

# Wildfire Impacts on Utilities

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# About Portland General Electric

## Quick facts

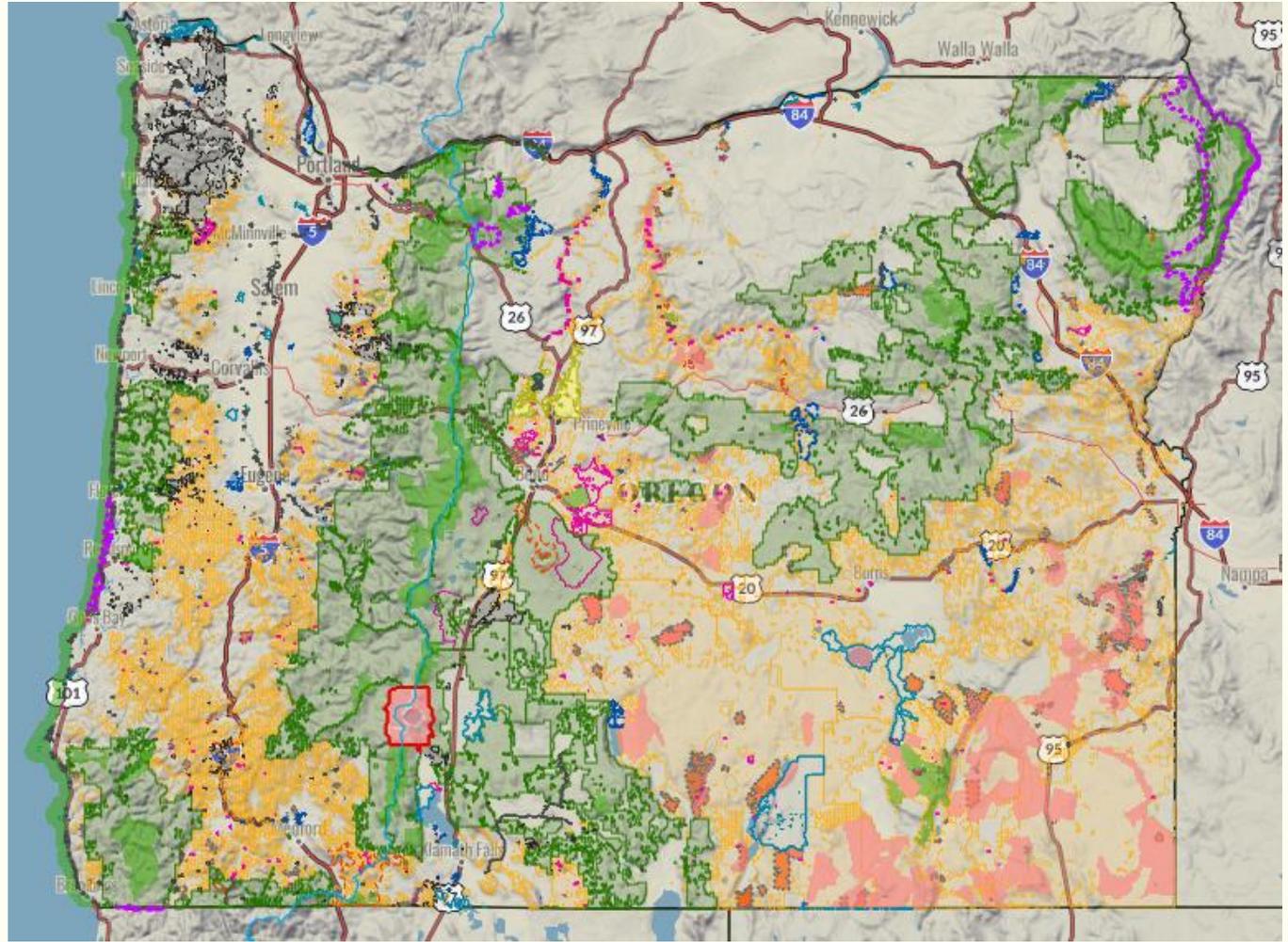
- PGE serves over 950,000 customers in 51 incorporated cities across Oregon.
- We have approximately 2,960 employees.
- Continued position as #1 ranked renewable power program in the U.S. for 15 years according to the National Renewable Energy Laboratory (2024).<sup>(1)</sup>
- PGE was ranked the No. 1 utility in the 2024 Forrester U.S. Customer Experience Index.
- In 2024, PGE employees, retirees and the PGE Foundation donated \$5.5 million and volunteered nearly 23,000 hours to more than 480 nonprofit organizations.

## Leading the way to a clean energy future for Oregon

- Our goals align with the state's 100% clean energy by 2040 framework. The targets to reduce baseline greenhouse gas emissions from power served to Oregon retail customers are:
  - 80% reduction in greenhouse gas emissions by 2030
  - 90% reduction in greenhouse gas emissions by 2035
  - 100% reduction in greenhouse gas emissions by 2040



60% of the land in Oregon is public, with 53% of that being managed by the Federal Government.

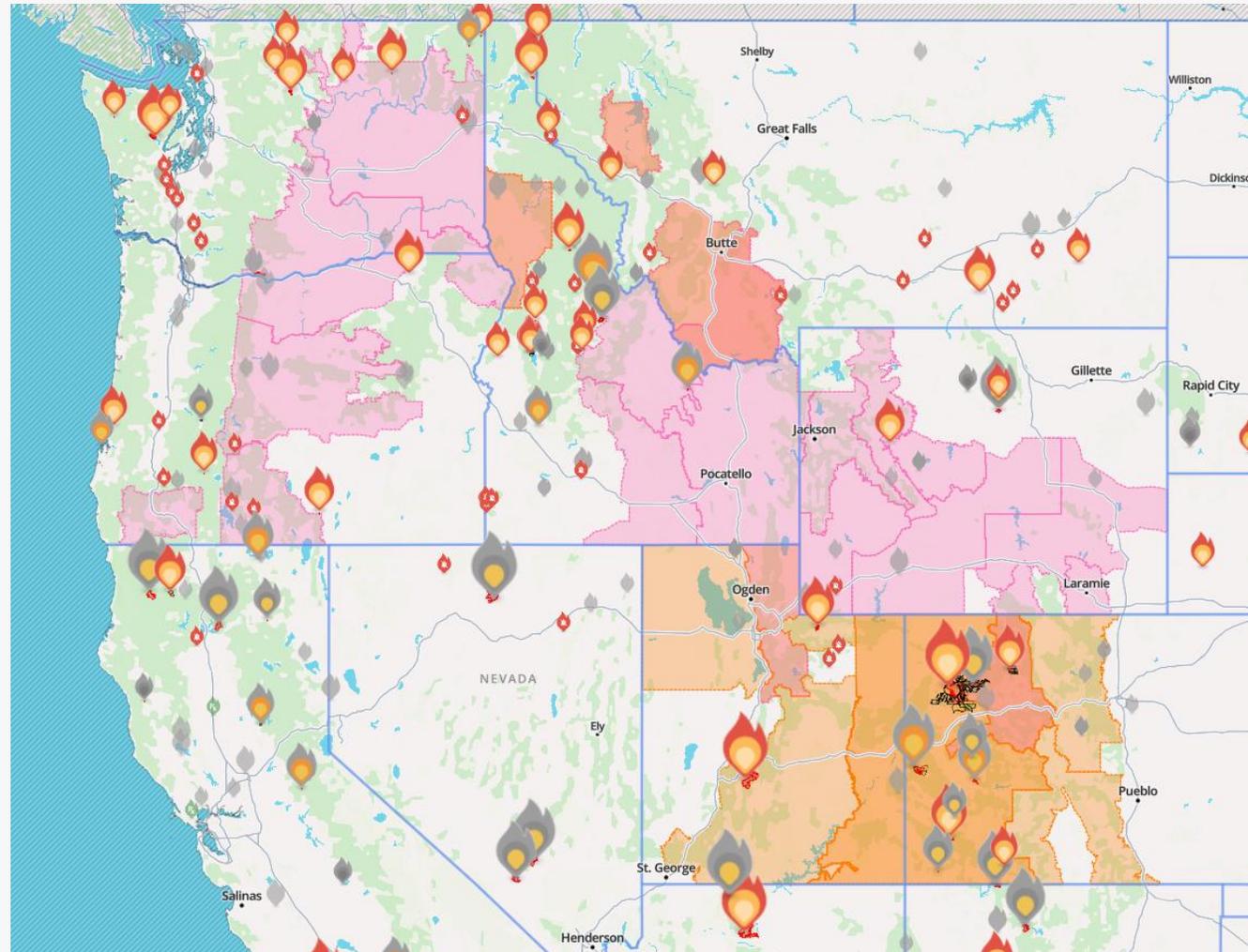


# Wildfire across the West

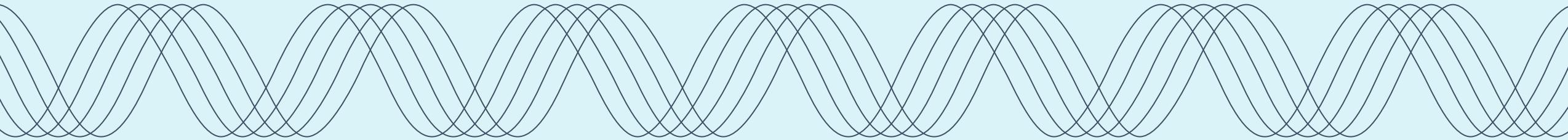
## National Statistics

Year-to-date

- 43,381 wildfires
- 3,642,224 acres burned
- 16,953 firefighters and support personnel currently engaged in fires response or prevention work.



# Wildfire impact on utilities



# Wildfire Impacts on Electric Utilities

Infrastructure Damage



Financial Costs



Operational Disruption



Reputational Pressure



Safety & Liability Risks



# Examples and lessons learned



## 2023 Hawaii Wildfires (Maui)

- \$6 billion in damages
- 2,200 structures destroyed
- More than 110 lives lost

### Key Lessons

- Resource and equipment shortages: Advanced planning for mutual aid



## 2018 Camp Fire (California)

- \$13.5 billion in damages
- 18,000 structures damaged
- 85 lives lost

### Key Lessons

- Inspection and infrastructure improvements can help prevent utility ignitions



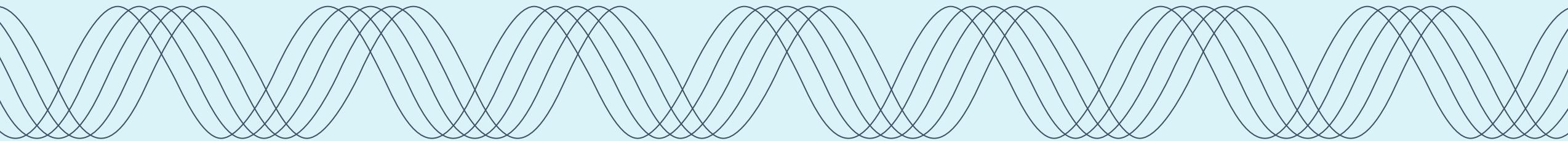
## 2020 Labor Day Fires (Oregon)

- 1,000,000 acres burned
- Thousands of homes destroyed
- 11 lives lost

### Key Lessons

- High-winds and dry weather led to a fast-moving event, prompting greater emphasis on monitoring real-time conditions

# Wildfire Prevention and Response



# Wildfire Mitigation Summary



# Prevention & Mitigation Measures



## System Hardening

- Metal poles
- Reconductoring
- Undergrounding



## Vegetation Management

- Tree trimming
- Monitoring



## Situational Awareness

- Fire / smoke detection
- Early fault monitoring
- Weather forecasting

# Prevention: Designing Today's Grid for Tomorrow's Risk

We are designing today's grid with tomorrow's wildfire environment in mind, scaling fire-safe construction standards beyond HFRZ areas.



## Systemwide Standards

- Resilient pole design and framing
- Fiberglass arms
- Polymer clamp-top insulators
- Fire safe fuses (equipment fusing)
- Wildlife covers



## Targeted Risk-based Programs

- Fire safe fuses (line fusing)
- FM Global padmount transformers
- Underground conversions
- Covered conductor installations
- Fire mesh wraps for assets

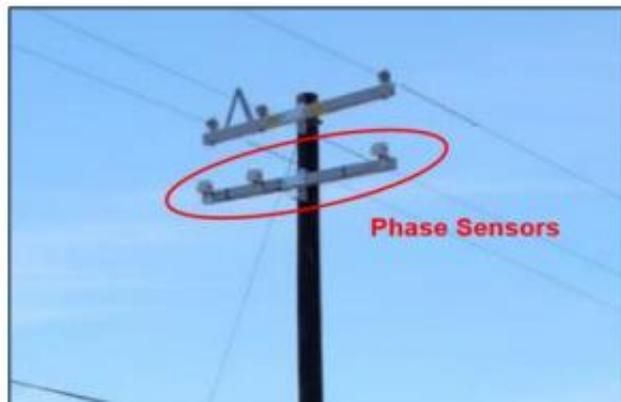


## Pilots/Evaluations

- Breakaway secondary service drops
- Enhanced covered conductor (1 ply vs 3 ply Tree Wire)
- Stirrups for hot line clamps

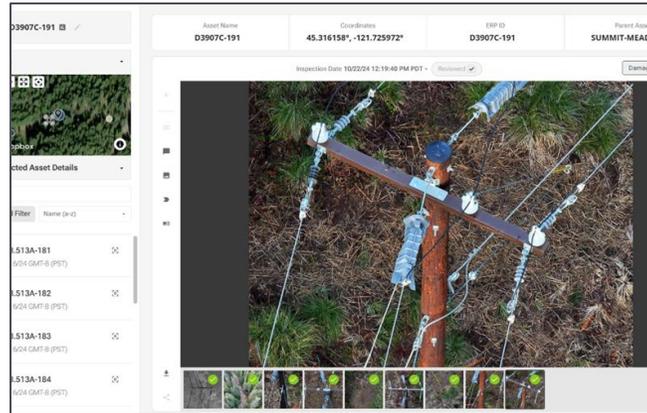
# Detection: The Evolution of Monitoring

Enhancing detection and monitoring capabilities with technology



## Projects & Programs

- **Early Fault Detection** using RF sensors deployed with covered conductor
- **Drones** augment transmission ground inspections
- **Protective Relay** settings updated to reflect ignition risk



## Pilots

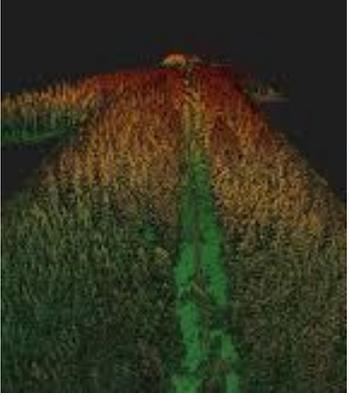
- **Thread Imagery** platform designed to validate asset records and enhance visual data management
- New **Mobile Units** used to augment traditional surveys with Remote Sensing data
- **Drones** used for Ignition Prevention Inspections in new HFRZ 12



## Evaluations

- **High Impedance Fault** detection methods
- **Broken Conductor** protective relaying
- **Grid Edge Computing** using meter data

# Vegetation Management Advancements



**LiDAR** can be used to create highly detailed 3D maps of vegetation and terrain, helping identify fuel loads, fire-prone areas, and safe access routes for crews.



**Hyperspectral** imaging can detect subtle differences in vegetation health and moisture, enabling early identification of stressed or highly flammable areas that increase wildfire risk.

# Response: Real-time Mitigations during Fire Season



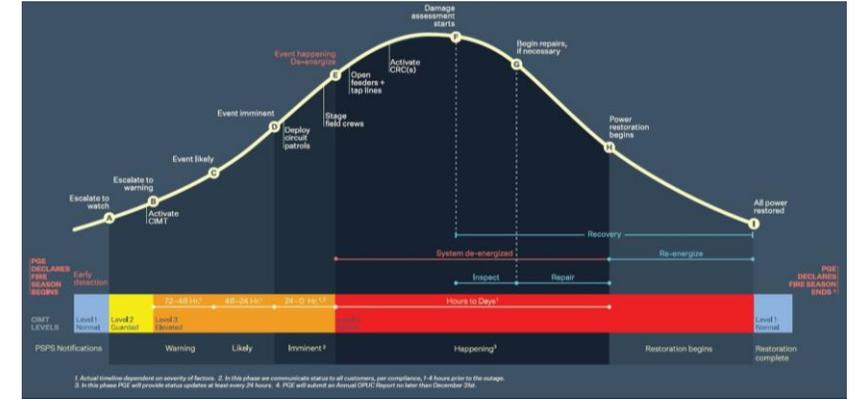
## Fire Season Readiness

- Fire safe work practices
- Fire trailers and other suppression tools
- Red Flag Warning (RFW) and Industrial Fire Precaution Level (IFPL) protocols
- Employee and supplier training



## Enhanced Powerline Safety Settings (EPSS)

- Mitigates both wind and fuels-driven fires
- Only one-shot reclosing during Fire Season
- Fast trip with no reclosing during periods of Enhanced Fire Risk
- Line patrols
- Expanding beyond HFRZs



## Public Safety Power Shutoff (PSPS)

- Mitigates wind-driven fires
- Planning in partnership with emergency managers
- Annual plan updates and exercises
- Robust notification processes