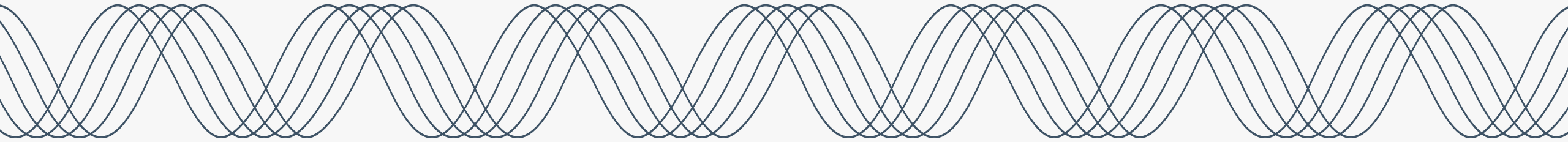


OPUC WMP Workshop Portland General Electric

March 2024



PGE's Wildfire Mitigation Plan Presentation



Overview discussion of PGE's 2024 WMP



2024 WMP Considerations



Changes from 2023 to 2024

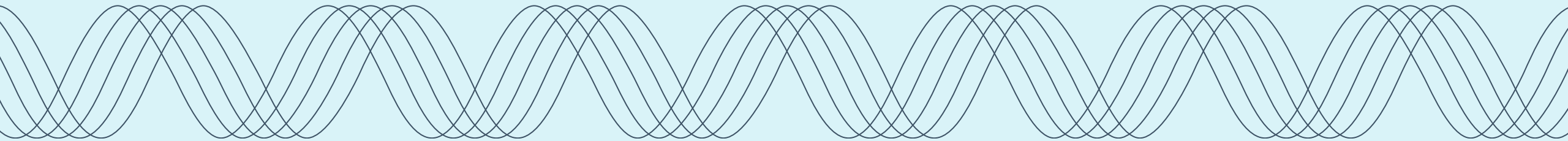


2024 Prevention, detection, and readiness



Engagement and continuous improvement

Overview Discussion of PGE's 2024 WMP



Purpose of PGE's Wildfire Mitigation Plan



Prioritize	Prioritize public and employee safety
Reduce	Reduce the risk of wildfire ignitions from PGE assets
Guide	Guide PGE's Fire Season operations
Identify	Identify and prioritize wildfire system hardening and resiliency activities
Communicate and collaborate	Communicate and collaborate effectively with Public Safety Partners, stakeholders, and customers
Implement	Implement Public Safety Power Shutoff events with efficiency, when necessary, and with broad public awareness

PGE's Wildfire Mitigation Journey

2018	2019	2020	2021	2022	2023
<ul style="list-style-type: none"> Industry-wide wildfire taskforce established Initiated enhanced Vegetation Management Provided monthly Seasonal Outlooks from late Spring to Fall 	<ul style="list-style-type: none"> Revamped Western coordination and mutual aid (WMAG) Initial fire risk assessment model / risk evaluation Evaluated Public Power Safety Power Shutoff (PSPS) in Tier III risk area 	<ul style="list-style-type: none"> Created dedicated full time Wildfire group Initiated first Public Safety Power Shutoff (PSPS) in Mt Hood area 	<ul style="list-style-type: none"> First Wildfire mitigation Plan filed with OPUC for 2022 wildfire season Updated risk assessment: expanded High Fire Risk Zones (HFRZ) from 1 to 7 26 weather stations 2 HD AI Cameras 	<p>Start of WMPs</p> <ul style="list-style-type: none"> First Wildfire Mitigation Plan (WMP) Approved Further updates to risk assessment: expanded HFRZ from 7 to 10 Initiated PSPS across all 10 HFRZ 49 weather stations 24 HD AI Cameras Second WMP filed for 2023 wildfire season 	<ul style="list-style-type: none"> Second Wildfire Mitigation Plan Approved Review of risk assessment: minor modifications made to HFRZ 80 remote automated weather stations 30 HD AI-enhanced cameras Third WMP filed for the 2024 wildfire season

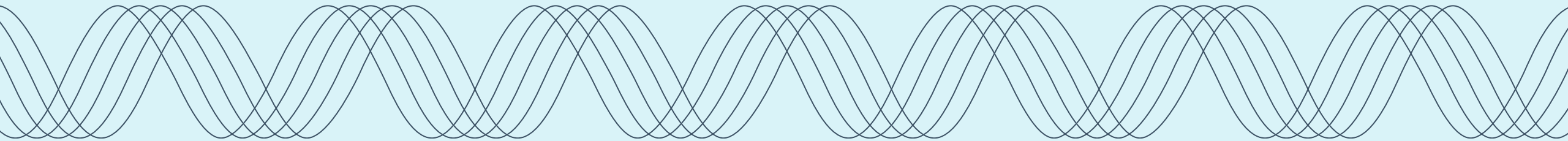
Wildfire Mitigation Plan Cycle

Key Updates in 2024:

- Increased focus on climate change projections in addition to historical weather and fire behavior
- Risk-informed 2-year full-scope vegetation management cycle in addition to annual cycles
- Improved PSPS decision making and Crisis Incident Management Team (CIMT) structure
- Defined customer engagement metrics
- Improved ignition management process
- Improved PSPS Readiness including shortened restoration time
- Value Spend Efficiency (VSE) evaluation of system hardening alternatives, adjusting capital Risk Spend Efficiency (RSE) calculations to account for consequences like impacts to the watershed



Considerations in 2024 Wildfire Mitigation Plan



2024 Annual Wildfire Mitigation Plan Assessment



2023 OPUC Staff Recommendations for 2024 WMP

	Workshop Date	Status		Workshop Date	Status
1	Oct 17, 2023	Implemented	16	Aug 2, 2023	Acting On
2	Aug 2, 2023	Implemented	17	Oct 17, 2023	Implemented
3	Aug 22, 2023	Acting On	18	Aug 22, 2023	Implemented
4	Aug 2, 2023	Implemented	19	Aug 22, 2023	Implemented
5	Oct 5, 2023	Acting On	20	Oct 5, 2023	Acting On
6	Oct 5, 2023	Implemented	21	Oct 17, 2023	Implemented
7	Aug 2, 22, 2023	Implemented	22	Aug 22, 2023	Acting On
8	Aug 22, 2023	Implemented	23	Oct 5, 2023	Implemented
9	Aug 2, 2023	Acting On	24	Oct 5, 2023	Implemented
10	Aug 2, 2023	Implemented	25	Aug 2, 22, 2023	Implemented
11	Aug 2, 2023	Implemented	26	Aug 2, 22, 202	Implemented
12	Oct 17, 2023	Implemented	27	Oct 17, 2023	Implemented
13	Aug 2, 2023	Implemented	28	Oct 17, 2023	Implemented
14	Oct 17, 2023	Implemented	29	Aug 22, 2023	Acting On
15	Oct 17, 2023	Implemented	30	Oct 5, 2023	Acting On

2024 Updates to Risk Assessment Framework

- Incorporate new variables in assessment framework
 - Access and egress road density
 - Detection probability
 - Fire response/time probability to emergency response
 - Social vulnerability (e.g., income level, vehicle access, English-as-a-second-language)
- Updated Climate Change Variables

Development of multi-year plan

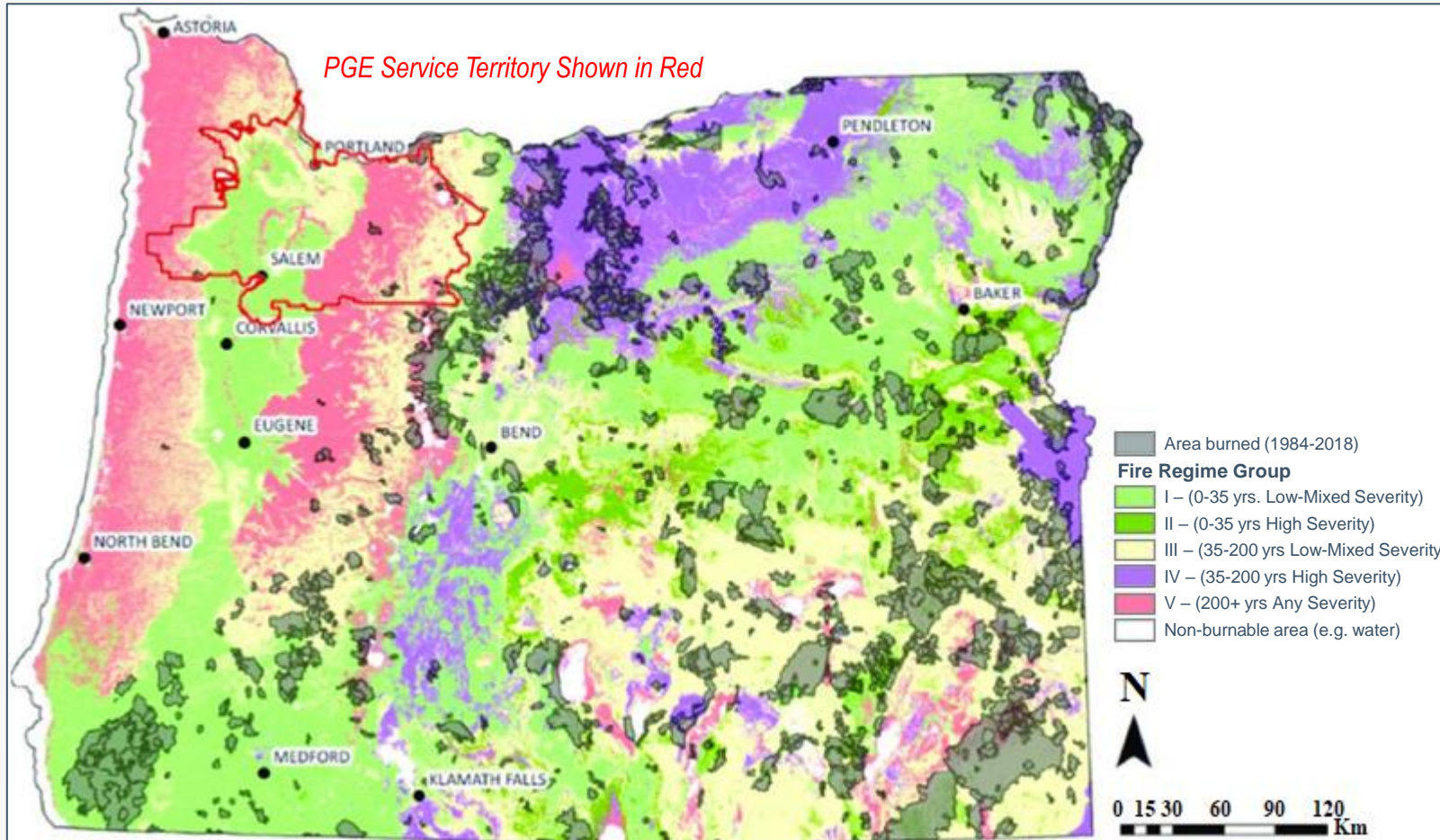
Ongoing development of 4-year wildfire risk mitigation roadmap with planned mitigation activities through 2027 fiscal year.

Details and supporting documentation related to each recommendation are shown on page 99 of PGE's 2024 WMP

Inclusion of Climate Change Variables in Risk Assessment



Key forecasts suggest that fuel in PGE's service area, and the land that may be burned, is projected to increase by 500%-900% over the next 10-20 years.¹



Monitoring Trends in Burn Severity (Eidenshink et al. 2007), LANDFIRE

PGE's service area is primarily classified as Fire Regime Groups I, III, and V, with dominant fire severity V (200+ years any severity) in HFRZ.

Less frequent fires, as seen in class V areas, increase the risk of more intense, damaging fires.

Dense conifer forests of the area have higher fuel load due to amassed needles and branches.

1. As noted on page 27 of PGE's 2024 WMP; recently published 2024 American Geophysical Union study indicates the increase could be as high as 1400% in the next 50+ years.

PGE's High Fire Risk Zone Annual Update Process



Layers of data, models and collaboration

Key Question

Representative Inputs Used

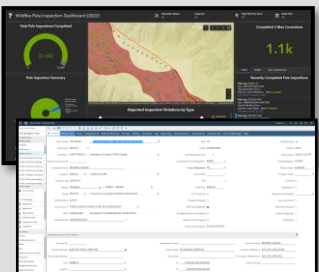
Visual

1

PGE Asset Review

Where are PGE assets located?

Circuit location, overhead vs. underground, conductor material, structure load, asset age, asset condition, past reliability metrics.



2

Fire Behavior Models

How do weather conditions affect fire behavior?

Custom fire models for PGE service territory based on 216 unique weather scenarios, evaluating threat, probability, and consequence.

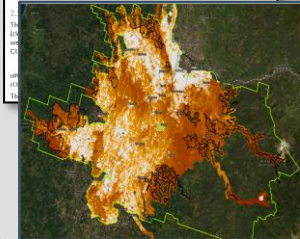
2.1.3 WILDFIRE THREAT INDEX
The Wildfire Threat Index (WTI) is calculated as the product of conditional fire (CF) and the weighting of the weather type probability (WTP), which were calculated at the original gridMET resolution and smoothed to the coarser 1/25th resolution.

$$WTI_{smoothed} = \sum_{i=1}^{216} (CF_i \times WTP_i)$$

CF is the conditional fire for the weather type.
WTP is the weather type probability weighting factor for weather type.

The resulting WTI raster and vector data provide an estimate of relative wildfire threat across the analysis area for the range of weather conditions specified. As the product of CF and WTP, the WTI allows a public utility to identify locations with the greatest combination of utility-related ignition and resulting wildfire damage potential.

The overall WTI was sent to the client as Deliverable 2.3.

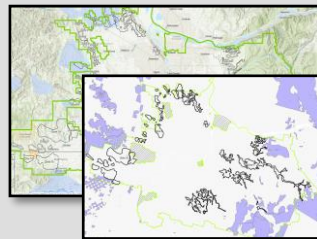


3

Consequence Adjustment

What would the impact of a fire be?

Non-Financial damages, public safety, CDC social vulnerability, protected habitats, watersheds, cultural/scenic landmarks etc.

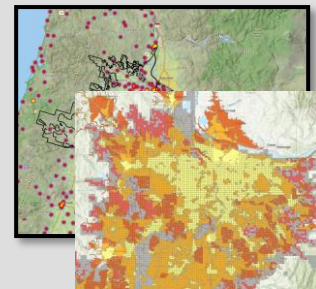


4

Fire Agency Review

Where are there barriers to fast fire suppression?

Fire station proximity, volunteer vs. staffed stations, road condition, egress, average annual fire starts, past response struggles, detection probability and response levels.



5

Climate Change & Fuels Impact

How is climate change impacting the risk?

Wildfire meteorology, climate projections, scholarly sources, international benchmarking forums, consultations with forestry experts.

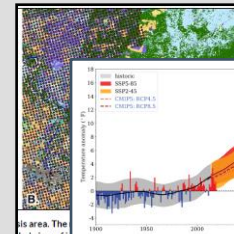


Figure 8B. Annual mean temperature in Oregon as observed (blue and red lines) relative to the 1970-1999 average, from NOAA Climate of a Century and as simulated by the CH2019 models for the past (darker black curve and grey shading). The colored bands and solid curves indicate the range of the two CH2019 models for 2015-2050, and the dashed curve indicates the corresponding results for CH2019 (2010-2050). Shaded regions denote the range between the inter-model minimum and maximum annual mean temperature for the eight models. The modeled time series were converted with a linear time-base offset for the eight models and oriented to the right of the curves and represent the warming relative to 1970-1999.

6

Publish High Fire Risk Zones

Where will PGE perform increased patrols, enable increased protective settings, and focus hardening efforts?

PGE's 2024 High Fire Risk Zones



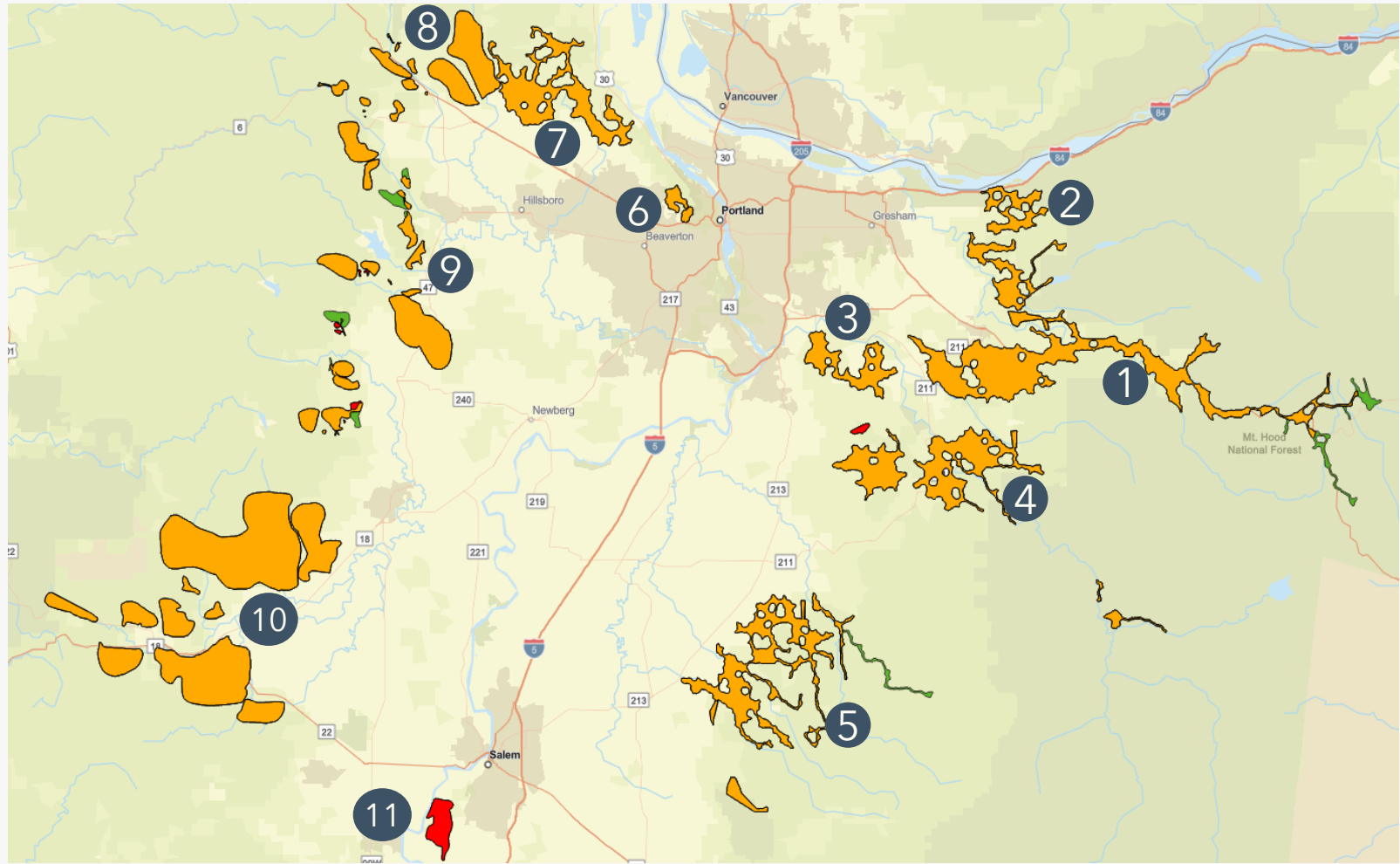
2% of PGE customers are within an HFRZ

9% of all PGE distribution circuits identified as HFRZ (line miles)

2 Public Safety Power Shutoff events executed by PGE

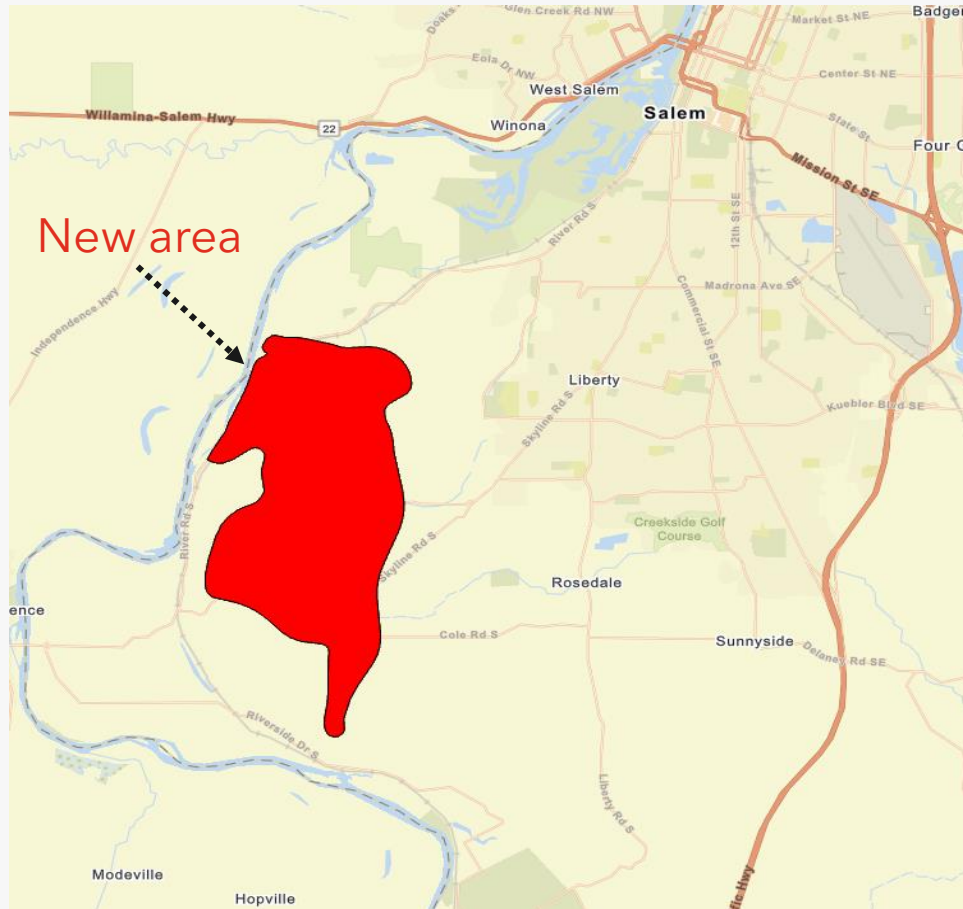
4% of customers have experienced at least one PSPS

Zone	Change
1	3 sections removed
3	1 new section
5	1 section removed
9	3 sections added, 4 removed
11	New zone



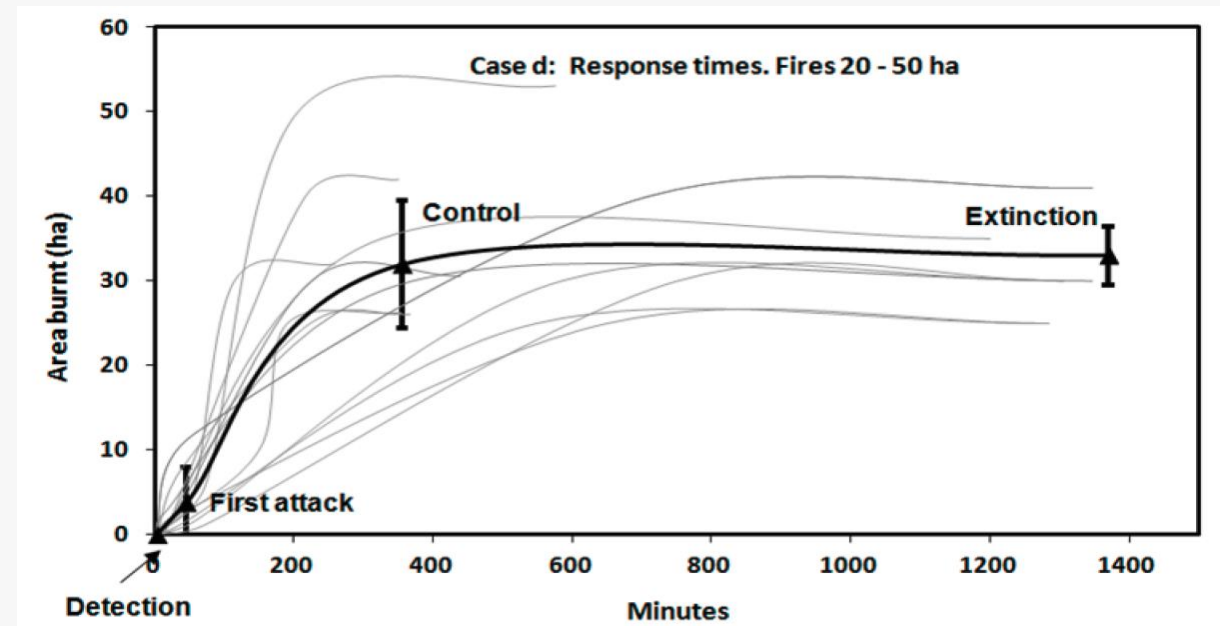
High Fire Risk Zones
2024 additions in Red, reductions in Green

New HFRZ Zone 11, Salem Hills



Criteria for Adding the Zone:

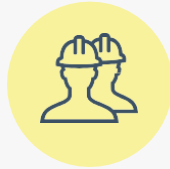
- Observed wildfire behavior (Vitae Springs Rd & Liberty fires)
- Modeled wind behavior
- Protection of critical fire suppression infrastructure
- Limited access and longer response times (see graphic)
- Input from Yamhill Fire Protection District Chief, McMinnville Fire Dept. Chief, and Oregon Dept. of Forestry



Wildfire Risk Mitigation Hierarchy

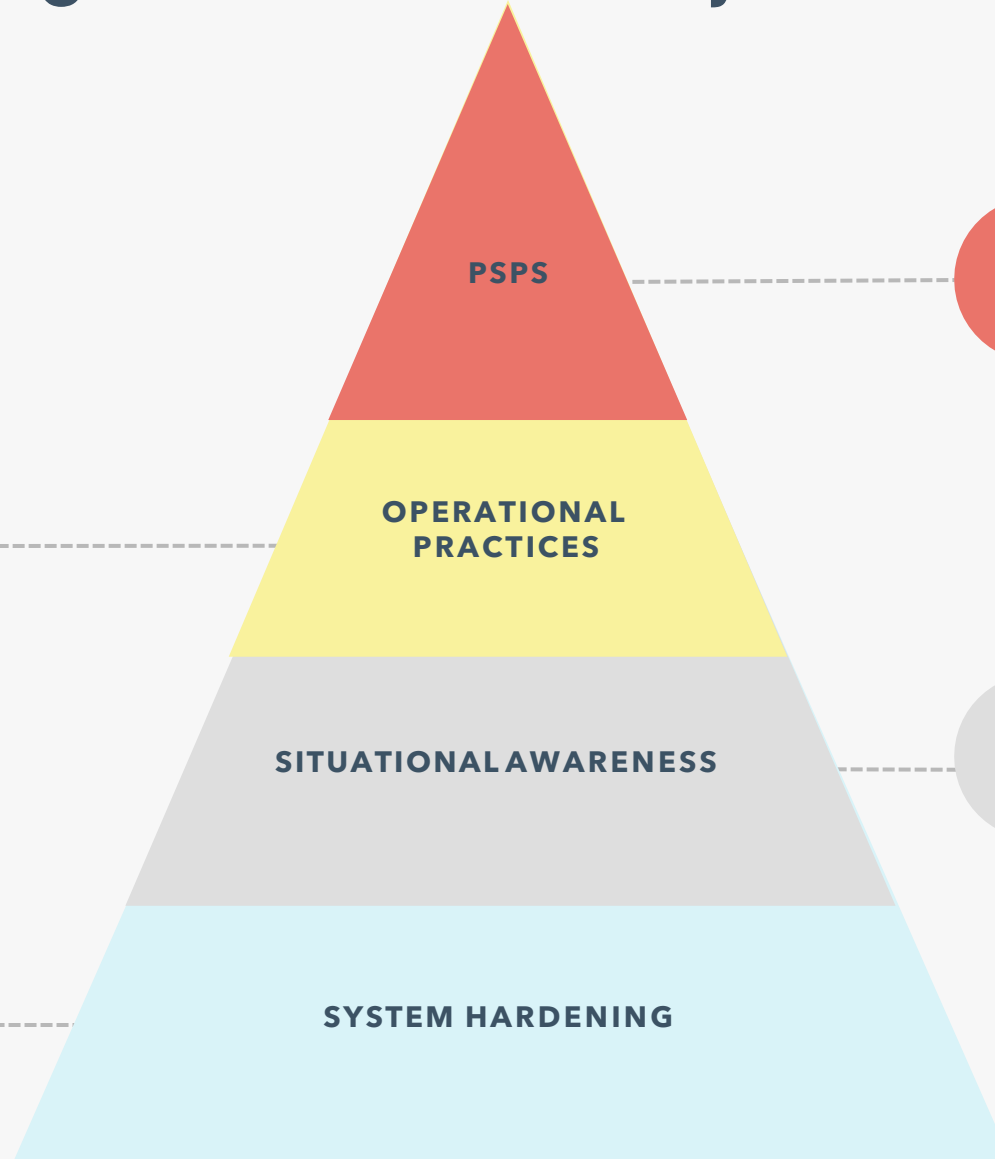
Short-term

Implement operational programs, including fire season protection settings, line inspections, and vegetation management to reduce the risk of ignitions.



Long-term

Implement a systematic, risk-informed approach to system hardening and resiliency measures to reduce the likelihood of ignitions and protect PGE assets.



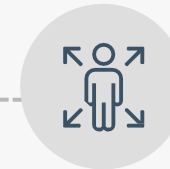
Immediate

Mitigate the risk of wildfire ignition in high-risk areas through planned Public Safety Power Shutoffs (PSPS) during periods of extreme fire risk.



Short-term

Improve PGE's wildfire-related risk management and situational awareness capabilities to improve detection of high-risk conditions and potential ignitions.



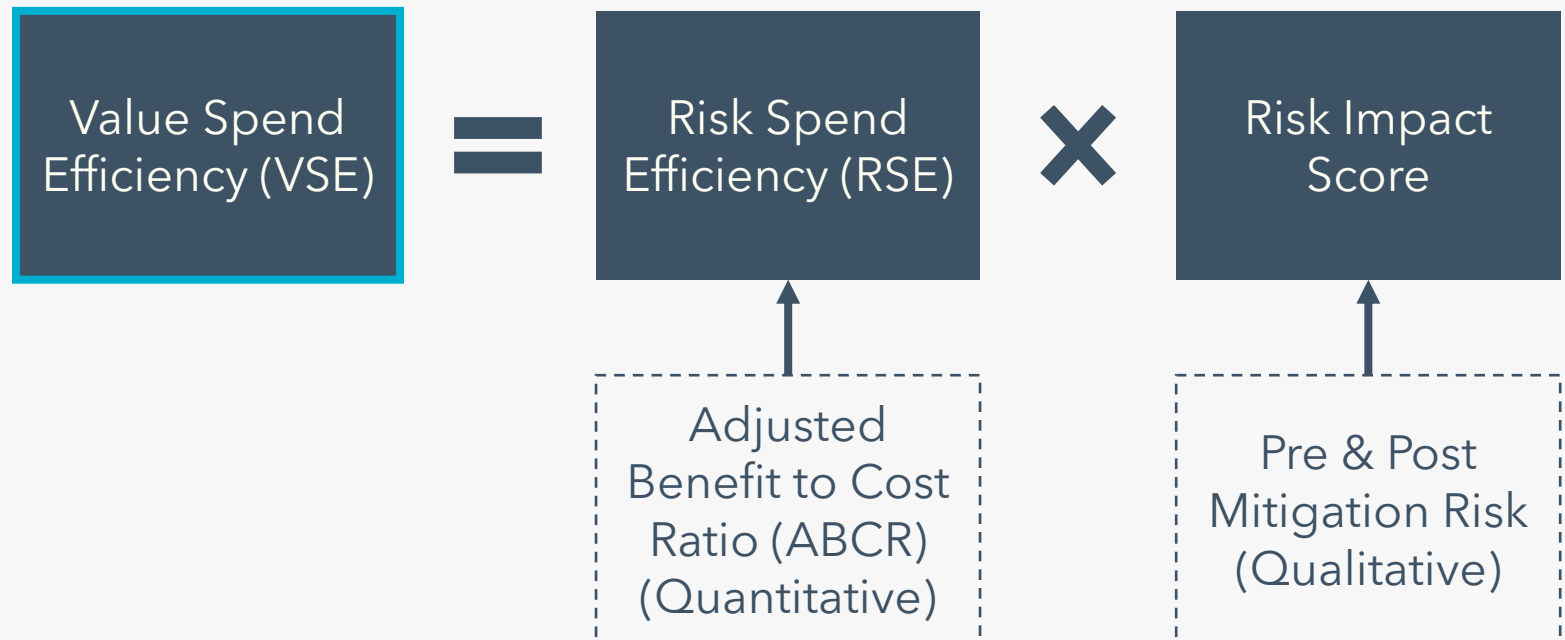
Risk Informed Decision-Making: Value Spend Efficiency (VSE)

PGE updated its risk assessment process to utilize Value Spend Efficiency (VSE), building off the Risk Spend Efficiency (RSE) concept shared in the 2023 WMP.

- Risk measurements are adjusted for qualitative impacts not easily measured in dollars. For example, the impact on tribal land and protected cultural areas, a critical consequence to factor into decision-making, was not accounted for in the classical RSE equation.
- The investment prioritization process considers forward-looking projections, historical analysis, geospatial modeling, and execution speed.

The Institute of Asset Management (IAM) criteria in the ISO 55000 standards define **value** as:

A function of **lifecycle costs**, **performance**, and **risk**.



The Wildfire Benchmarking and Risk Methodology



Table 29. in PGE's 2024 Wildfire Mitigation Plan

	Zone	1	2	3	4	5	6	7	8	9	10	11
Asset Density	Total Meter Count	162	46	150	78	57	374	61	33	27	16	71
	T&D pole density per mi ²	127	70	111	108	97	123	82	44	48	27	68
	Share of HFRZ T&D poles	0	0	0	0	0	0	0	0	0	0	0
	Land area mi ²	59	10	12	34	35	3	25	23	39	111	6
Pyrologix Probability	Probability exceeding manual control	2%-4%	2%-4%	2%-4%	2%-4%	2%-4%	2%-4%	2%-4%	2%-4%	2%-4%	2%-4%	2%-4%
	Probability exceeding mechanical control	2%-4%	2%-4%	2%-4%	2%-4%	2%-4%	2%-4%	2%-4%	2%-4%	2%-4%	2%-4%	2%-4%
	Probability extreme fire behavior	2%-4%	2%-4%	2%-4%	2%-4%	2%-4%	2%-4%	2%-4%	2%-4%	2%-4%	2%-4%	2%-4%
Pyrologix Weather Scenario	Heat Intensity per unit area	10096	12775	10199	13221	7882	7541	6854	7333	8565	12451	12617
	WTI MEAN Scenario 158	1141609	472579	1575943	2030959	1312534	611661	767440	798307	1557185	1436931	6580233
	CI MEAN Scenario 158	424	209	906	135	476	624	333	152	148	138	228
Accessibility	IPI MEAN Scenario 158	2789	6213	6729	3549	3047	3313	3892	3897	4684	5227	6441
	Average drive time from a fire station	5-10 min.	10+min.	5-10 min.	10+min.	10+min.	5-10 min.	10+min.	10+min.	10+min.	10+min.	10+min.
	Slope-mean	6	8	5	6	6	9	7	9	9	9	7
Social Indicators	Aspect-mean	262	272	337	296	306	124	201	164	92	97	316
	Households below 200% Federal Poverty Line	25%	22%	16%	22%	15%	7%	16%	16%	22%	36%	17%
	Household Disability Composition	18	13	12	15	14	8	13	11	15	20	10
	Hispanic or Latino	7	8	2	3	3	4	5	9	5	7	9
	Age 65+	25	17	20	18	22	16	20	13	18	16	20
	Housing / transportation vulnerability	30	30	20	46	35	12	56	30	32	78	40
Ecological & Cultural Vulnerability	Social vulnerability index	30	35	22	37	34	5	11	16	30	65	35
	Critical Habitat 1-5 (1 is least relative presence of attribute)	2	3	1	2	3	1	3	2	2	2	1
	Cultural / historical protected areas (relative rank 1-5)	3	3	3	3	2	2	1	1	2	3	1
Rural / Urban Divide	Percent in WUI	77	57	100	77	64	82	71	72	53	52	99
	June-Sept 2018-2022 on UG	79	12	19	14	7	9	12	0	17	5	4
Outage History	June-Sept 2018-2022 on UG average duration	2705	647	419	367	1412	655	253	0	695	420	442
	June-Sept 2018-2022 on OH	265	31	72	98	106	54	103	50	203	76	126
	June-Sept 2018-2022 on UG	1758	2344	327	805	1418	527	538	325	381	299	168
	June-Sept 2018-2022 on UG average duration											

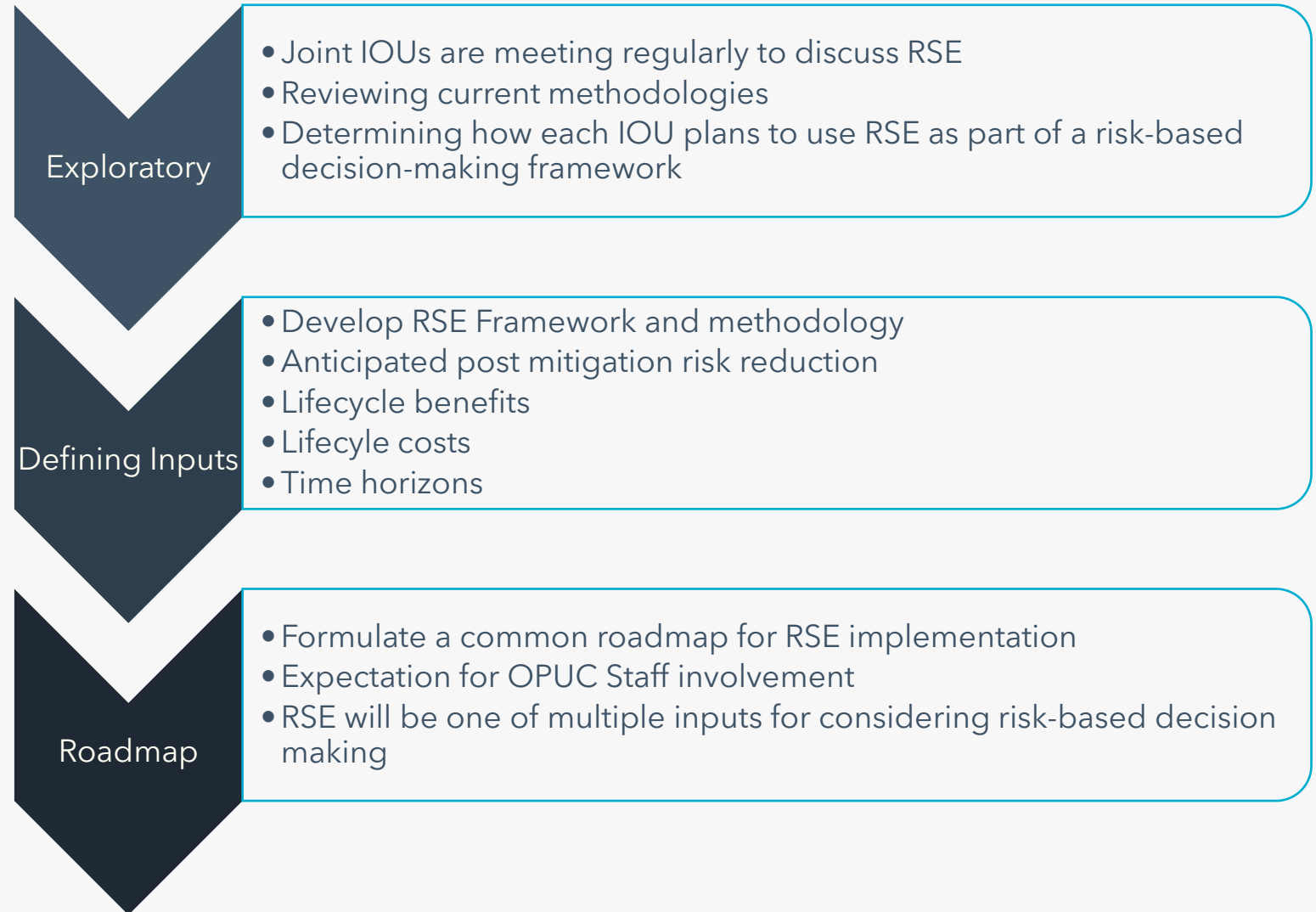
Considerations:

- Asset density
- Probability
- Weather
- Access
- Social Indicators
- Outage History

Continuing Evolution of Risk Spend Efficiency (RSE)

- Methodology is unique across utilities
- WMP includes VSE for capital investments, but not operational programs like vegetation management
- RSE methodology requires detailed inputs that reflect variations in vegetation, weather, climate science, and topology
- PGE is working with OPUC staff in the near term to evaluate the value of mitigations like vegetation management

Goal: The creation of a common framework for evaluating mitigation alternatives



Engagement with **EPRI** on RSE



- **Two-year engagement** kicked off October 2023 to align across utilities and multiple mitigation methods



- The industry collaboration activities are applicable to measurement of risk reductions **attained by specific resilience investment approaches**

Ignition reduction technologies

Hardened distribution assets and components

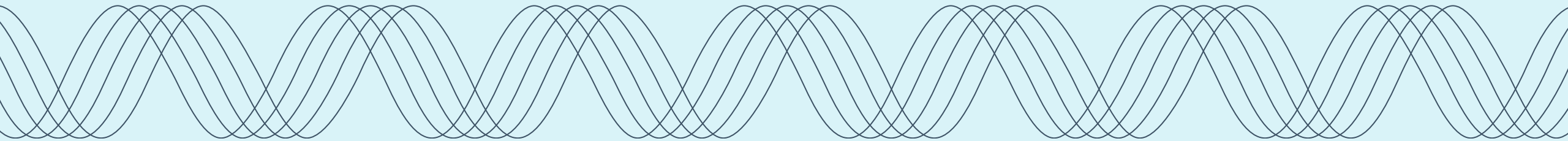
Sensing and situational awareness systems

Fire protection technologies

Vegetation management risk/spend outcomes

Includes **three** components to support future integration of vegetation data into data platform to analyze dynamic risks parameters

Prevention: System Hardening



Prevention: System Hardening

To-Date

44 distributed protective devices installed

4 circuits protected by non-expulsion fuses

948 ductile iron poles installed

1313 mesh wrapped poles

11.5 reconducted line miles

2024
2024-2025

+37 protective devices

+2 circuits with fire safe fuses

+1200 mesh wrapped poles

+15 line miles reconducted

+17 line miles converted to underground

Year	Budget *
To date	\$44.6M
2024	\$43 - \$49.2M
2025	\$56.6 - \$78.3M
2026	\$62.1 - \$78.4M
2027	\$65.5 - \$84.6M

*Includes system hardening, situational awareness, and inspection corrections



Protective Devices



Fire Safe Fuses



Ductile iron poles & covered wire



Underground Conversion

Nearly 1,000 Distribution Line Miles in HFRZs

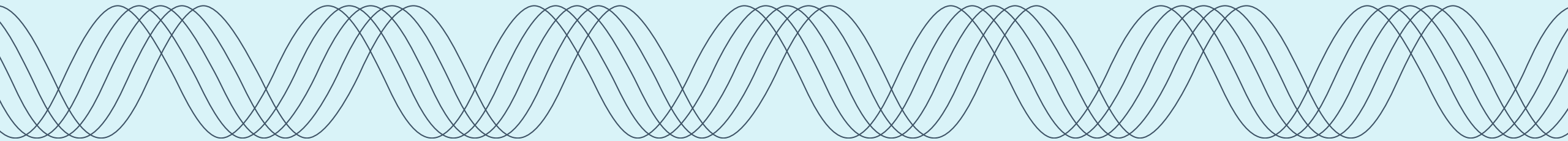
Underground conversions average ~\$1.8-\$2.0 million per mile

→ \$1.8-\$2.0 billion to underground all existing distribution lines in HFRZ

Table 7. in PGE's 2024 Wildfire Mitigation Plan

HFRZ	Distribution Line Miles (Primary OH Miles)			Distribution Line Miles (Primary UG)			T&D Poles (Distribution structures + Transmission poles)			Customers (meters)		
	'23	'24	Net Change	'23	'24	Net Change	'23	'24	Net Change	'23	'24	Net Change
Zone 1	250	249	0%	184	166	-11%	7,930	7,851	-1%	9,513	9,535	0%
Zone 2	25	25	0%	38	38	0%	710	704	-1%	456	458	0%
Zone 3	47	50	6%	34	36	6%	1,268	1,349	6%	1,743	1,800	3%
Zone 4	139	138	0%	68	68	0%	3,726	3,693	-1%	2,652	2,654	0%
Zone 5	151	150	0%	63	50	-26%	3,442	3,426	0%	2,000	2,005	0%
Zone 6	15	16	6%	13	13	0%	702	743	6%	960	1,121	14%
Zone 7	92	91	0%	52	52	0%	2,182	2,171	-1%	1,524	1,527	0%
Zone 8	43	43	0%	28	28	0%	1,068	1,061	-1%	762	768	1%
Zone 9	78	82	5%	51	43	-19%	1,820	1,916	5%	1,049	1,043	-1%
Zone 10	134	133	0%	83	84	1%	3,085	3,084	0%	1,710	1,724	1%
Zone 11	N/A	18	N/A	N/A	17	N/A	N/A	466	N/A	N/A	425	N/A

Detection: Situational Awareness



Detection: Enhancing Situational Awareness

To-Date

100%

HFRZ Camera detection coverage

100%

HFRZ Weather Station coverage

6

Dist. circuits with early fault detection sensors

2024

+2

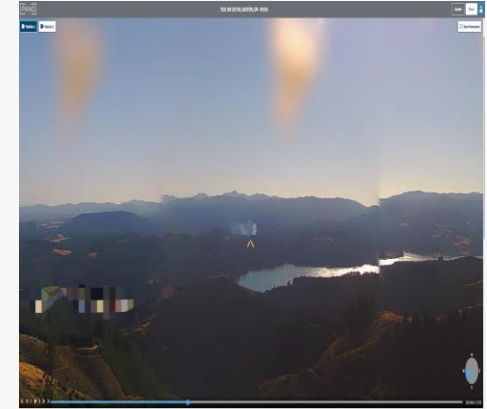
AI-equipped cameras

+5

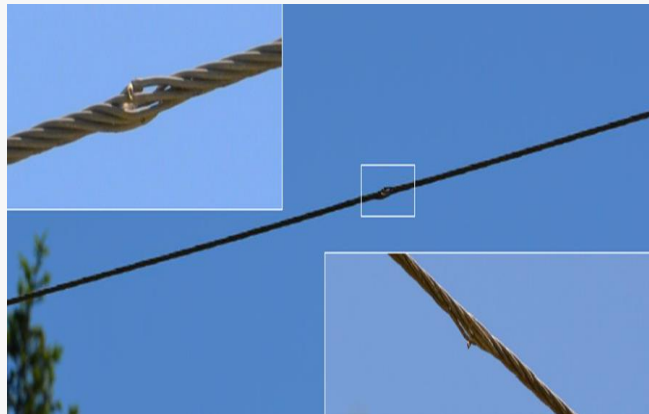
Weather Stations

+2

Circuits with early fault detection



Hawn Fire 7.14.22



Early Fault Detection

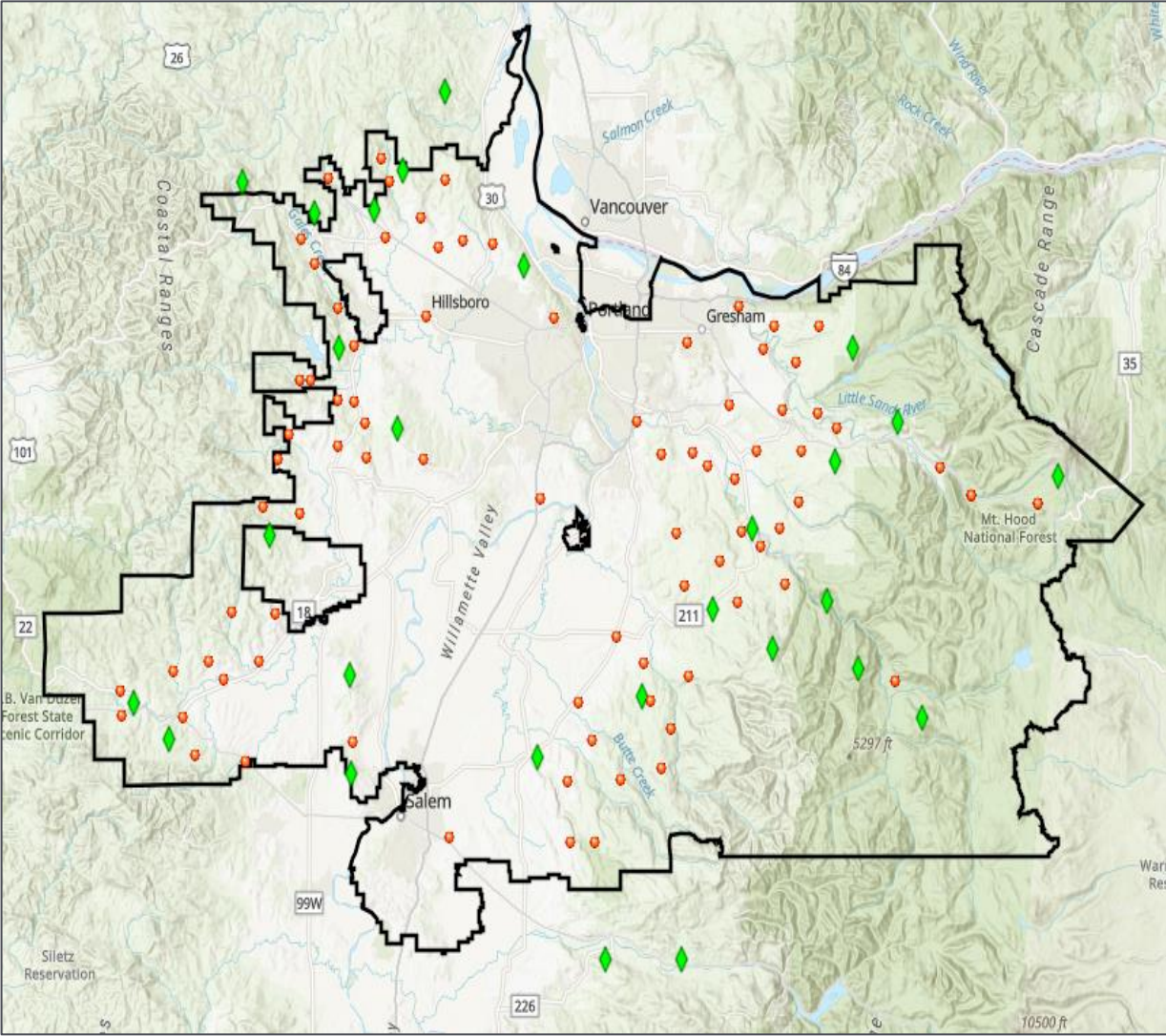


Weather Stations



Artificial Intelligence (AI) cameras

Detection: Enhancing Situational Awareness



Service Territory and Westside Hydro

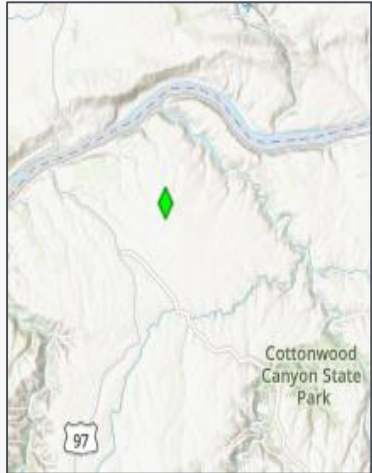
- Weather Station (80)
- ◆ HD AI Camera (33)



Westside Thermal



Pelton-Round Butte

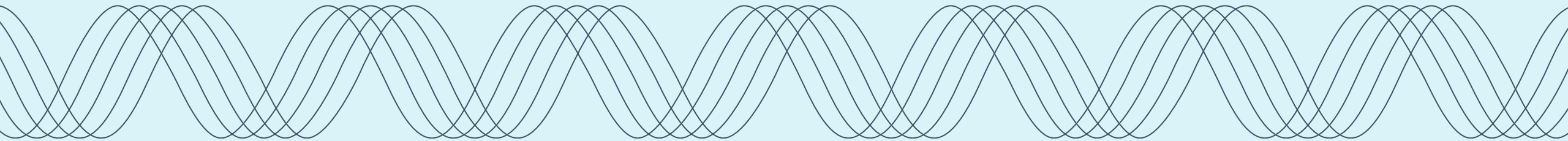


Biglow Wind Farm



Tucannon River Wind Farm

Prevention: Advanced Wildfire Risk Reduction Vegetation Management



Advanced Wildfire Risk Reduction (AWRR)

Classifications:

- **Vegetation (V5)** within striking distance (5 ft) of electrical infrastructure
- **Condition 1 (C1)** vegetation is an imminent hazard to PGE facilities; mitigation within 24 hours
- **Condition 2 (C2)** vegetation is a probable hazard to PGE facilities; mitigation within one year
 - Any dead, dying, diseased, damaged, fungal or insect infestation, stress, poor site condition, overall poor health



healthyforests.org

What is AWRR Vegetation Management?

- Guided by Wildfire Risk Assessment Modeling
- Annually inspect all overhead lines in HFRZ + heightened risk areas in PGE ROW outside of service area
 - ~ 26,000 structures over 1,000 line-miles inside PGE's service area & 100 line-miles outside footprint
- More stringent and frequent inspection, maintenance cycle, and mitigation guidelines than traditional 3-yr cycle routine vegetation management (RVM) performed outside HFRZ



Prevention: AWRR Comparison

2023 inspections indicated the **need for additional vegetation mitigations** due to changing vegetation health

➤ In **2024**, PGE implemented **bi-annual full scope patrol & mitigation**

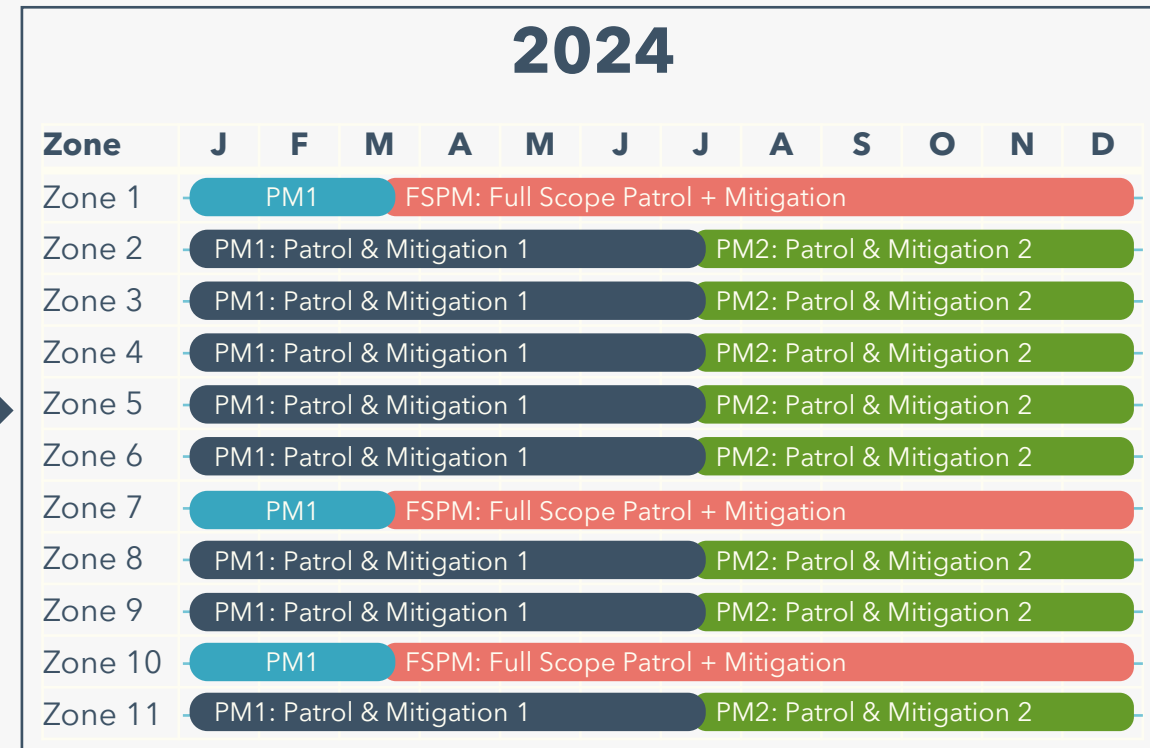
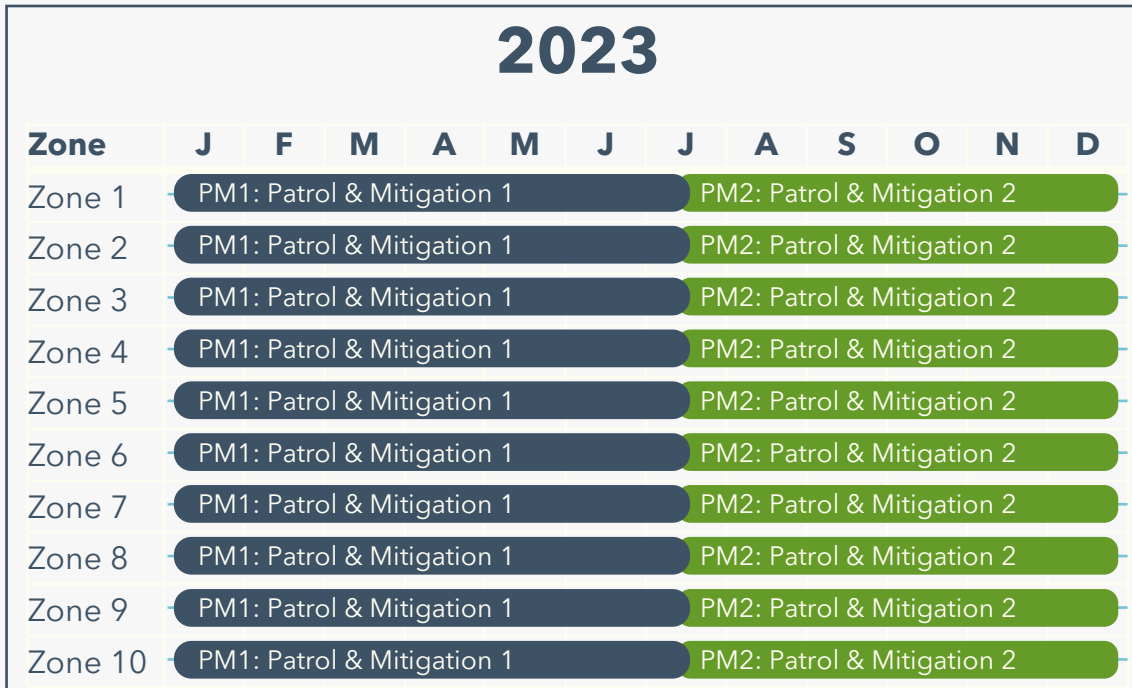
2023

- **Annual Patrol & Mitigation:**
 - Inspection to identify C1 trees and vegetation within 5 feet of high-voltage conductors (V5)
 - Mitigation of C1 trees and V5 vegetation
- **Annual, Ongoing:**
 - Comprehensive inspection for C2 trees
 - Vegetation trimming, mitigation of large diameter C2 trees showing decline in AWRR database

2024

- **Continue Annual Patrol & Mitigation** in all HFRZ
- **Begin Full Scope Patrol Inspection & Mitigation (FSPM)** with two-year cycle:
 - Comprehensive Inspection to identify C1, C2, and V5
 - Cataloguing data for analytics and reliability assessment
 - Mitigate hazards with estimated 5% vegetation mitigation rate
 - Initial FSPM cycle in most densely vegetated HFRZ with over half of all line-miles (zones 1,7,10)
 - Multiple inspections of areas throughout the fire season

Prevention: AWRR Comparison



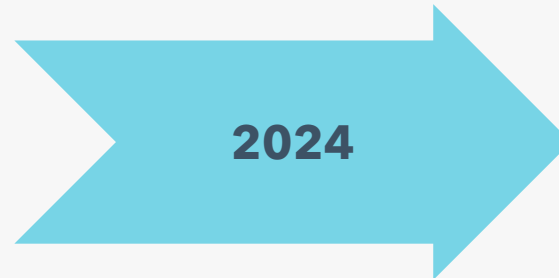
Program	Cadence	Mitigation	Primary Target	Description
Patrol & Mitigation	Annual (Q1 & Q2)	PM1	C1 Patrol + V5 Mitigation	Identify imminent hazard trees, clearance issues, new vegetation unsuitable for location, and other encroachments
	Annual	PM2	C2 Patrol + V5 Mitigation	Identify probable hazard trees, pruning & brush clearing
Full Scope Patrol & Mitigation	Bi-annual (Q1)	PM1	C1 Patrol + V5 Mitigation	Identify imminent hazard trees, clearance issues, new vegetation unsuitable for location, and other encroachments
	Bi-annual	FSPM	C1/C2/V5 Patrol & Mitigation	Identify hazard trees and encroaching vegetation, tree trimming, mitigate probable hazard trees, intensive clearance work; patrol extends beyond the right-of-way

Prevention: AWRR Comparison



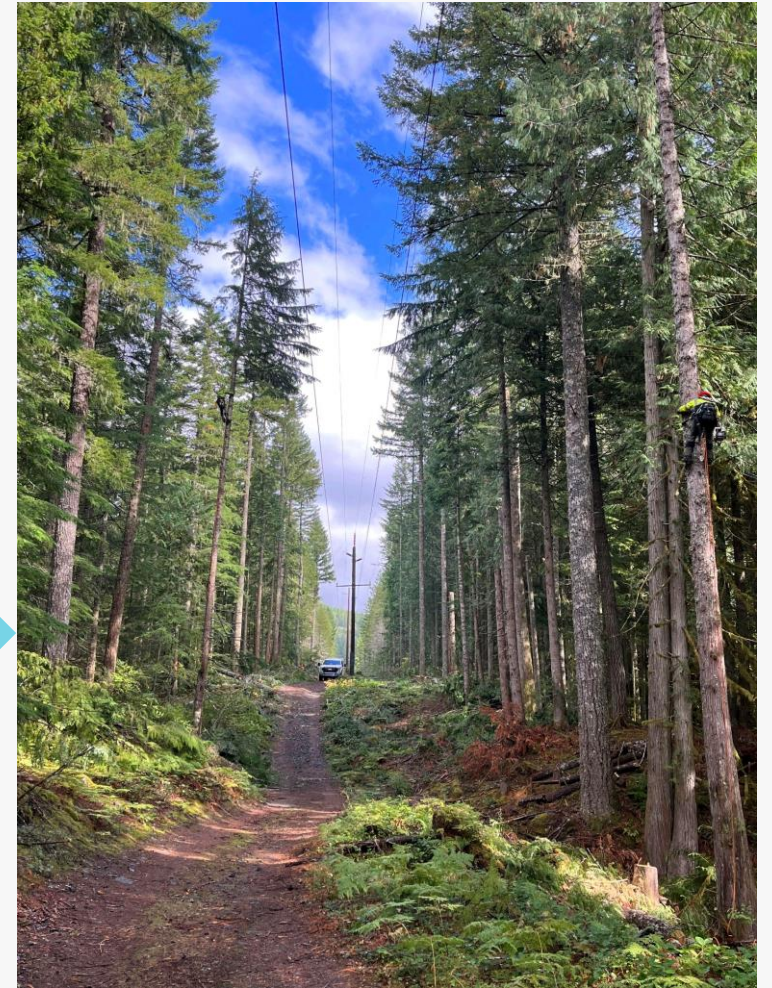
2023

Approximately 49,000 trims and 8,000 C2 mitigations



2024

Approximately 56,000 trims and **16,400 C2 mitigations**



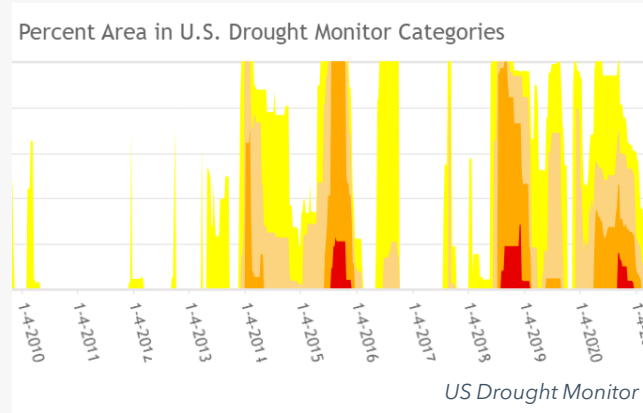
Why 2-year full-scope cycle with 5% mitigation rate?

Approximately 85% of PGE recorded ignitions result from vegetation contact

Natural tree mortality rate is 1-8%

Per 2023 USFS data, there could be up to 27,000 dead trees across PGE's service territory

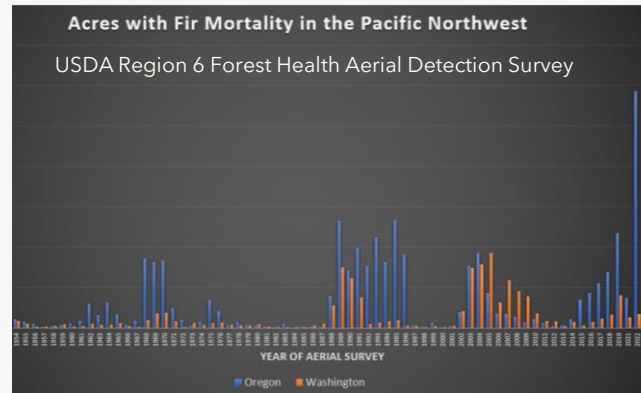
71% increase in non-wildfire related damage/mortality relative to 10-year average



Increasing Drought

Repeated extreme drought events in Portland

Additional stress on trees, resulting in increased failure rates



Increasing Mortality

Bark beetles, amongst other pests, contribute to increased tree failure rates

Root disease impacts PGE HFRZ 1-5



Significant Tree Fuel

Down dead trees contribute 5-7 tons of carbon fuel per acre in PGE's HFRZ

Standing dead trees introduce fuel source and safety hazards

Budget: Advanced Wildfire Risk Reduction Plan



O&M Cost Area	2024	2025	2026	2027
Vegetation Management & Inspections (AWRR)	\$36.2	\$39.3	\$38.3	\$39.7

Overall spend is forecast to remain constant for the next several years despite annual changes:

- Stress due to long term climate change trends, including extreme heat, drought, disease, and high wind events
- New and expanded HFRZs
- Labor escalation and high demand for tree crews
- Reduced HFRZs due to system hardening investments
- Decreased maintenance required in established HFRZs after several years of sustained AWRR

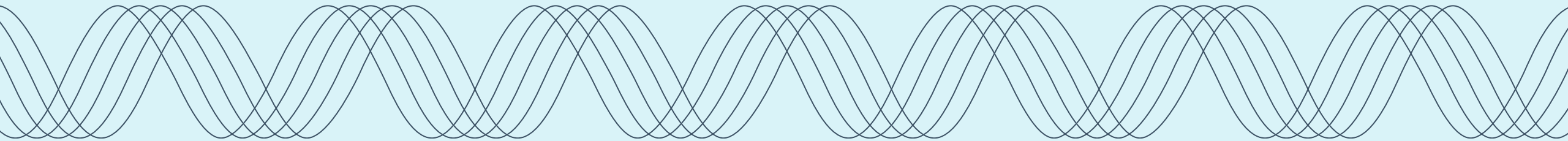
2024 YTD Status:

- **69% patrol inspections**
- **7% forecast mitigations**

2024 AWRR Plan

HFRZ	Line Miles	Trees	Plan	Est Mitigation Rate	Est. C2 Mitigations	Crews
Zone 1	290	188,991	Full-scope	5.00%	9,450	16.4
Zone 2	25	45,871	Inter-cycle	0.50%	229	0.5
Zone 3	51	18,594	Inter-cycle	0.50%	93	1.0
Zone 4	161	63,984	Inter-cycle	0.50%	320	3.3
Zone 5	150	72,137	Inter-cycle	0.50%	361	3.0
Zone 6	16	21,354	Inter-cycle	0.50%	107	0.3
Zone 7	93	51,247	Full-scope	5.00%	2,562	4.6
Zone 8	43	27,830	Inter-cycle	0.50%	139	0.9
Zone 9	85	21,587	Inter-cycle	0.50%	108	1.7
Zone 10	133	58,801	Full-scope	5.00%	2,940	6.6
Zone 11	18	8,205	Inter-cycle	0.50%	41	0.4
TOTAL	1065	578k +			16,350	39

Prevention: Pole Inspections



Prevention: Pole Inspections & Corrections

2023

25181

HFRZ pole inspections 

2024

26464

HFRZ pole inspections

750

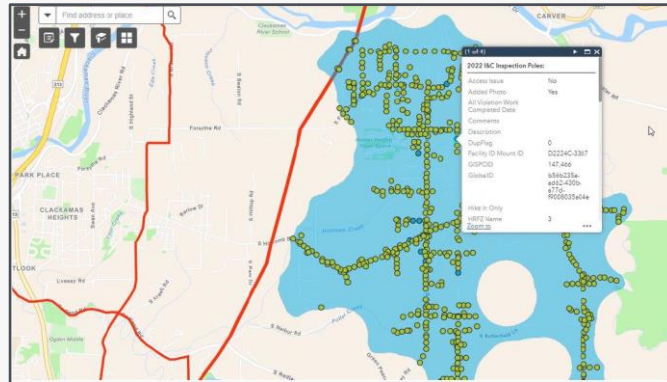
pole inspections outside service area 

+1200

mesh wrapped poles



- Annual HFRZ walk-through by 2-person line crew to perform visual inspection using optical aids
- Inspection criteria:
 - Damaged/broken/missing/loose hardware
 - Damaged pole
 - Inadequate conductor clearance
 - Abandoned facilities
- All inspections complete by end of July
- PGE staff systematically audits inspections & corrections
- Scope includes all HFRZ plus central Oregon risk areas associated with PGE Generation



Year	Budget
2024	\$3.6M
2025	\$3.7M
2026	\$3.5M
2027	\$3.7M

2024 YTD Inspection Status: 20%

Correction Requirements

Issue	Schedule
Notice of violation	15 days to notify equipment owner
Heightened risk of ignition	Less than 180 days to correct
Other conditions	No longer than two years to correct
Tree Attachments	Multi-year plan with completion in 2027

Prevention: Joint Use Inspections & Corrections



Joint Use Conditions

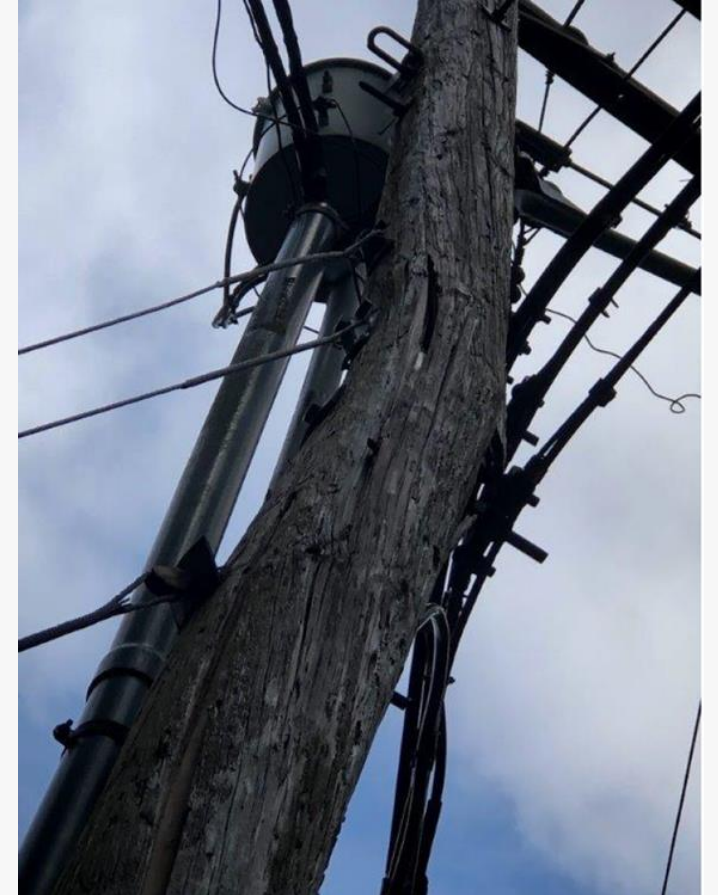
- Broken lashing wire
- Inadequate clearances
- Foreign reject poles
- Damaged/broken equipment

Notice of Violations

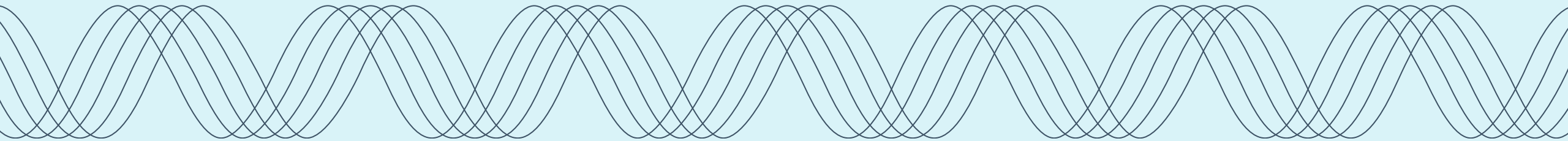
Notice issued within 15-days of violation discovery per OAR 860-024-0018(6)

Uncorrected by Owner

If exceed correction timelines, PGE performs correction and charges for full reimbursement of costs + 25% per OAR 860-024-0018(7)



Prevention & Readiness



Prevention & Readiness: Operational Protocols

Preparing the grid, employees, and suppliers to prevent and safely respond to events

1

Protection Settings adjusted to speed up fault clearing



Normal



Fire Season



Enhanced Fire Risk

2

Fire Season Work Practices

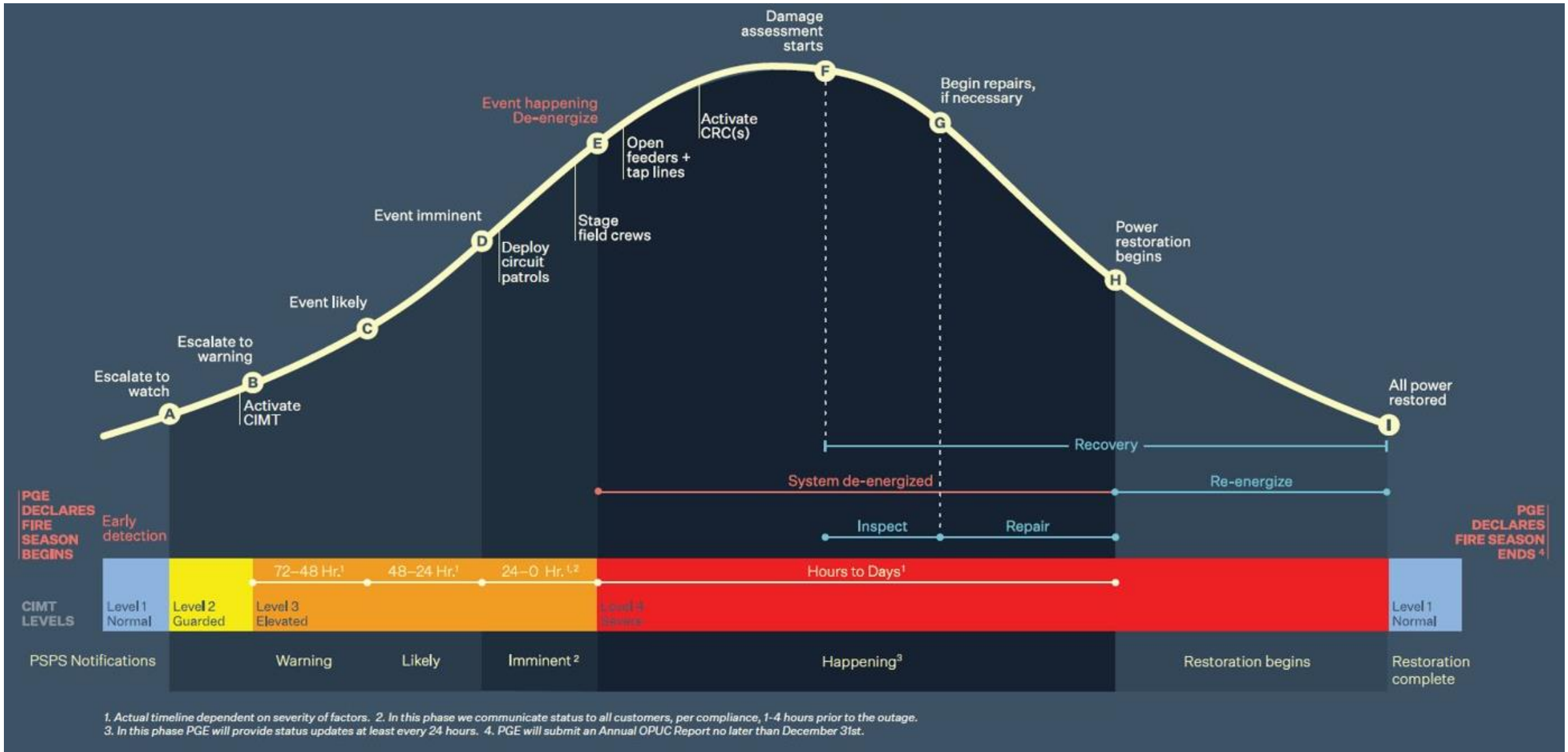
- Fire trailer
- Fire season suppression tools and equipment
- Fire season tailboard supplement
- Red Flag Warning

3

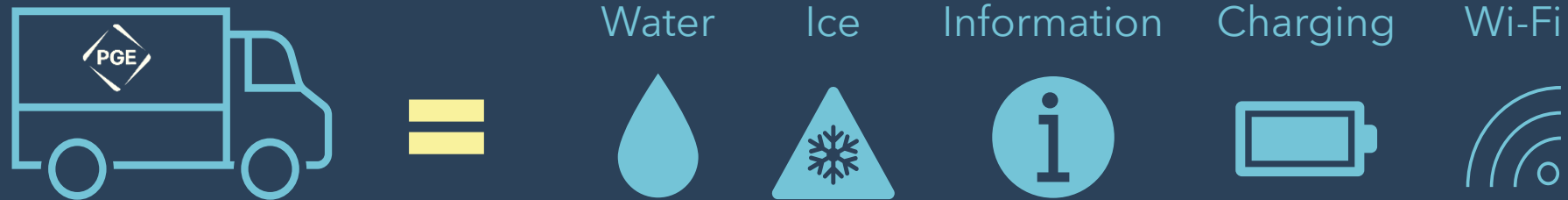
Employee & Supplier Training

- Fuels, weather and topography impact on wildfire ignition, and spread
- Fire weather zone forecasts
- Suppression tools and equipment
- Basic suppression tactics
- PSPS procedures (including functional exercise)

Public Safety Power Shutoff



Recharge Relief: Community Resource Centers



WHAT IS RECHARGE RELIEF?

- Nimble Mobile Readiness Units (MRUs) deployed within hours of a Public Safety Power Shut-off serving impacted communities
- PGE branded trailer providing support and information, staffed by experienced emergency management professionals, and adaptable to everchanging weather conditions, variety of terrains, and spaces

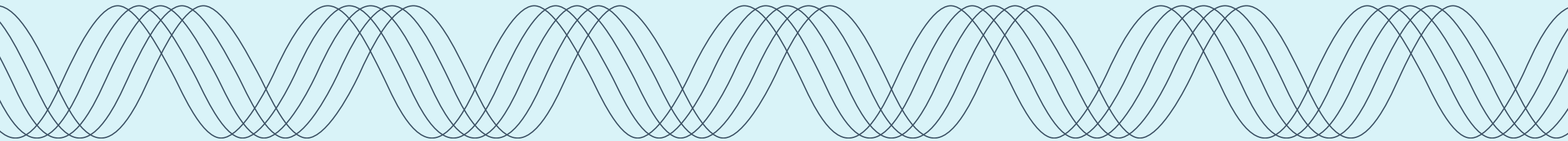
HOW DOES IT WORK?

- A Recharge Relief MRU will be at a predetermined location as a Public Safety Power Shut-off is activated
- Recharge Relief MRUs are approachable by walk-up, have tables and chairs under an awning, and drinkable water for consumption all while customers charge and get the information they need

WHERE IS IT LOCATED?

- PGE's goal is for Recharge Relief MRUs to be in or near active PSPS zones where vulnerable customers need us most
- A diversity, equity, and inclusion lens was used to determine where to locate and we're making sure the places we choose are fully accessible, on or near main roads, and likely known locations within the community
- Locations will be shared with impacted consumers when the PSPS is activated, on PGE's wildfire PSPS page
- Some PSPS areas may need to share a Recharge Relief MRU depending on availability and staffing

Engagement and continuous improvement



Engagement Strategies

Continuously improving and addressing wildfire mitigation as a community-wide issue

1

Customer & Community



Wildfire Safety & Prevention



Wildfire Outage & PSPS



Community Town Halls



Medical Battery Support

2

Public Safety Partners

Improving risk models, incident response, and coordination:

- Fire Agencies
- OPUC ESF-12
- Emergency Managers
- Forest Services
- Tribes

3

Industry Forums

Driving innovation through international, national, regional, and state collaboration:

- Climate & risk modeling
- Research & Development
- Leading practices
- Investment valuation
- Asset management
- Operators of critical infrastructure

Wildfire Mitigation Partnership through Grants

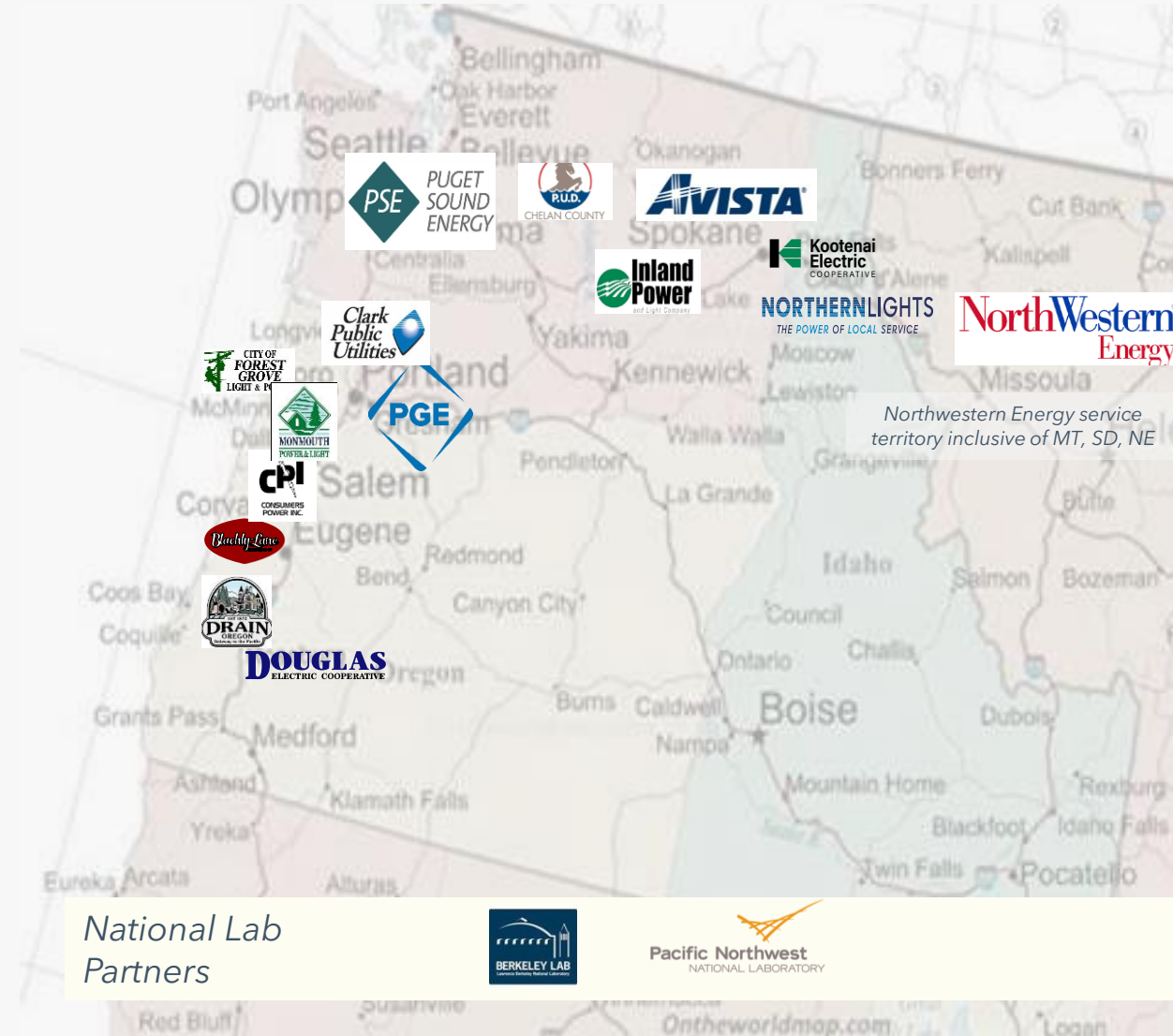
Grant Concept: Wildfire and All Hazards Modeling and Mitigation Consortium

- Develops wildfire risk modeling, high-definition weather model, and long duration outage economics model for the PNW
- Models inform mitigation strategies like EFD, FLISR, AI Cameras, and UG conversions to address all hazards
- PGE can provide weather as a service with new capabilities to consortium and others

Funding potential: \$250 million grant

Area: Oregon, Washington, Idaho, Montana, South Dakota, Nebraska

Parties: 15 utility partners and 2 national labs





Thank you