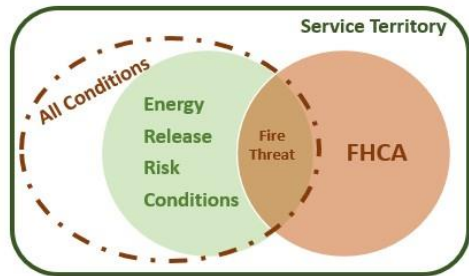
Asset Inspections

Increased Frequency of Inspections in the FHCA

| Location | | | ✓ 2022 Accomplishments | |
|----------|----------|---------|------------------------|--------|
| | Non-FHCA | FHCA | Non-FHCA | FHCA |
| Visual | 2 years | 1 year | 210,689 | 55,139 |
| Detailed | 10 years | 5 years | 24,327 | 3,953 |

*Approximately 55,000 out of 450,000 poles (or ~12%) are in FHCA

Accelerated Correction of Fire Threat Conditions



Fire Threat Conditions

- Frayed / Damaged Conductor
- Loose Connections/Bolts/Hardware
- Loose / Damaged Equipment
- Primary / Secondary Clearances
- Vegetation Clearances
- **Loose / Broken Anchors & Guys**
- **Pole Replacements**
- **Loose / Lashing Wire**

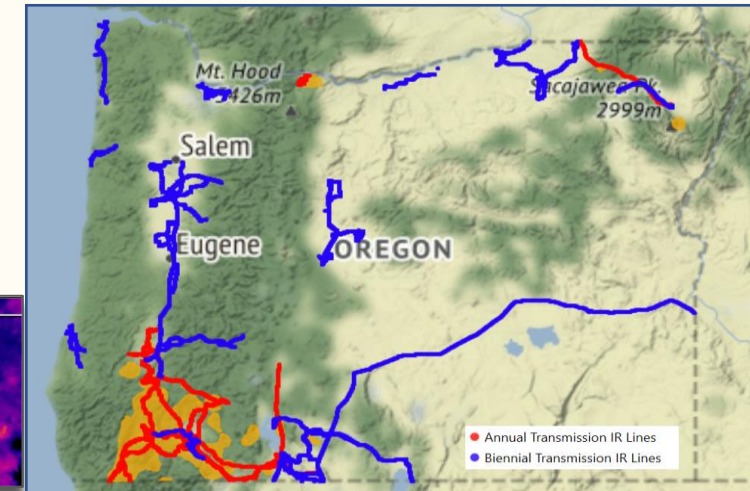
| Priority | | | ✓ 2022 Accomplishments | |
|----------------------|----------------------|---|------------------------|--|
| | Correction Timeframe | | Corrected | |
| Imminent Fire Threat | Immediately | → | 1,308 | |
| | Up to 180 days | | | |



IR Inspections

Incremental, Enhanced Inspections on OH Transmission Lines

| Location | Line Miles | Frequency | ✓ 2022 Accomplishments | |
|----------|------------|------------|------------------------|--|
| | | | Line Miles | |
| FHCA | 1,000 | Annually | 1,082 | |
| Non-FHCA | 2,000 | Biennially | Scheduled 990 for 2023 | |



🎯 2023 Goals

- Continue implementation of FHCA and IR Inspection Programs
- Leverage OAR 860-024 rule requirements, when possible, to expedite correction of Fire Threat Conditions



Vegetation Management

Presenter: Brian King, Director of Vegetation Management

Vegetation Management

Program Elements

- Transition to a 3-yr cycle
- Increased clearances in the FHCA
- Annual inspections in the FHCA
- Annual pole clearing of equipment poles

2022 Accomplishments

- ✓ Inspected 1,700 additional miles
- ✓ Trimmed over 18,600 additional trees
- ✓ Removed over 22,700 additional trees (including brush equivalent)
- ✓ Cleared over 20,000 poles

Section 3.3 - Post Work Audits Added to Plan per Staff Recommendation #16

[Recommendations can be found in Order No. 22-131 made effective April 21, 2022, under UM 2207]

2022 Oregon Wildfire Mitigation Plan | Vegetation Management

In designed to reduce the risk of the ignition of a fire by removing vegetation that has been found to be a wildfire hazard. This work will be performed in the FHCA around poles that have been found to be a wildfire hazard. This work will be performed in the FHCA around poles that have been found to be a wildfire hazard. This work will be performed in the FHCA around poles that have been found to be a wildfire hazard.

Continuous Improvement Plans

Pacific Power vegetation management will continue to evaluate other strategies and emerging industry standards and their applicability to the range of wildfire mitigation. Along these lines, Pacific Power may implement additional vegetation management strategies in a subsequent WMP as conditions and best management practices evolve considering wildfire ignition risk.

3.3 POST WORK AUDITS

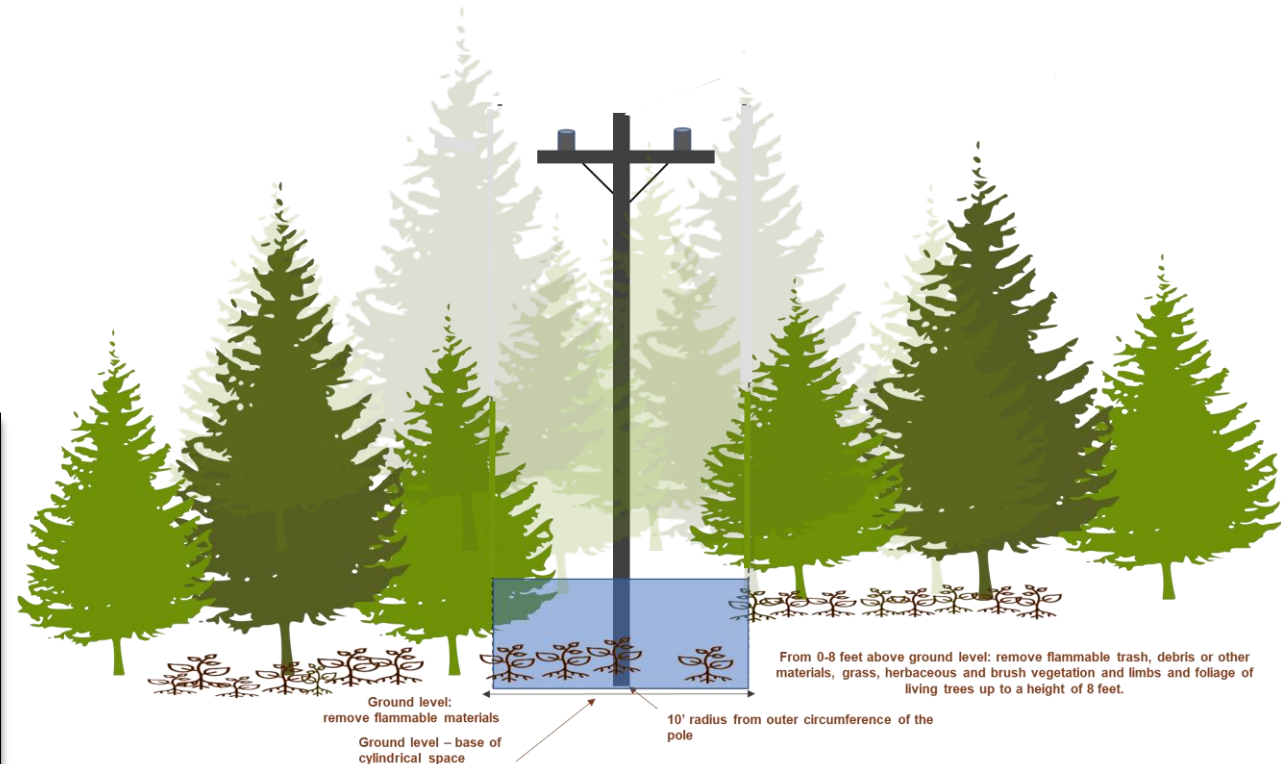
After work is completed by Pacific Power's vegetation management contractors, Pacific Power conducts post-work audits (quality control reviews) to compare completed work against specifications, such as post-work observations. Post-audit observations identify and describe areas of routine maintenance or additional work completed annually within the FHCA. Post-audit observations are provided to Pacific Power internal risk control staff. Risk control staff may issue an audit report based on the observations. In addition, Pacific Power is hiring additional staff throughout its service territory to increase internal audit capacity. Pacific Power is currently conducting audits of the vegetation management work to determine if a location, to identify any issues before vegetation management crews leave the area for their next work assignment. Post-audit observations are intended to identify recurring quality-control issues early on. In 2022 Pacific Power staff can review with the contractor conducting the work and treatment any needed corrective measures.

The audit observations are made available to Pacific Power's internal risk control staff. The audit observations are then visible to the vegetation management contractor within the routine data management software and appropriate contractors, and remove responsibility for the work, including any corrective action.

14 of 202

DISTRIBUTION CLEARANCES IN THE FHCA

| CLEARANCE LOCATION | SLOW GROWING (<1 FT./YR.) | MODERATE GROWING (1-3 FT./YR.) | FAST GROWING (> 3 FT./YR.) |
|--------------------|---------------------------|--------------------------------|----------------------------|
| SIDE CLEARANCE | 12 ft. | 12 ft. | 14 ft. |
| UNDER CLEARANCE | 12 ft. | 14 ft. | 16 ft. |
| OVERHANG CLEARANCE | 12 ft. | 14 ft. | 14 ft. |





System Hardening

Presenter: Kevin Schiedler, Wildfire Project Delivery Director

System Hardening

Long term, multi-year investment: ~\$430 million over 5 years

Program Elements

- Line Rebuild Program
- Advanced Protection and Control
- Expulsion Fuse Replacement
- Fault Indicator Installation

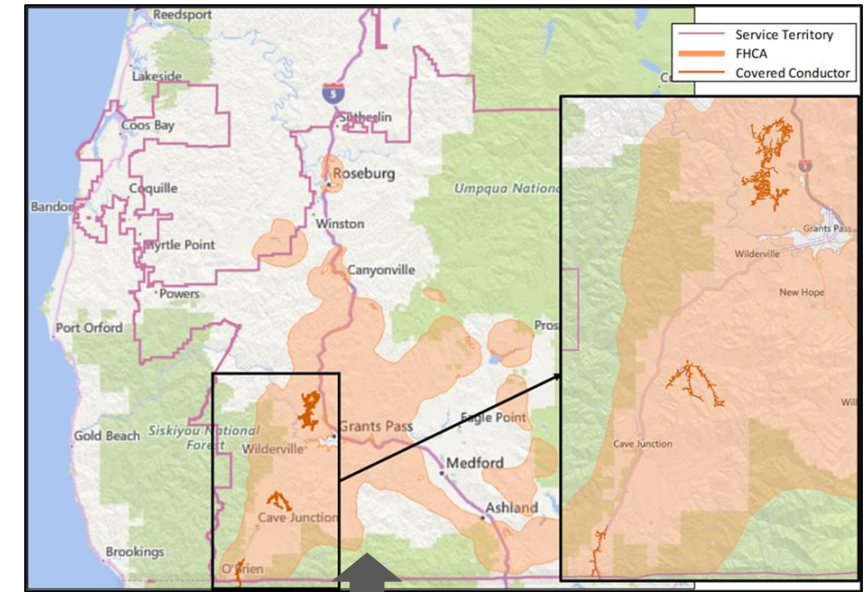
2022 Accomplishments ✓

- ✓ 91 miles of covered conductor designed
- ✓ 2 miles of covered conductor constructed
- ✓ 1,000 expulsion fuses replaced
- ✓ 62 relays and reclosers upgraded
- ✓ 2,156 fault indicators installed

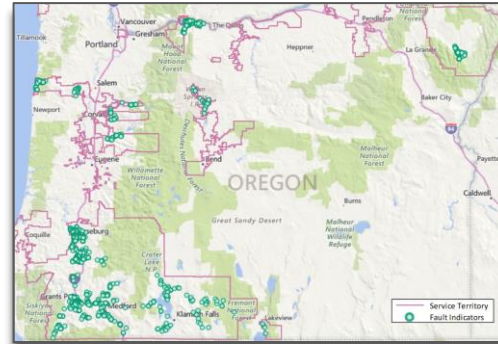
2023 Targets 🎯

- Construct 89 miles of covered conductor
- Upgrade 65 devices
- Replace 10,000 fuses

2022-2023 LINE REBUILD PROGRAM

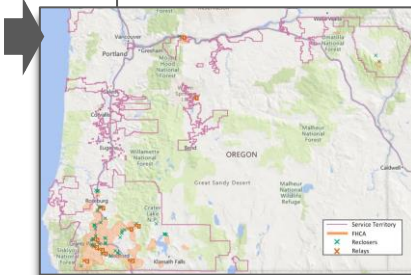
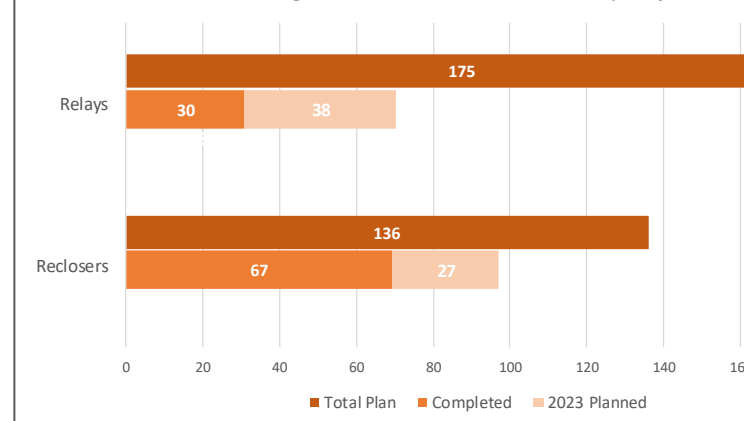


2022 FAULT INDICATOR LOCATIONS



| PROJECT COMPONENT | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | TOTAL |
|--------------------------|------|------|------|------|------|------|-------|
| Scoping & Design (miles) | 91 | 125 | 125 | 125 | 125 | 125 | 716 |
| Construction (miles) | 2 | 89 | 125 | 125 | 125 | 125 | 591 |

Oregon Multi-Year Recloser and Relay Project



FUSE REPLACEMENT PLAN

| Program | 2022 | 2023 PLAN | 2024 PLAN | 2025 PLAN | TOTAL |
|-------------------|-------|-----------|-----------|-----------|--------|
| FUSE REPLACEMENTS | 1,000 | 10,776 | 8,919 | 6,085 | 26,780 |

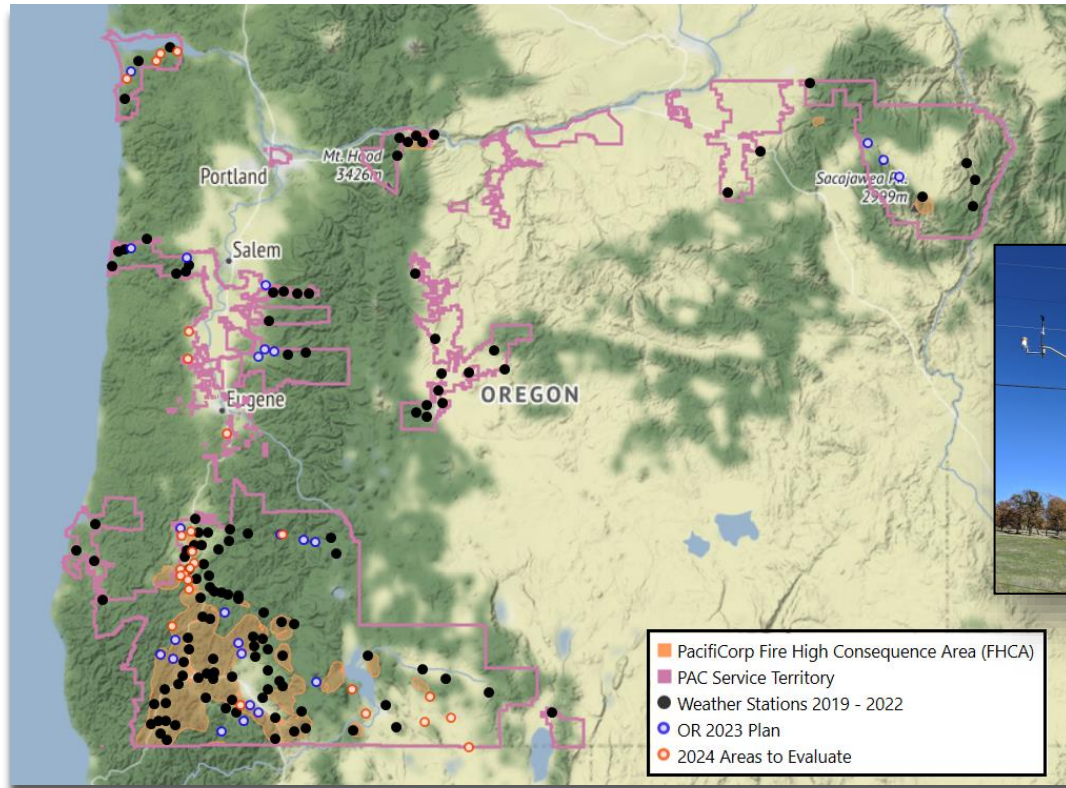


Advanced Weather Forecasting & Situational Awareness

Presenter: Steve Vanderburg, Manager of Meteorology

Situational Awareness

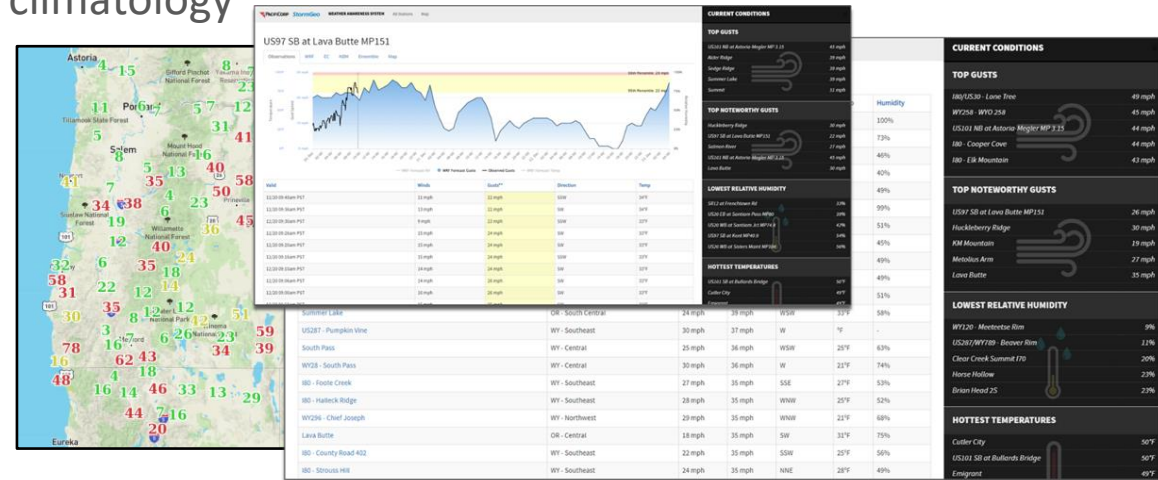
Expanding Weather Station Network



| | ✓ 2022 ACTUALS | 2023 PLAN | 2024 AREAS TO EVALUATE | TOTAL |
|----------------------|----------------|-----------|------------------------|-------|
| New Weather Stations | 86 | 47 | 25 | 158 |
| Total OR Fleet | 115 | 162 | 187 | 187 |

✓ Situational Awareness Websites

- Real-time displays of weather station & Forecast data
- Wind gusts are color coded by strength relative to local climatology



✓ Meteorology Team

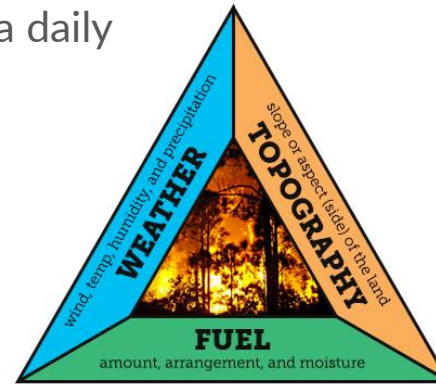
- 5 full-time meteorologists on staff
- 1 operations data scientist
- Provide daily and event-driven forecasts
- Support the Emergency Coordination Center



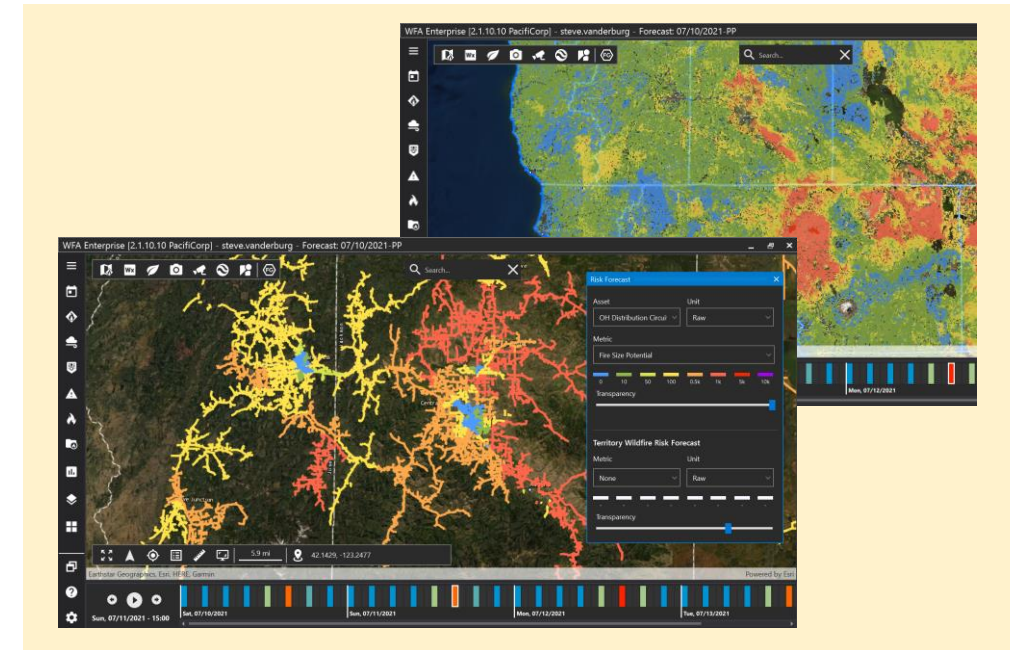
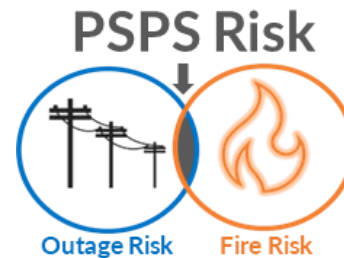
Situational Awareness

Weather Forecast Models

- In-house Weather Research & Forecast (WRF) model
 - 2km, 96-hour weather and fuels forecasts
 - Generates one terabyte of forecast data daily
- Building and Training Outage Impact Models
 - 48-hour impacts (outage) forecast
- Detailed 30-year Weather Reanalysis
 - Foundation for risk-based forecast

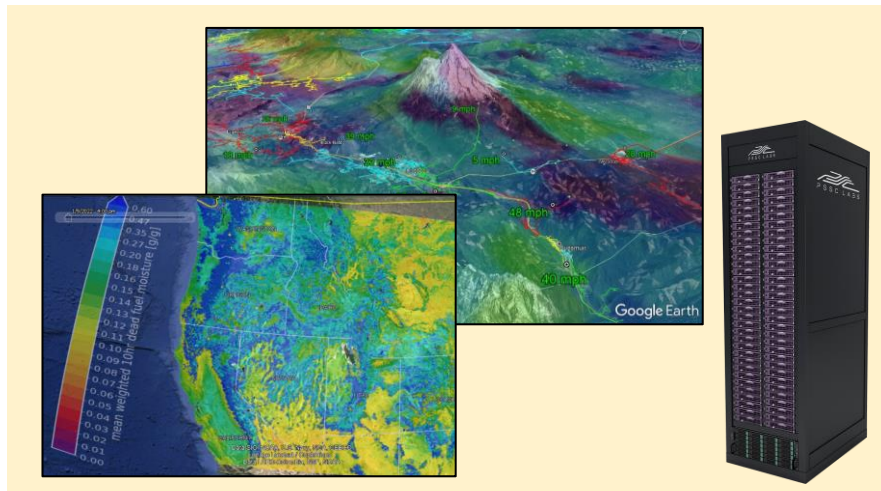


Fire Behavior Triangle



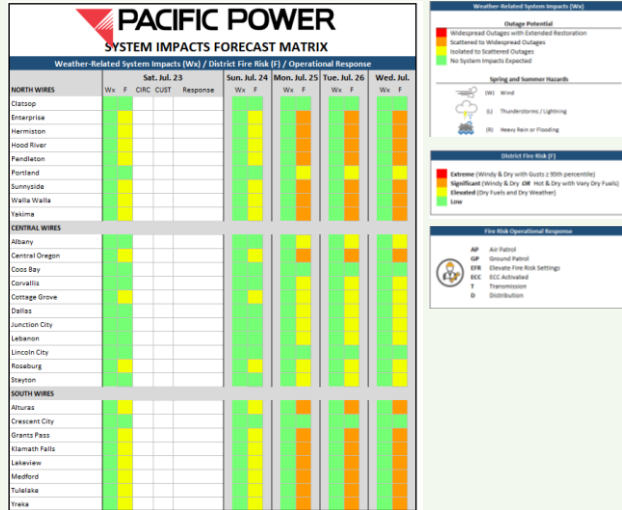
Advanced Wildfire Models

- Millions of territory-wide wildfire simulations performed daily
- Wildfire risk and consequence forecasts
- Used for real-time decision making and long-term planning of system hardening



District Level Fire Risk Assessment

Daily Reports Inform Risk & Decision Making



✓ 2022 Accomplishment / Methodology

| PacifiCorp Wildfire Risk | GACC 7-Day Significant Fire Potential | Fuels Considerations | Wind Gust Considerations |
|----------------------------|---------------------------------------|----------------------|-----------------------------|
| Little to No Wildfire Risk | Low or Little to No Risk | | |
| Elevated Wildfire Risk | Low or Moderate | Dry | |
| Significant Wildfire Risk | Moderate | Very Dry | |
| Extreme Wildfire Risk | High Risk* | Dry or Very Dry | Max Gusts < 95th Percentile |
| | | | Max Gusts ≥ 95th Percentile |

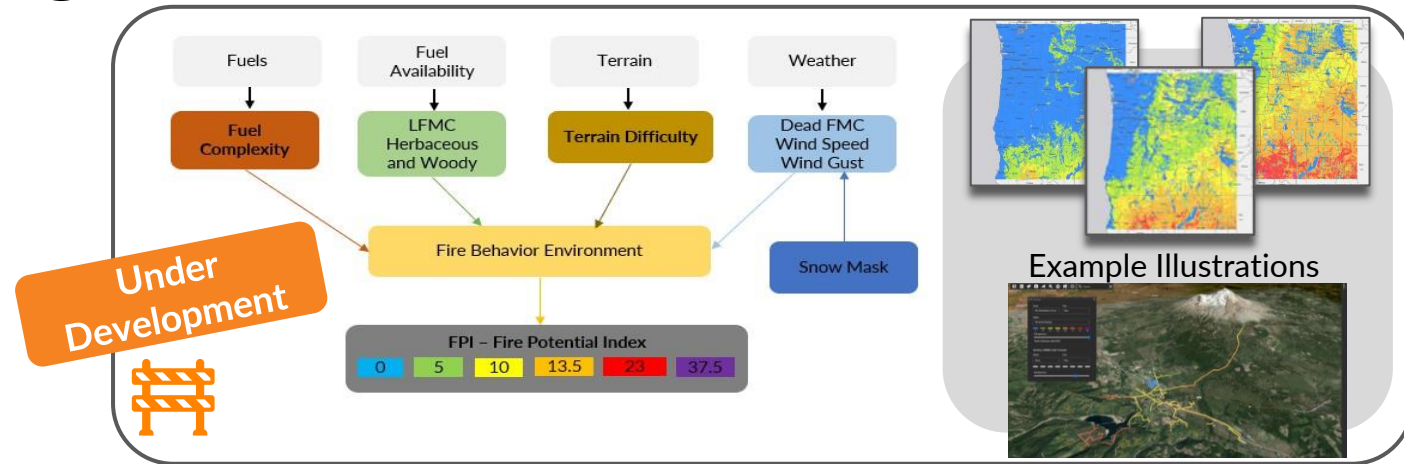
* Excludes Lightning or Recreation High Risk triggers

| PacifiCorp Fuels | 100-hr Dead Fuel Moisture | 1000-hr Dead Fuel Moisture | Energy Release Component |
|------------------|---------------------------|----------------------------|--------------------------|
| Dry | Near or Below Average* | | Near or Above Average* |
| Very Dry | ≤ 10th Percentile | ≤ 10th Percentile | ≥ 90th Percentile |

*Relative to the average fire season values for a given location

- WFA-E Consequence Modeling
- Fire Weather Watches or Red Flag Warnings (RFW)
- WRF Forecasts
- Evaporation Demand Drought Index (EDDI)
- Fuels Conditions (Grasses, Live Fuels, & Dead Fuels)
- Current or Recent Wildfire Activity
- Hot-Dry-Windy Index (HDWI)
- Vapor Pressure Deficit (1-month avg)
- FHCA Location (Y/N)

🎯 2023 Plan - Fire Potential Index





PSPS Program & Preparedness

Presenter: Nora Yotsov, Director of Emergency Management

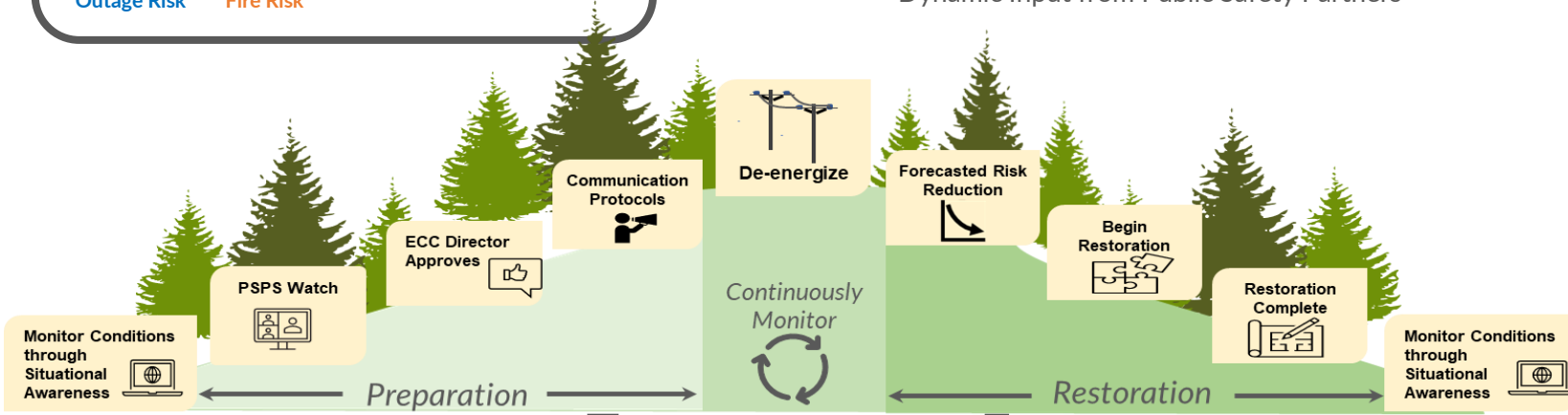
PSPS Implementation



Conditions are continuously monitored to assess risk

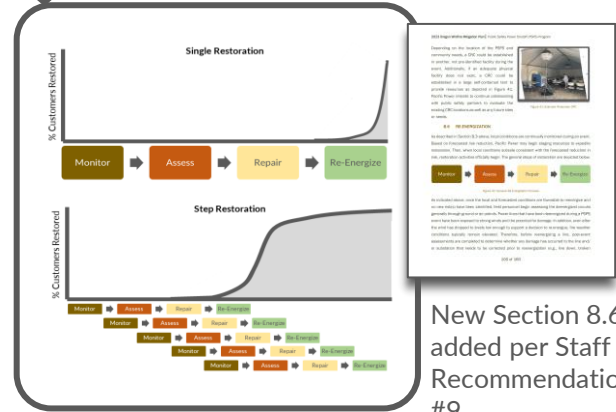
Decision incorporates multiple factors:

- ✓ Real Time Monitoring of Local Conditions
- ✓ Weather Forecasting & Risk
- ✓ Dynamic Input from Public Safety Partners



| Communication Protocols | |
|---------------------------|---------------------------------------|
| 48-72 hours prior | De-energization warning |
| 24-48 hours prior | De-energization warning |
| 1-4 hours prior | De-energization imminent / begins |
| Re-energization begins | Re-energization begins |
| Re-energization completed | Re-energization completed |
| Cancellation of event | De-energization event canceled |
| Status updates | Every 24 hours during event as needed |

*Communication Protocols Consistent with OAR 860-300-0050



New Section 8.6 added per Staff Recommendation #9

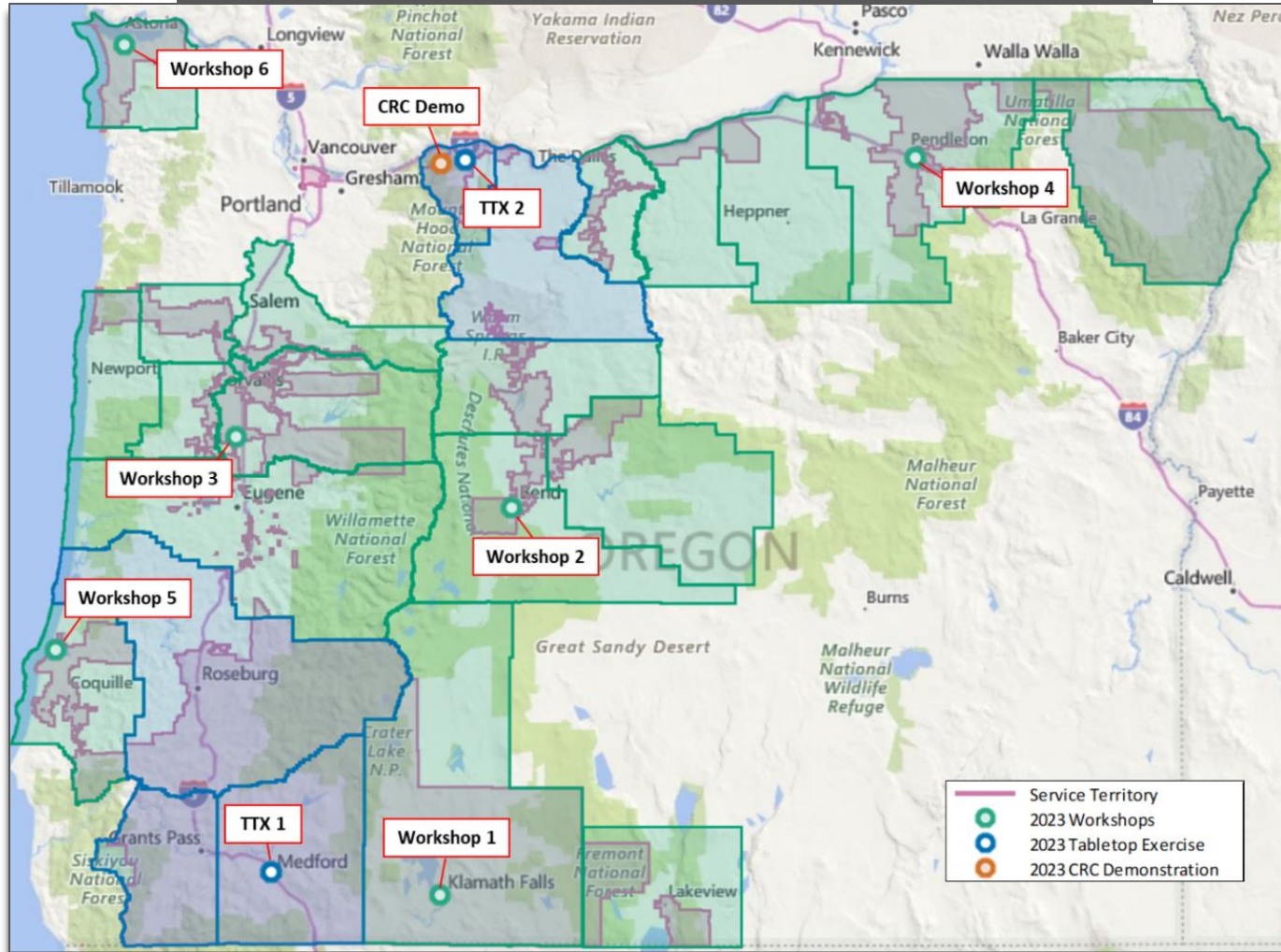
Interactive Tool Publicly Available

2023 PSPS Outreach & Preparedness Plan

✓ **2022 Actuals**
 4 tabletop exercises
 3 workshops
 2 presentations
 4 EM community outreach events

2023 OR Public Safety Partner Engagement Plan

2023 Plan



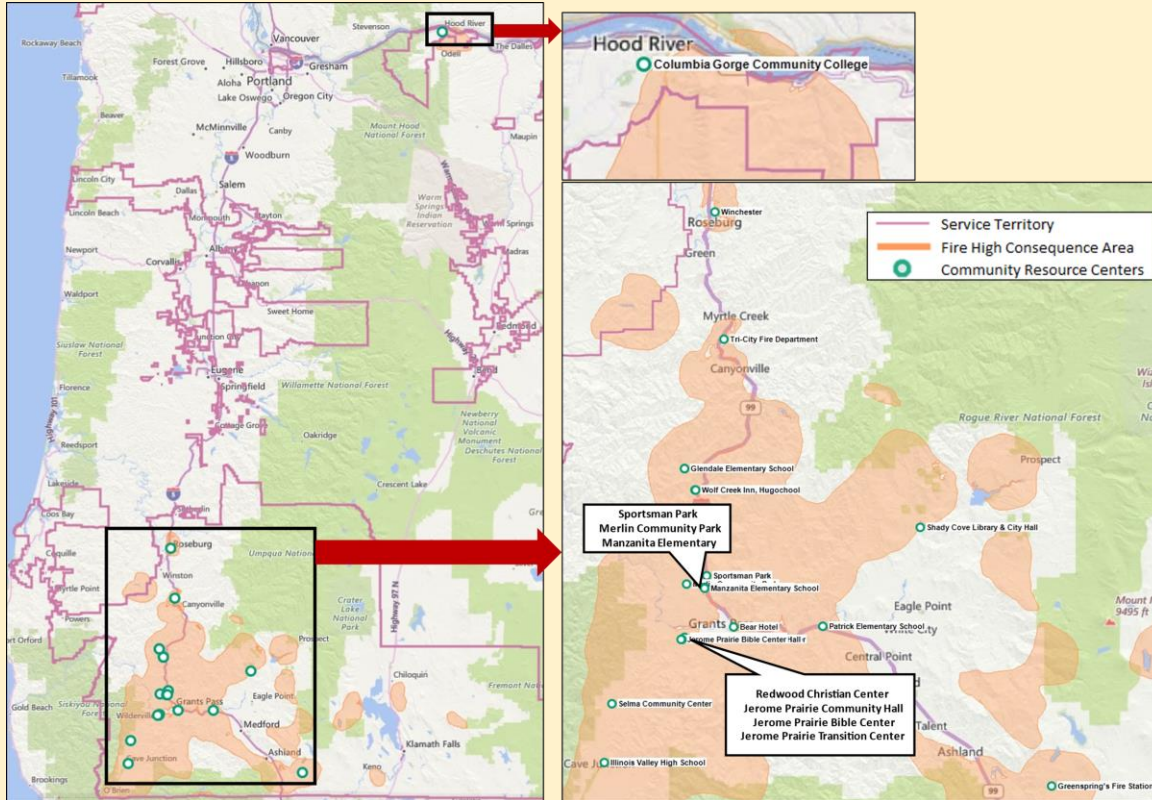
| Planned Activity | General Location | Target Counties | Planned Timeframe |
|-------------------|------------------------------|---|-------------------|
| Workshop 1 | Southeast OR (Klamath Falls) | Klamath, Lake | March 2023 |
| Workshop 2 | Central OR (Bend) | Deschutes, Jefferson, Crook | March 2023 |
| Workshop 3 | Willamette Valley (Albany) | Lane, Marion, Linn, Benton, Polk | March 2023 |
| Workshop 4 | Eastern OR (Pendleton) | Umatilla, Wallowa, Sherman, Gilliam, Morrow | April 2023 |
| Workshop 5 | Southern OR Coast (Coos Bay) | Coos | April 2023 |
| Workshop 6 | OR Coast (Astoria) | Lincoln, Clatsop | April 2023 |
| Regional TTX 1 | Southern OR (Medford) | Douglas, Jackson, Josephine | April 2023 |
| Regional TTX 2 | Northern OR (Hood River) | Hood River, Wasco | April 2023 |
| CRC Demonstration | Northern OR (Hood River) | Hood River, Wasco | April 2023 |

Incorporated addition details and summary of 2022 PSPS experience in Section 8.7 per Staff Recommendation #10



Community Resource Centers (CRCs)

22 CRC Locations Pre-Identified in WMP



8.4. Community Resource Centers

8.4.1. Community Resource Centers

8.4.2. Community Resource Centers

8.4.3. Community Resource Centers

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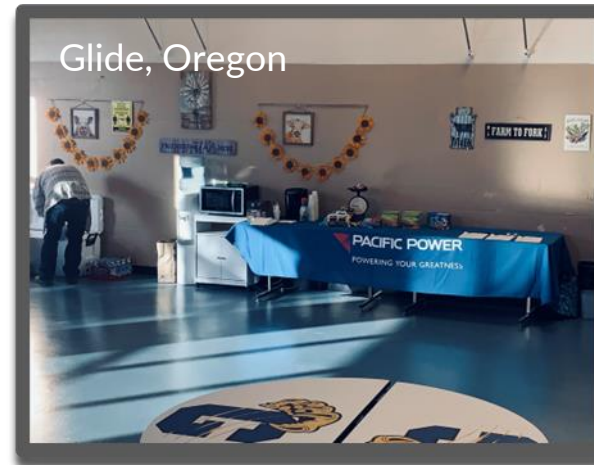
8.4.99. Community Resource Centers

8.4.100. Community Resource Centers

← Incorporated CRC clarifications in Section 8.5 per Staff Recommendation #7

Available Services

- ✓ Shelter from environment
- ✓ Air conditioning
- ✓ Potable water
- ✓ Seating and tables
- ✓ Restroom facilities
- ✓ Refrigeration for medicine and/or baby needs
- ✓ Interior and area lighting
- ✓ On-site security
- ✓ Communications capability such as Wi-fi access, Sat Phone, Radio, Cellular phone
- etc.
- ✓ Televisions
- ✓ On-site medical support (EMT-A at a minimum, Paramedic preferred)
- ✓ Charging stations
- ✓ Air Purifiers
- ✓ Air Quality Monitors
- ✓ Non-perishable snacks
- ✓ Small crates for pets
- ✓ Portable ADA ramp



Temporary CRCs Setup to support the PSPS Event on September 10, 2022



Wildfire Safety Engagement

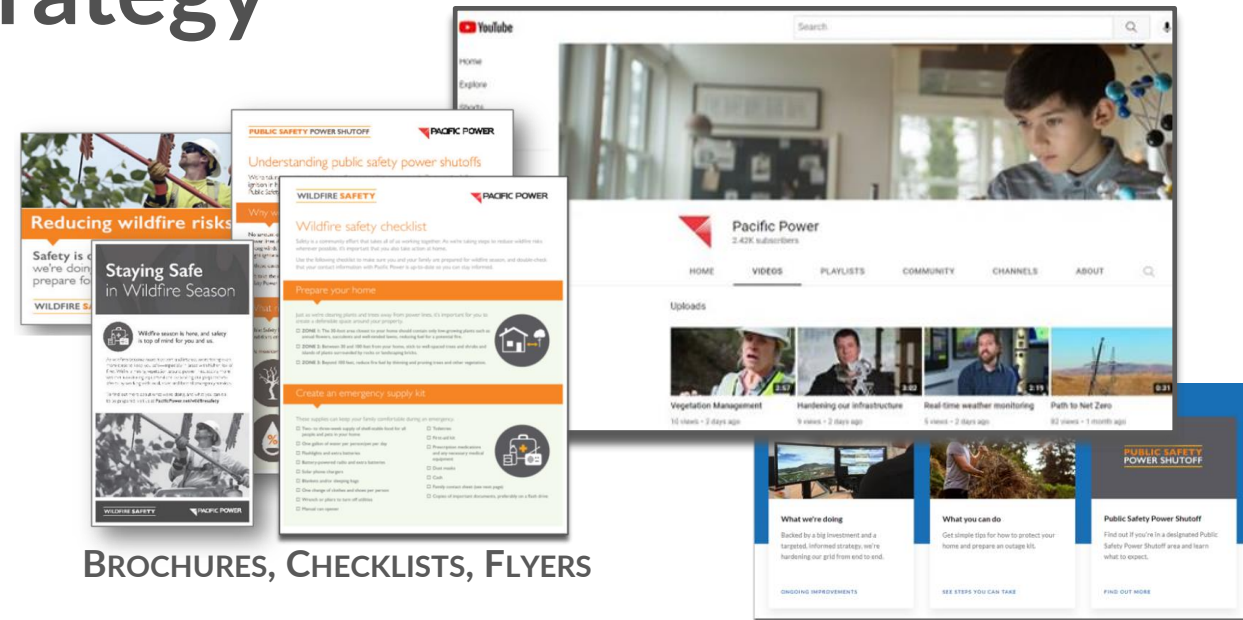
Presenter: Amy McCluskey, Mng. Director of Wildfire Safety & Asset Management

Community Engagement Strategy

Program Elements

- Awareness campaign
- Support collateral, brochures, checklists, flyers
- Customer service training
- Wildfire safety and preparedness campaign
- Webinars
- Webpages, online resources
- Engagement forums

SAMPLE YOUTUBE MATERIAL



BROCHURES, CHECKLISTS, FLYERS



Engagement Forums

2022 ENGAGEMENT FORUM SUMMARY

| Community | Date | Address | Total Attendees (In Person + Virtual) | In Person or Virtual |
|-----------------------|------------------|---|--|-----------------------------|
| CENTRAL POINT, OREGON | October 18, 2022 | 1 Peninger Road, Central Point, OR | 16 | In-person w/ Virtual Option |
| CANYONVILLE, OREGON | October 19, 2022 | 146 Chief Miwaleta Lane Canyonville, OR | 12 | In-person w/ Virtual Option |
| GRANTS PASS, OREGON | October 19, 2022 | 1451 Fairgrounds Road Grants Pass, OR | 22 | In-person w/ Virtual Option |
| MOSIER, OREGON | October 20, 2022 | 1000 4 th Avenue Mosier, OR | 5 | In-person w/ Virtual Option |
| VIRTUAL | December 1, 2022 | Virtual | - | Virtual Only |

Community Outreach Strategy

✓ 2022 Accomplishments

- ✓ 23 million impressions
- ✓ Over 34,500 clicks
- ✓ 20 news outlet interviews
- ✓ 5 engagement forums
- ✓ 2,935 survey participants
- ✓ 6 CBO interviews
- ✓ Webpage updates for Spanish translations



2022 Survey Results

Additional detail and survey results section added per Recommendation 13

| Survey Results - Topic Area | Recall Rate |
|--|-------------|
| Aware of Wildfire Safety Communications | 58% |
| Aware of Communications from Pacific Power (among those aware) | 26% |
| Took Action to Prevent or Prepare for a Wildfire | 49% |
| Recall PSPS | 49% |
| Would Turn to Pacific Power Website for PSPS Info | 44% |
| Aware of Ability to Update Contact Info for PSPS | 39% |
| Know if Address is in PSPS Area | 19% |
| Satisfied with Availability of Resources in Community for Wildfire Safety Info | 25% |
| Aware of Additional PSPS Notices for Those with Medical Need (among those with medical need) | 12% |



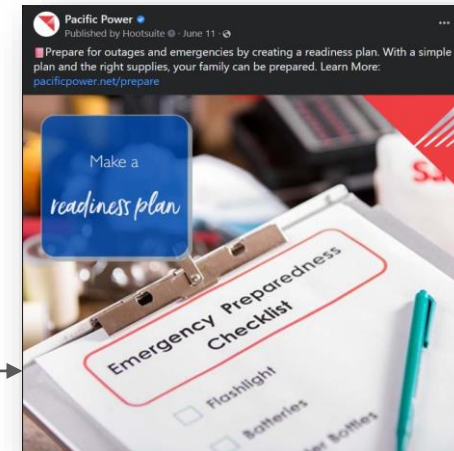
2,935 surveys

🎯 2023 Plan



Key Considerations

- Local organizations and CBOs provide clear and useful information
- Prioritize TV news, email, and social media and direct customers to the website
- Text messages considered highly effective
- Focus communications on PSPS / outage preparedness



Thank You!

For additional comments and questions,
email us at:

wildfiresafety@pacificorp.com