

# Walla Walla County

## Distribution System Planning

### Community Workshop #1

April 10<sup>th</sup>, 2024

***Presenters:***

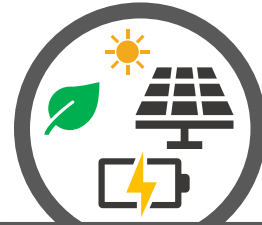
*Ian Hoogendam – DSP Manager, Cadogan Morgan– Engineer, Ryan Harvey – CBRE Product Manager*



Process  
modernization



Outreach and  
engagement



Non-traditional  
solutions



Collaboration

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## DISTRIBUTION SYSTEM PLANNING

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# Workshop #1 Information

## Microsoft Teams meeting info:

**Join on your computer, mobile app or room device**

[Click here to join the meeting](#)

Meeting ID: 273 654 512 633

Passcode: DYfXZn

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**Call in (audio only)**

[+1 563-275-5003,,995195291#](#) United States, Davenport

Phone Conference ID: 995 195 291#

[Find a local number](#) | [Reset PIN](#)

- Please **place your phone on “Mute”** when not speaking
- If you call in using your phone in addition to joining via the online link, please make sure to **mute your computer audio**
- Please **do not use the “Hold”** function on your phone

### Participation:

This workshop is available to the public, and there is a Questions/Comment section at the end of the workshop for online participants.

Please input your name and organization into the chat when you enter, and please “raise your hand” during the Open Discussion section to ask questions or provide input.

This workshop will be recorded and published to the PacifiCorp DSP website.

# Today's Agenda

5

Introductions

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Utility and Distribution System Planning Overview

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Community Based Renewable Energy Pilot

15

Break

15

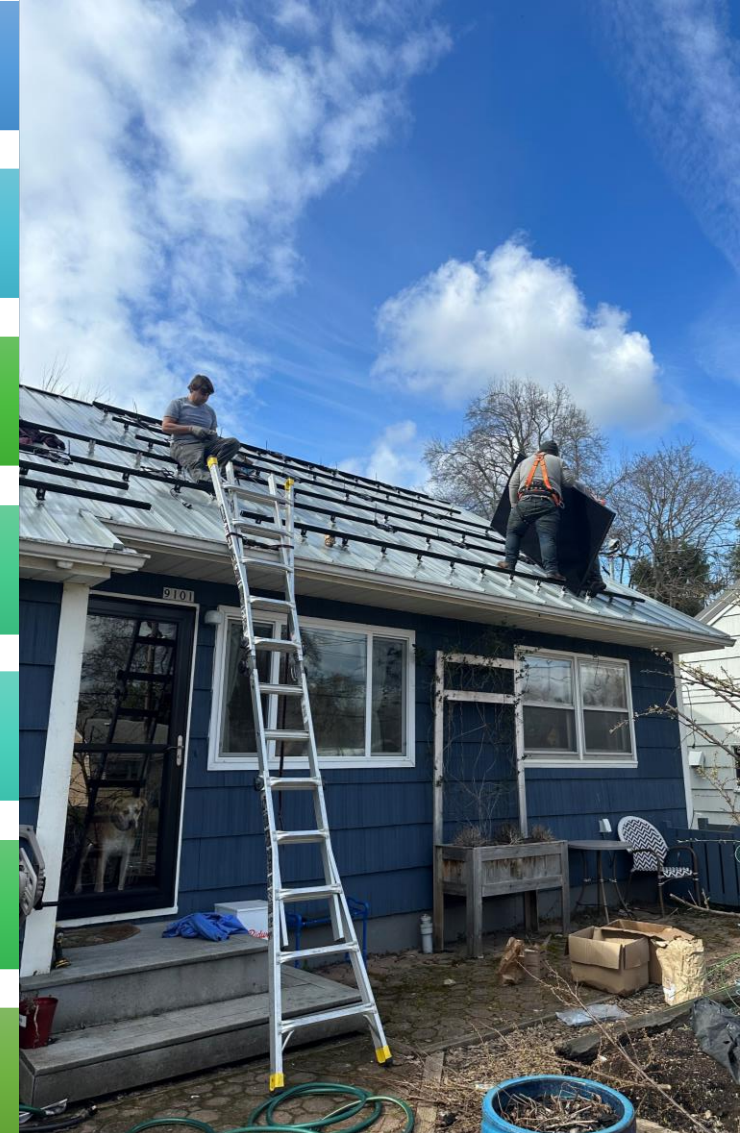
Study Area Overview

15

Forecasting/Preliminary Grid Needs

15

Open Discussion



# Introductions – Pacific Power Team Members

## Oregon Planning Team



Ian Hoogendam – DSP Manager



Shauna Thomas – DSP Program Specialist

➤ Daniel Talbot – DSP Engineer



Cadogan Morgan – DSP Engineer

➤ John Rush – Project Manager

➤ Ryan Harvey – CBRE Product Manager

## Wallowa Team

➤ Doug Guttromson – Field Engineer

➤ Lori Wyman – Regional Business Manager

# Introductions – Wallowa County Participants

- Joe Basile - Wallowa Resources
- Gavin Collier - Wallowa Resources
- Tara Porter - Wallowa Resources
- John Hillock - Wallowa County
- Susan Roberts - Wallowa County
- Kyle Petrocine - Energy Trust of Oregon
- Cayrn Appler - Energy Trust of Oregon
- Ryan Sheehy - Fleet Development
- Lisa Dawson - Northeast Oregon Economic Development District
- David Schmidt - Heartwood Biomass

# Workshop Objectives

**Success is a transparent, robust, and holistic distribution system planning framework.**

## Education

- Explaining traditional solution approaches and nontraditional solution programs
- Development and comparison of solutions

## Engagement

- Gathering input about the solutions being considered
- Understanding the needs, values, and concerns of the community

## Transparency

- Involving the community throughout the process
- Sharing of processes, analysis results, decisions, and learnings

**Why are you here? What do you hope to get out of today's discussion?**

# Distribution System Planning Overview

# Electric Grid Overview

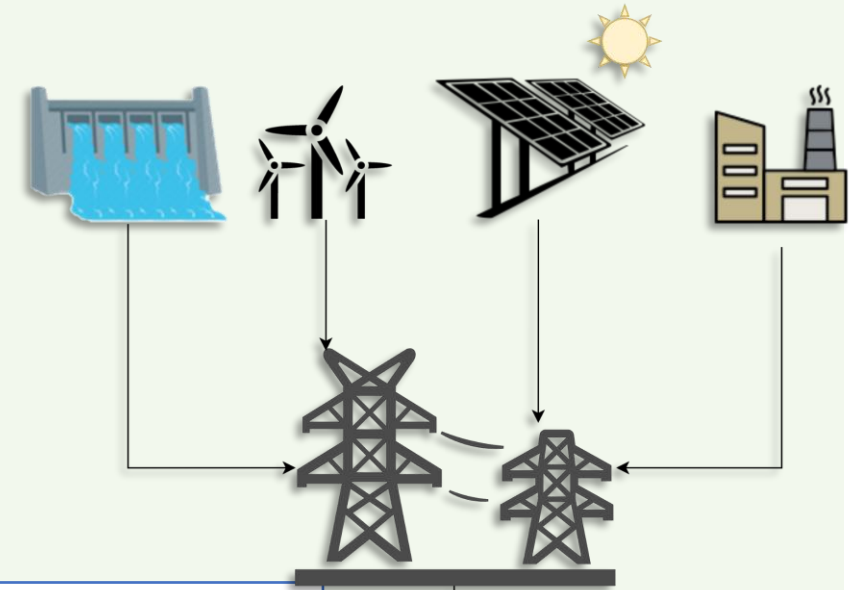


## Generation and Transmission System

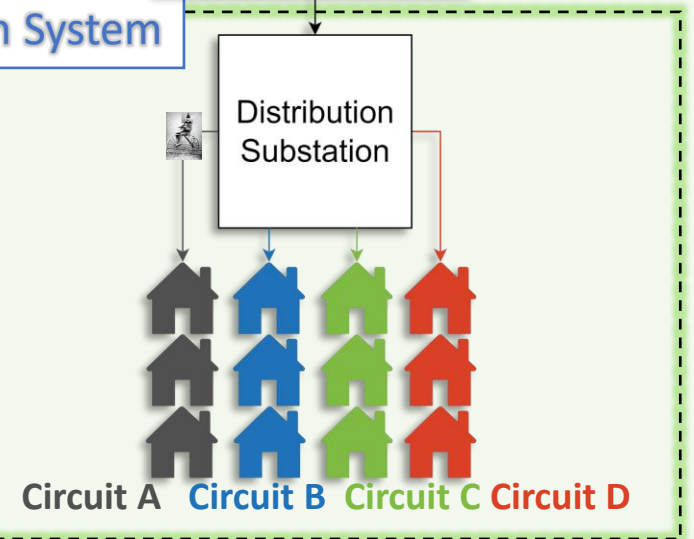
- Generates power from various resources
- Transmission lines transmits power from generation plants to distribution substations

## Distribution System

- Starts at distribution substation and ends at customer meter
- Delivers power to consumers via poles and wires(overhead and underground)



## Distribution System





# What is Distribution System Planning (DSP)?

## What is Oregon DSP?

- Advancements to traditional DSP based on guidelines proposed by Oregon PUC staff
- Increased transparency of DSP processes to meet the needs and leverage the capabilities of the modern grid

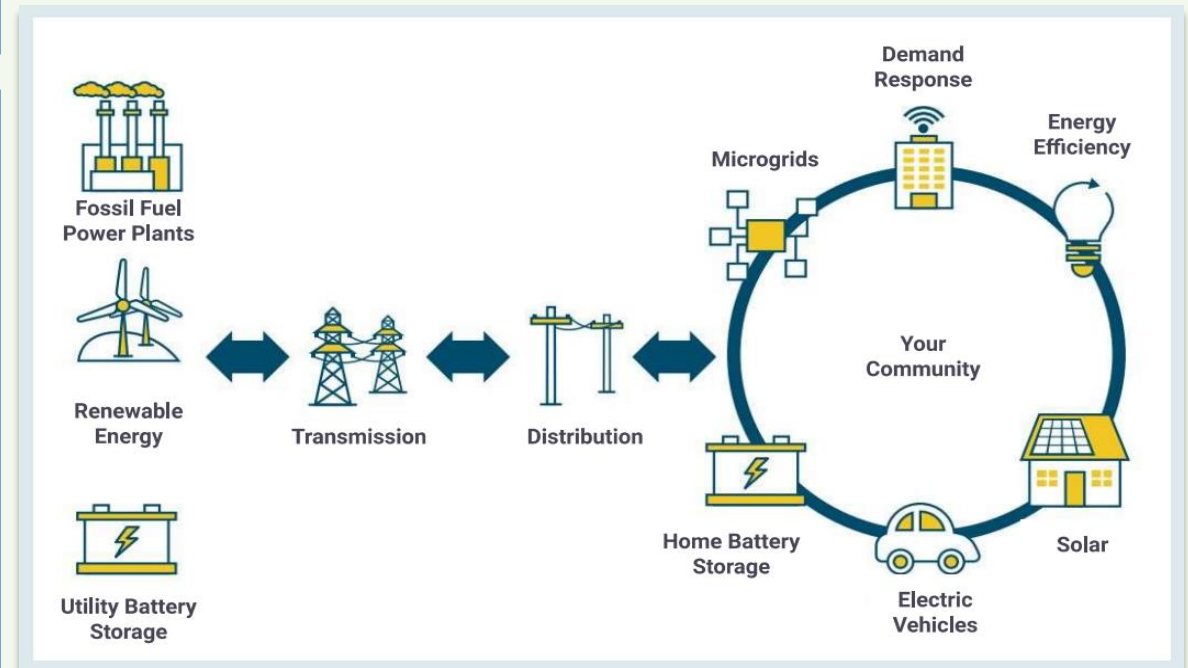
## Key Changes to Traditional DSP

- Enhanced forecasting:
  - 24-hour usage profiles
  - 10-year forecast horizon
- Evaluation of nontraditional solutions to address grid needs
- Increased community engagement

### Past Grid



### Modern Grid



# Distribution System Planning Studies vs. Ad-Hoc Studies

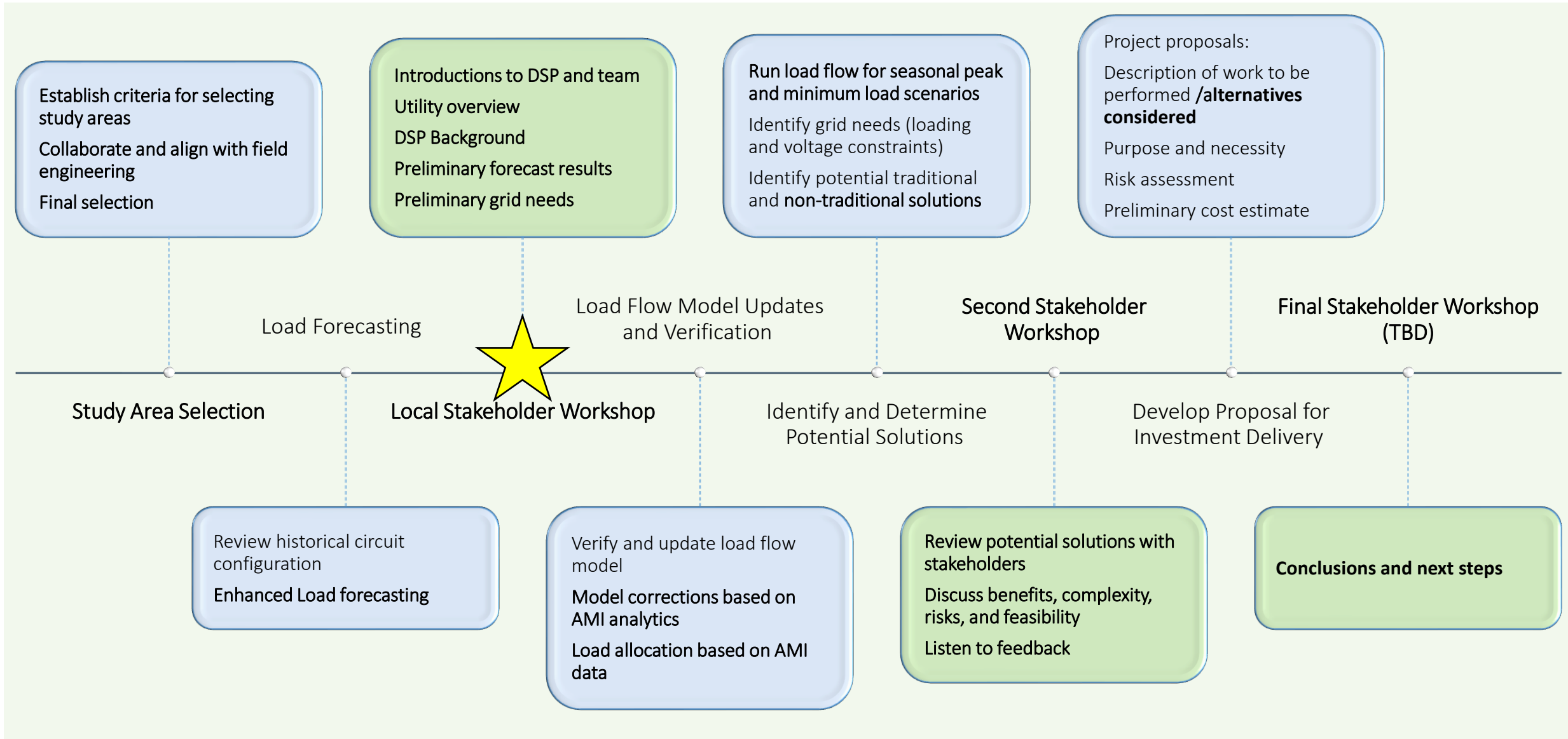
## Distribution System Planning Studies

- Scheduled to be completed on a 5-year cycle
- 5–10-year planning horizon
- Schedule may shift depending on several factors (high load growth activity, large load additions, etc.)
- 99 planning studies are on 5-year cycle in Pacific Power service area
- Study process takes multiple months

## Ad-hoc Studies (Generation Interconnect or System Impact Study)

- Initiated by load, generation interconnection, or transmission service requests
- Focused on a limited area, and the immediate effects of the request on reliability and load service
- Shorter timeframes to meet customer needs (~120 days for initial study)
- Customer shares in solution costs and has input into what solutions are implemented

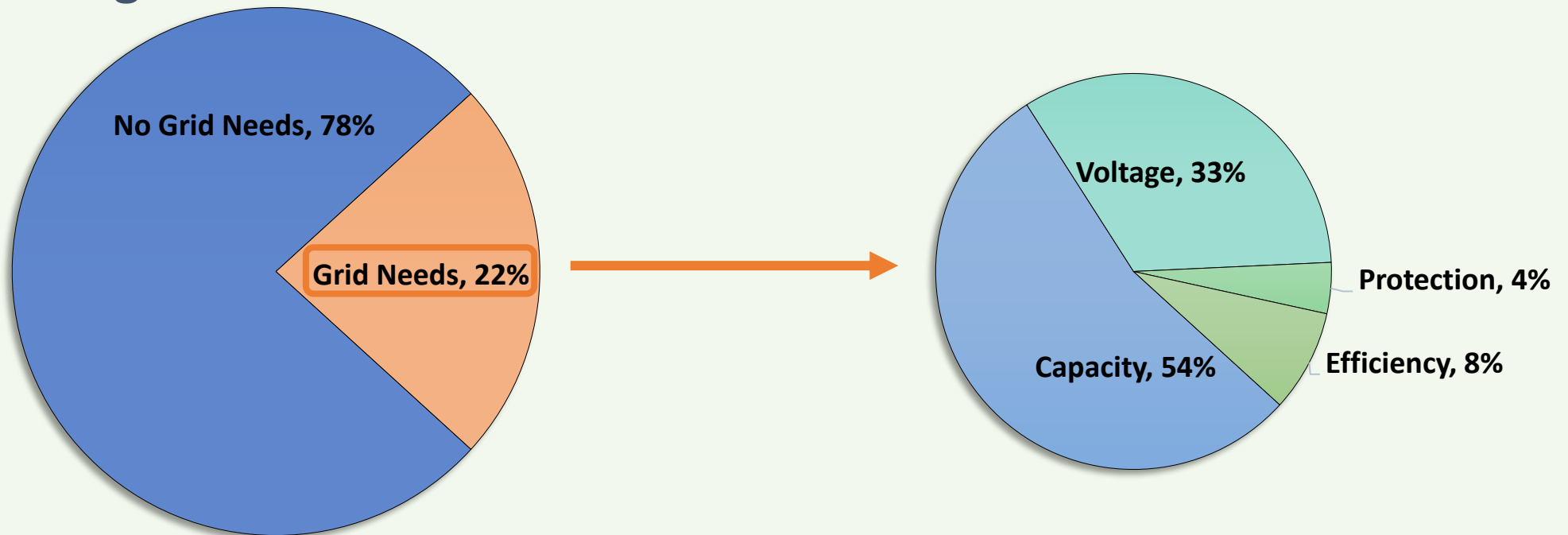
# 2024 DSP Study Process and Local Engagement Plan



# Types of Grid Needs

<b>Capacity</b>	Demand exceeds capacity of distribution system equipment
<b>Voltage</b>	Voltage levels that result in unsatisfactory performance of customer equipment
<b>Protection</b>	Expected loading conditions compromise the grid's ability to operate safely and reliably
<b>Efficiency</b>	Inefficiencies that result in avoidable power costs to the utility and can lead to other grid needs

## Oregon Distribution Circuit Grid Needs from Recent Studies



# Traditional Solutions: *Poles, Wires, Equipment*

## Equipment Upgrades

- Increase capacity of system equipment

## New Equipment

- New equipment to address voltage/protection needs or facilitate load transfers

## New Substations and Circuits

- Sometimes required in conjunction with other traditional solutions

## Load Transfers

- Transfer load to circuits with spare capacity

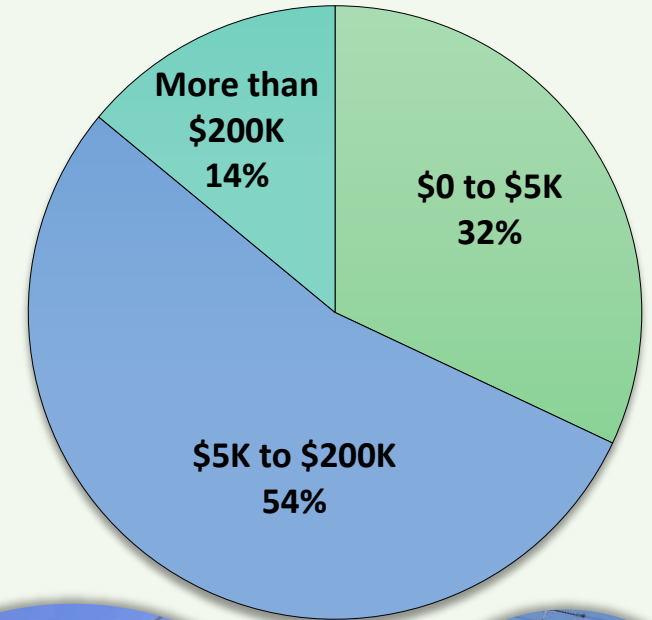
## Load Balancing

- Balancing load among circuit wires

## Settings Changes

- Update equipment settings to ensure safe and reliable service for expected loading conditions

## Costs of Traditional Solutions from Recent Studies



## Nontraditional Solutions: *Energy Programs*

### Solar

- Accelerate solar adoption in area through marketing and incentives



### Energy Efficiency

- Accelerate energy efficiency in area through marketing and incentives



### Demand Response

- Lower peak demand by managing behind the meter devices:
  - ❖ Batteries, Smart Thermostats, Water Heaters, EV Charging



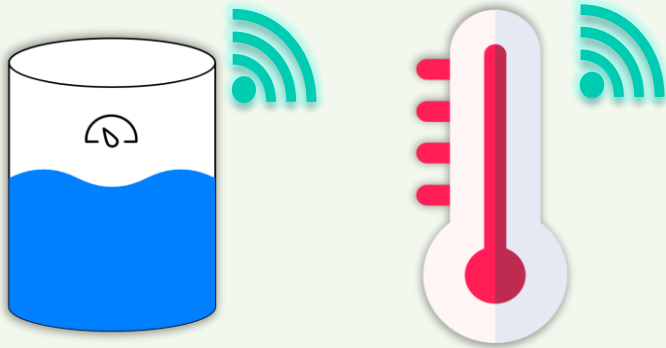
### Partnerships

- Collaboration with partners on unique/innovative solutions





# Pacific Power Programs



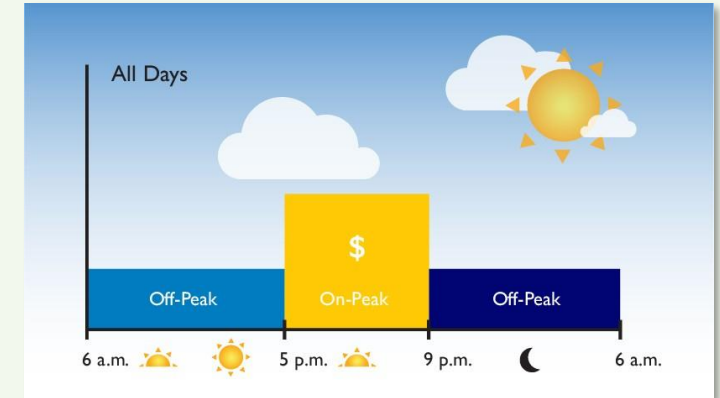
## Optimal Time Rewards

- Smart thermostat program
  - ❖ Smart thermostat rebates through Energy Trust of Oregon
- Water heater program (multi-family only)
- Initial enrollment incentive
- Ongoing annual incentive



## Commercial & Industrial Demand Response

- Commercial and Industrial customers agree to curtail load during peak events in exchange for financial incentives
- Incentives vary by:
  - ❖ Average available load for curtailment during product hours
  - ❖ Advance notification



## Time of Use Rate

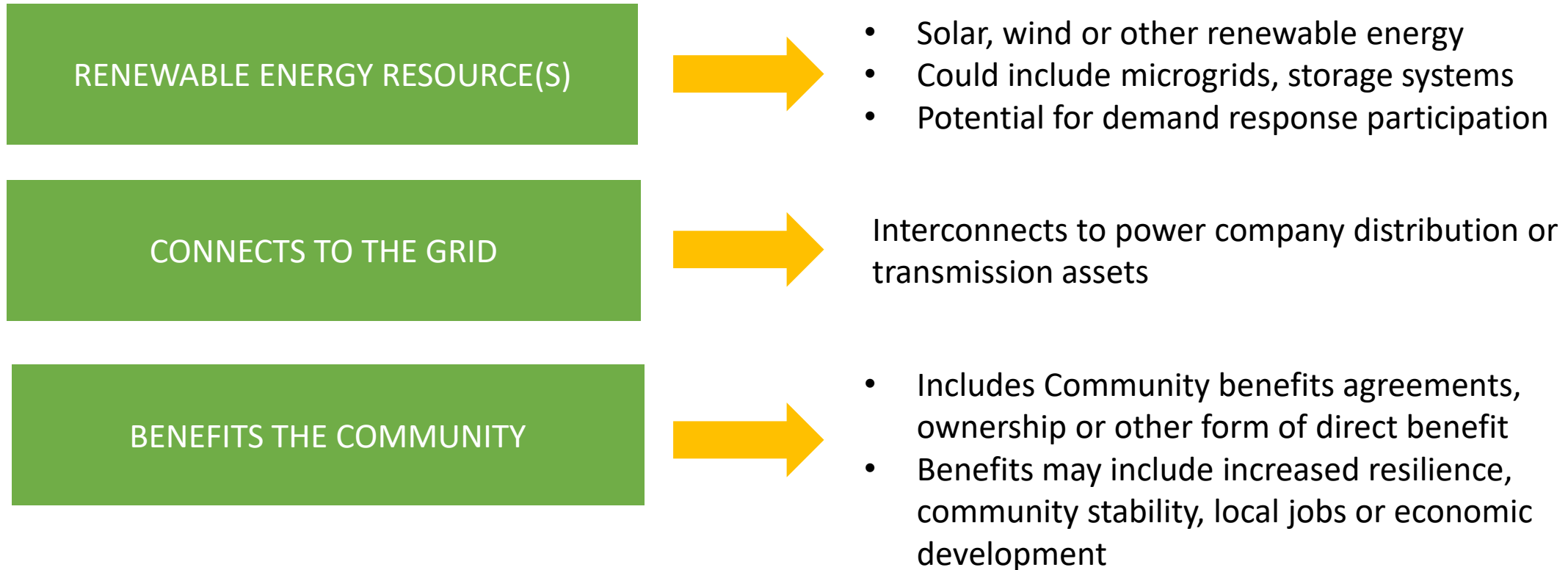
- On-peak (5PM-9PM): about 28¢ per kilowatt-hour (kWh)
  - Off-peak: about 10¢ per kWh
  - First year guarantee:
    - ❖ Bill will be no more than 10% more than it would have been under standard rate
- \*Standard combined effective rate 13.7¢ per kWh

# Community-Based Renewable Energy Pilot



# Community-Based Renewable Energy (CBRE) Projects

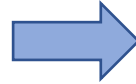
Allows community-level participation in a renewable energy source that promotes climate resilience as well as broader benefits. In Oregon, CBRE projects have three components:



Source: HB 2021 Legislation

# Proposed CBRE-RH Pilot Components

1. **TECHNICAL ASSESSMENTS**: Continue to provide feasibility studies (began in 2020) to communities interested in better understanding the costs and requirements of solar and battery energy storage systems at critical community facilities
2. **ONGOING PROJECT SUPPORT**: Leverage expertise and provide supplemental funding to support the planning for, and installation of, the battery storage component of planned and existing resilience projects to provide grid-enabled system-wide benefits and learning outcomes (capping the investment as part of the Pilot)
3. **GRANT MATCHING**: Establish a mechanism to provide matching funds for communities seeking external grant awards for resilience projects at critical facilities



Provide a mechanism of support for communities that have yet to begin CBRE development



Aid in the interconnection of funded, in-flight resilience projects with grid-enabled storage to capture takeaways & learnings with:

- 2a) Design Support
- 2b) Incentive Offering
- 2c) Ongoing Data Collection



Assist communities as they take advantage of existing funding opportunities

# Break (10 Mins)

Start Timer

TIME TO RESUME

# Study Area Overview

# Wallowa County Area

## Distribution System

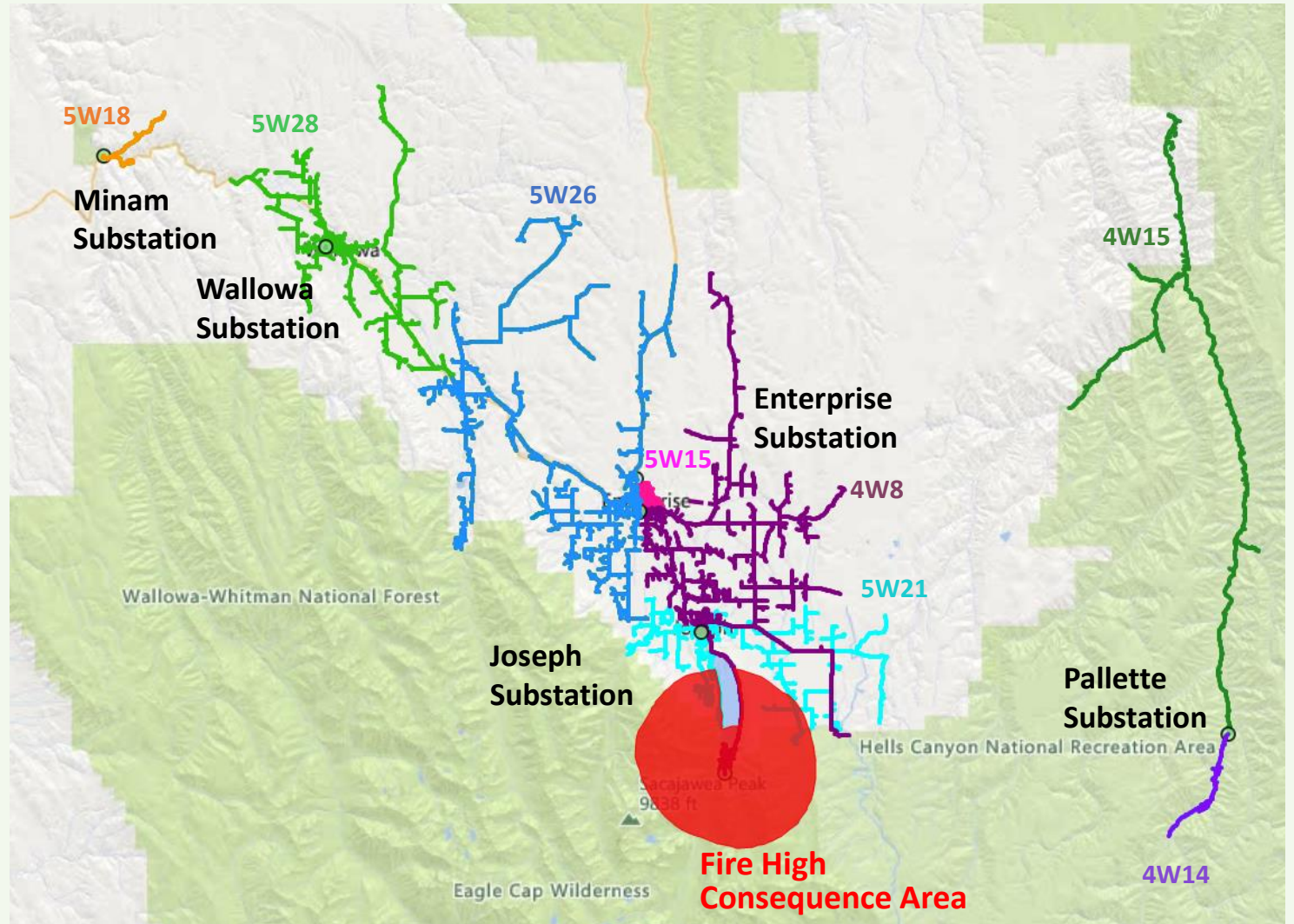
- Substations: 5
- Circuits: 8
- Line miles: 404 miles (sum of pole-to-pole distance)
  - Overhead: 347 miles
  - Underground: 57 miles
- Winter Peak Load: ~23 MW (1/30/23)

## Customers/Load Makeup

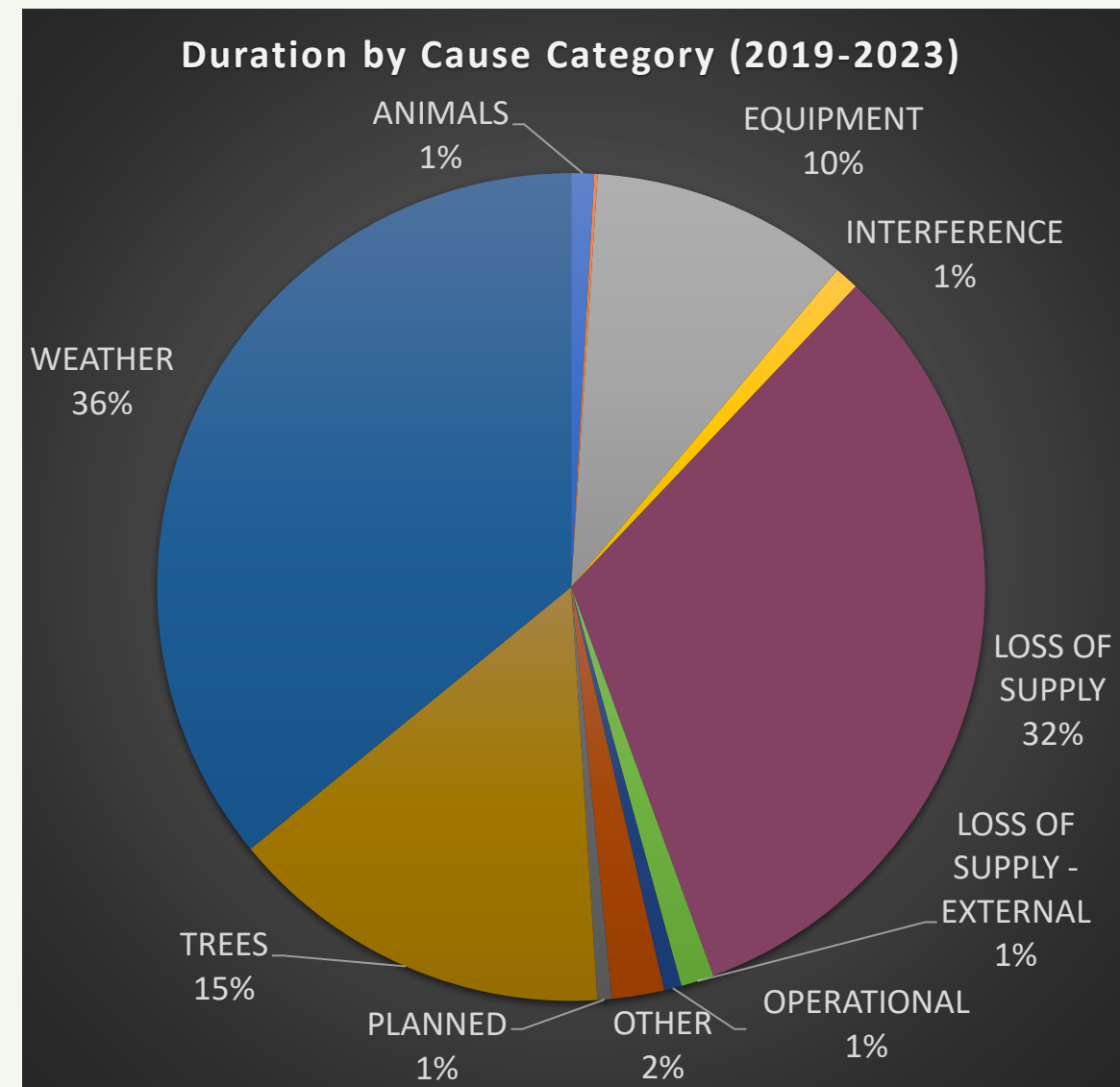
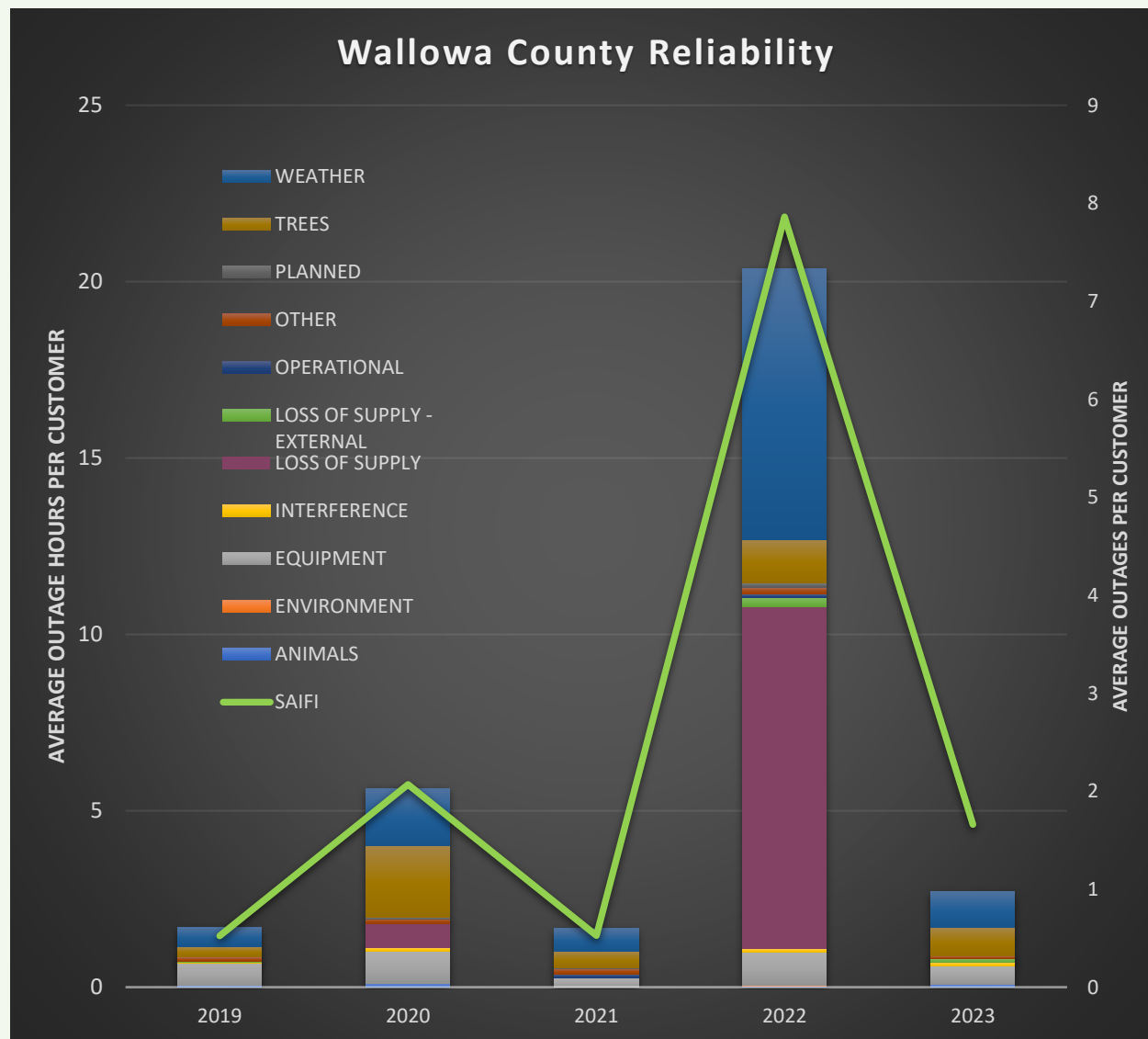
- Residential: 4,353 customers
- Commercial: 1,098 customers
- Irrigation: 278 customers
- Industrial: 21 customers

## Other Characteristics

- Fire High Consequence Area (FHCA)
- Winter peaking
- High percentage of wood heating
- High percentage of residential load



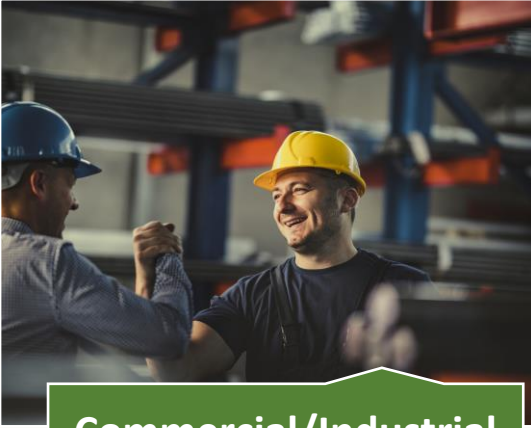
# Wallowa County Reliability



# Load Forecasting and Preliminary Grid Needs



# Drivers for Electrical Load Growth



**Commercial/Industrial Development**



**Population Growth**



**Heat Electrification**



**A/C Adoption**



**Natural Gas/Diesel Prices**



**Policy**



**Economic Output  
(Gross County Product)**

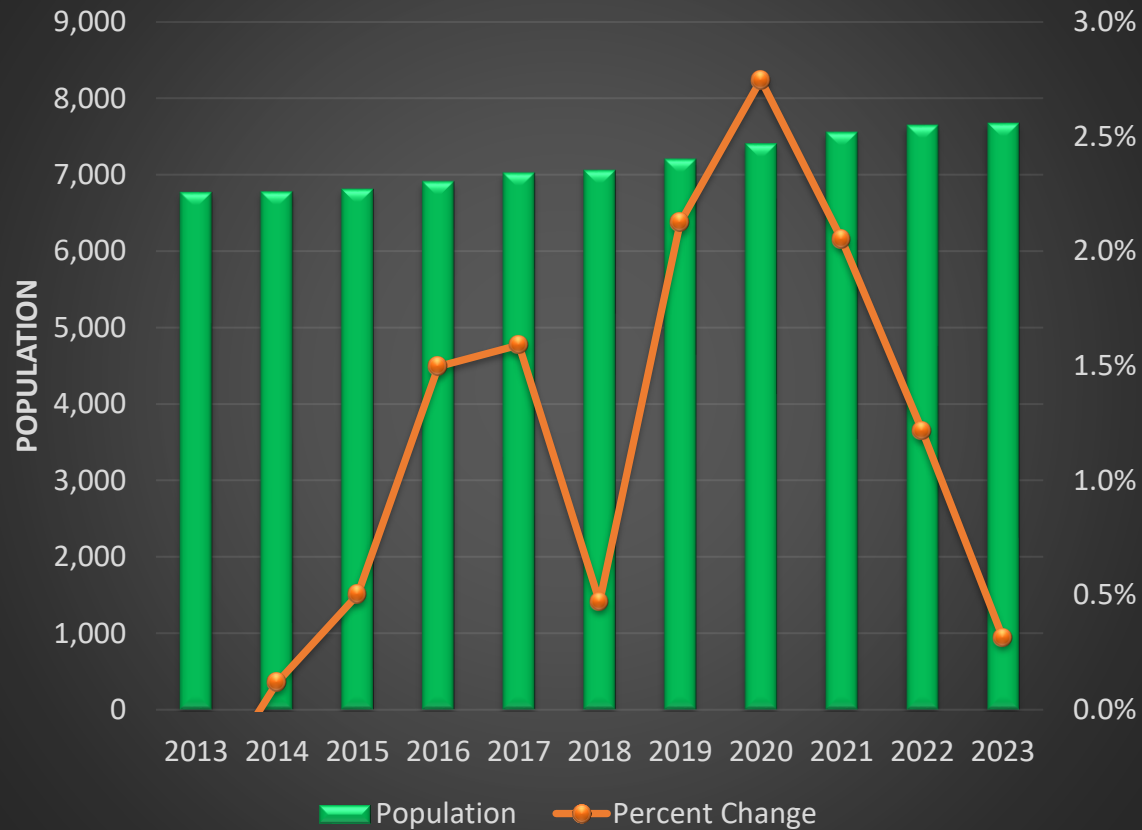


**Technology**

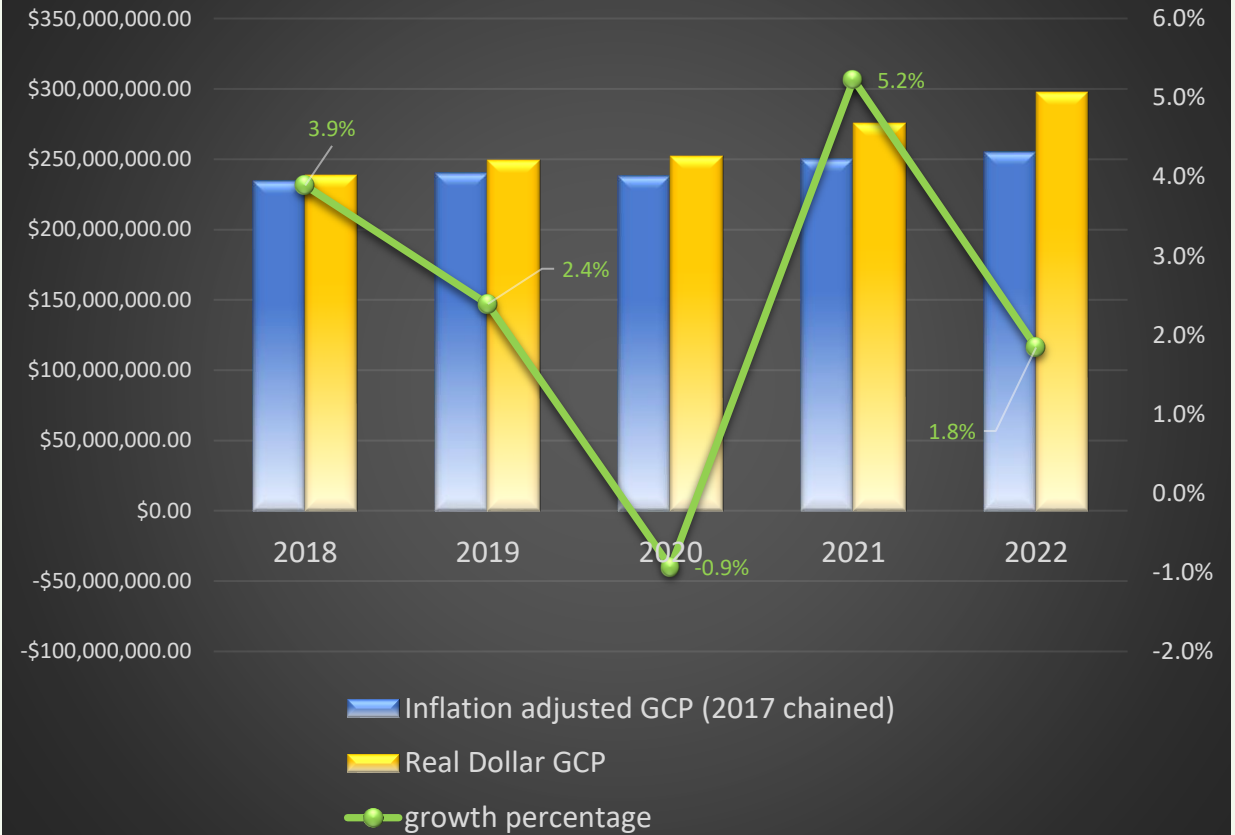


# Wallowa County Economic Growth

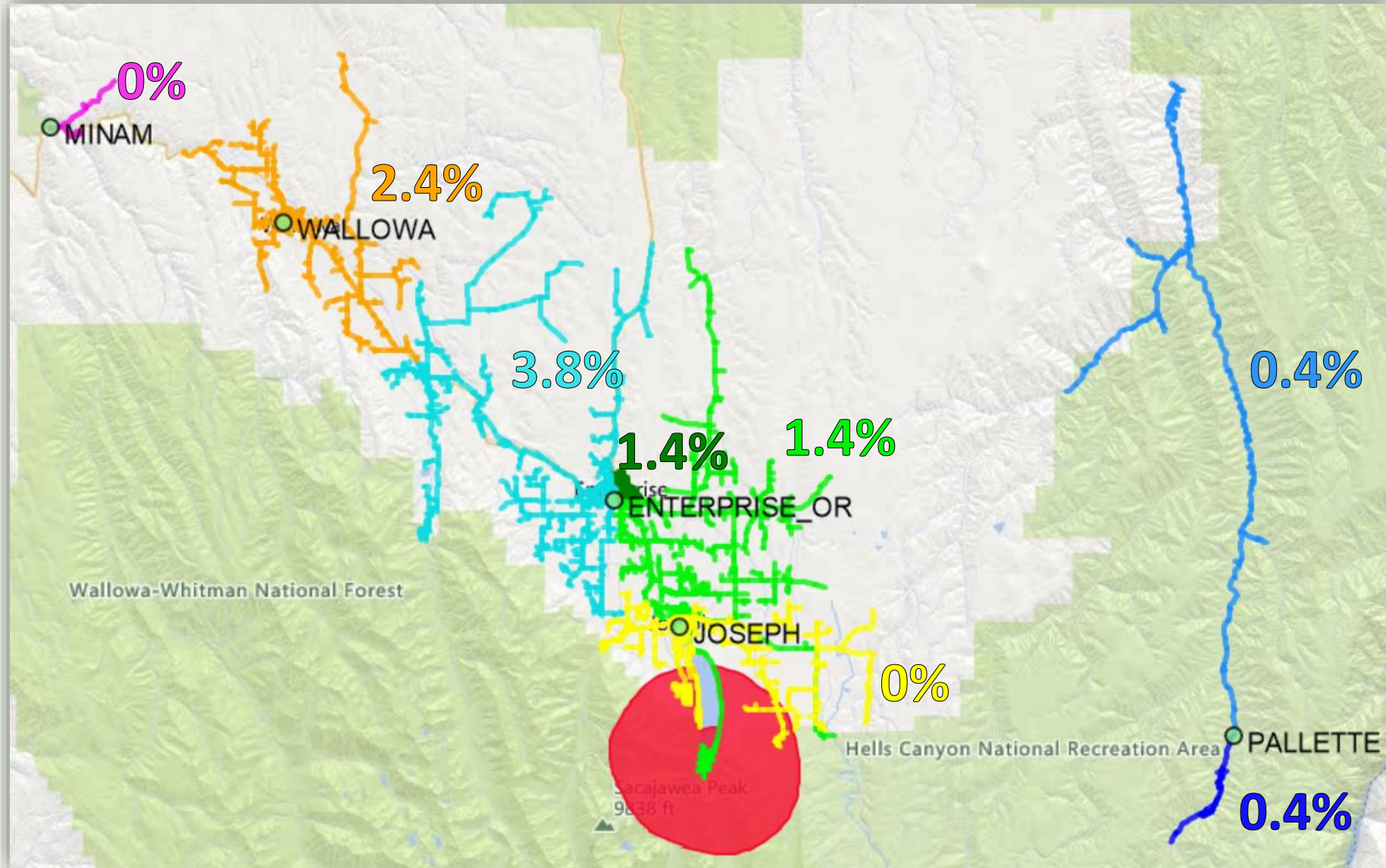
## Wallowa County Population Growth



## Wallowa Gross County Product

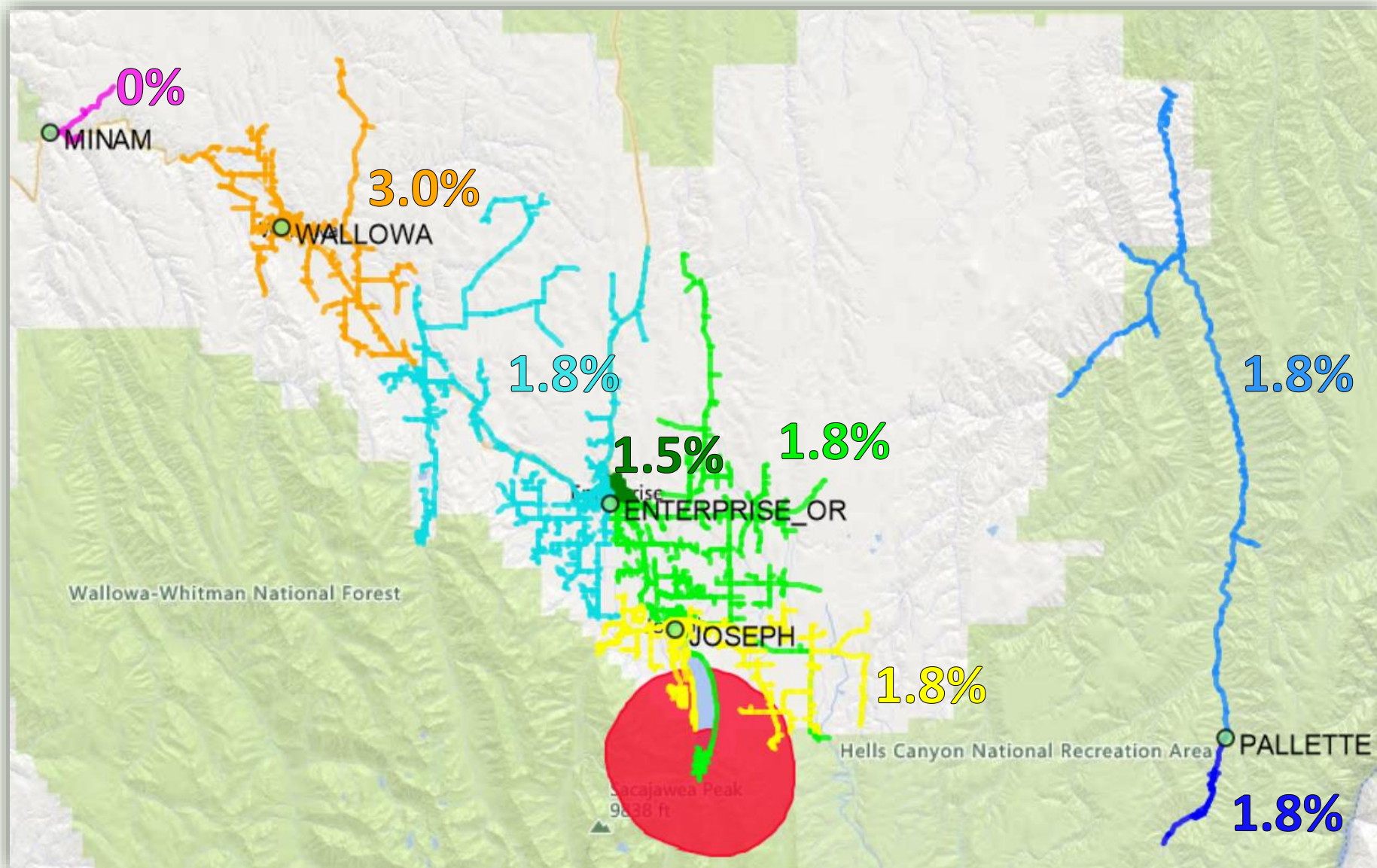


# Wallowa County Load Growth - Summer



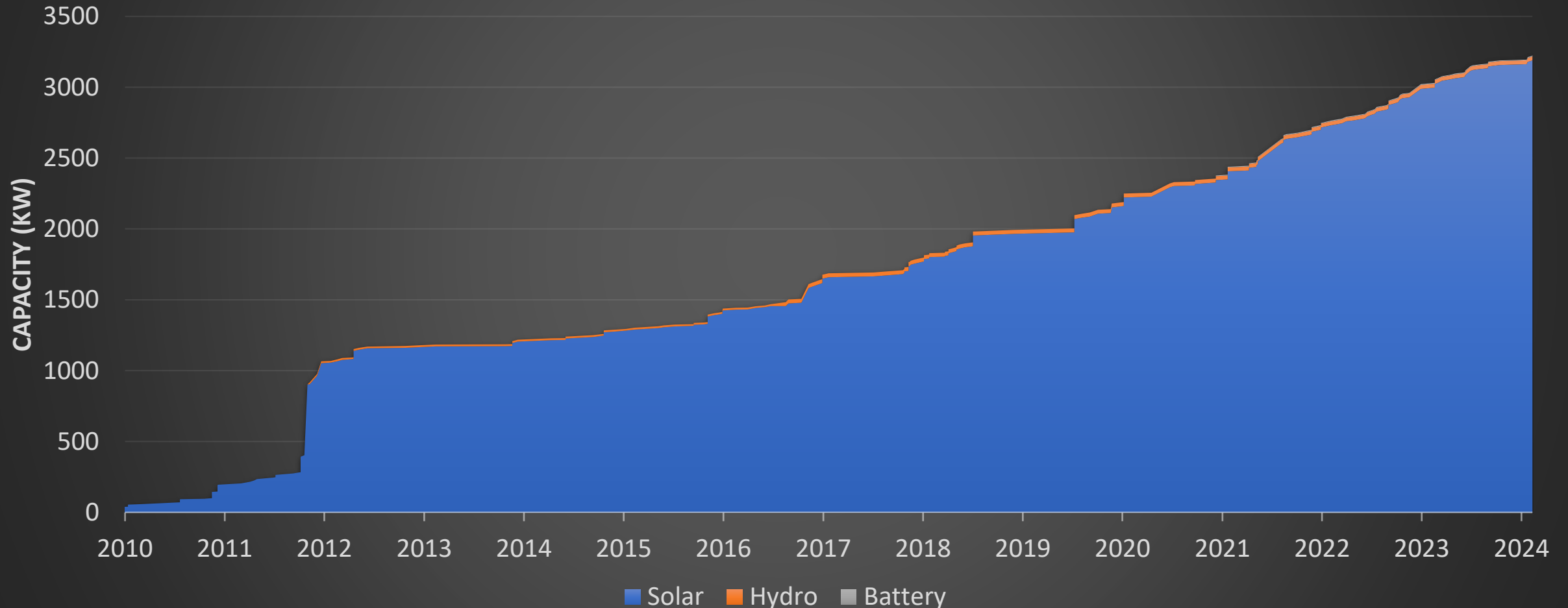


# Wallowa County Load Growth - Winter



# Walla Walla County DER Capacity Historical Growth

## Walla Walla County Net Metered Distributed Generation Installed Capacity

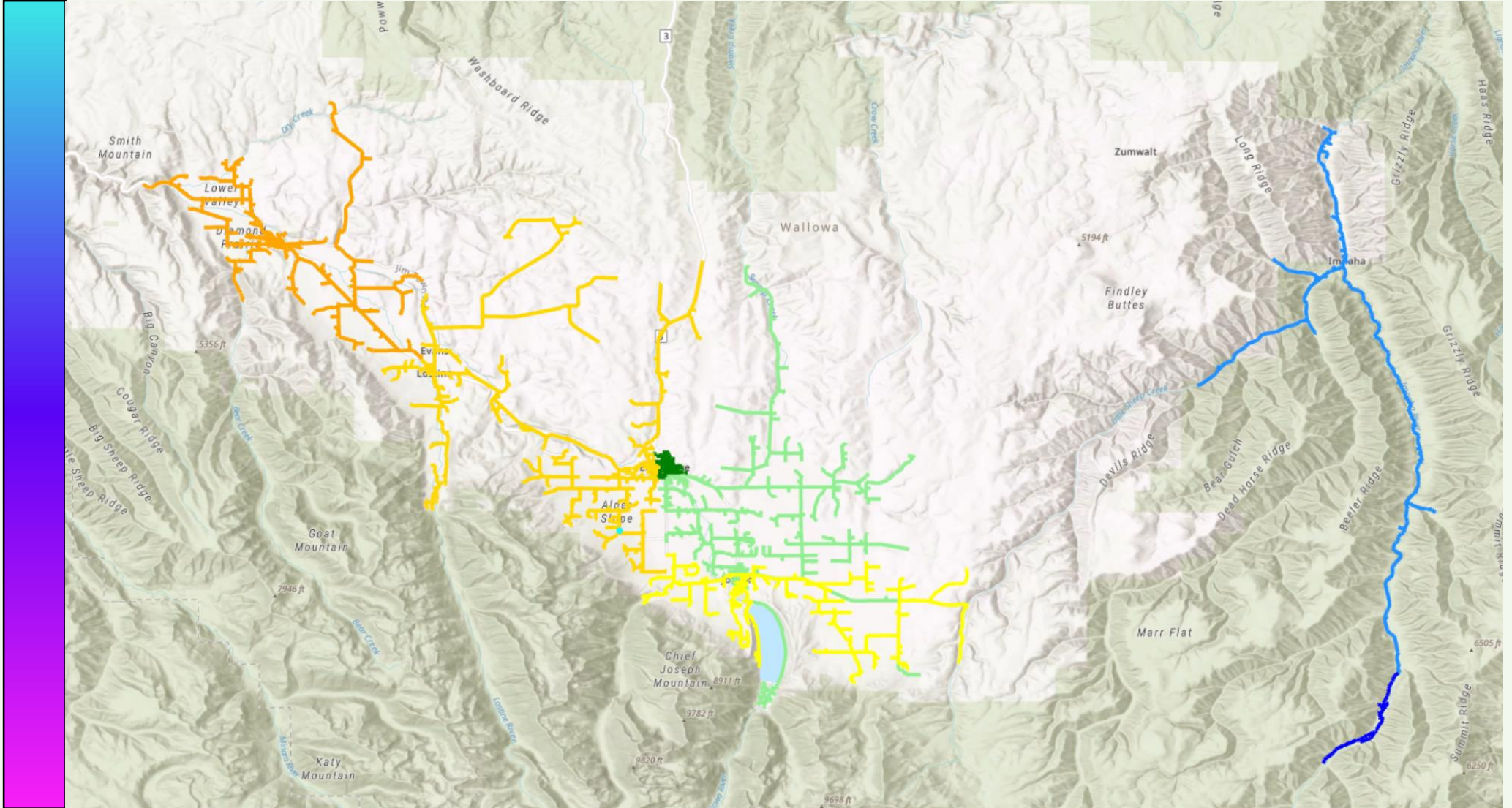




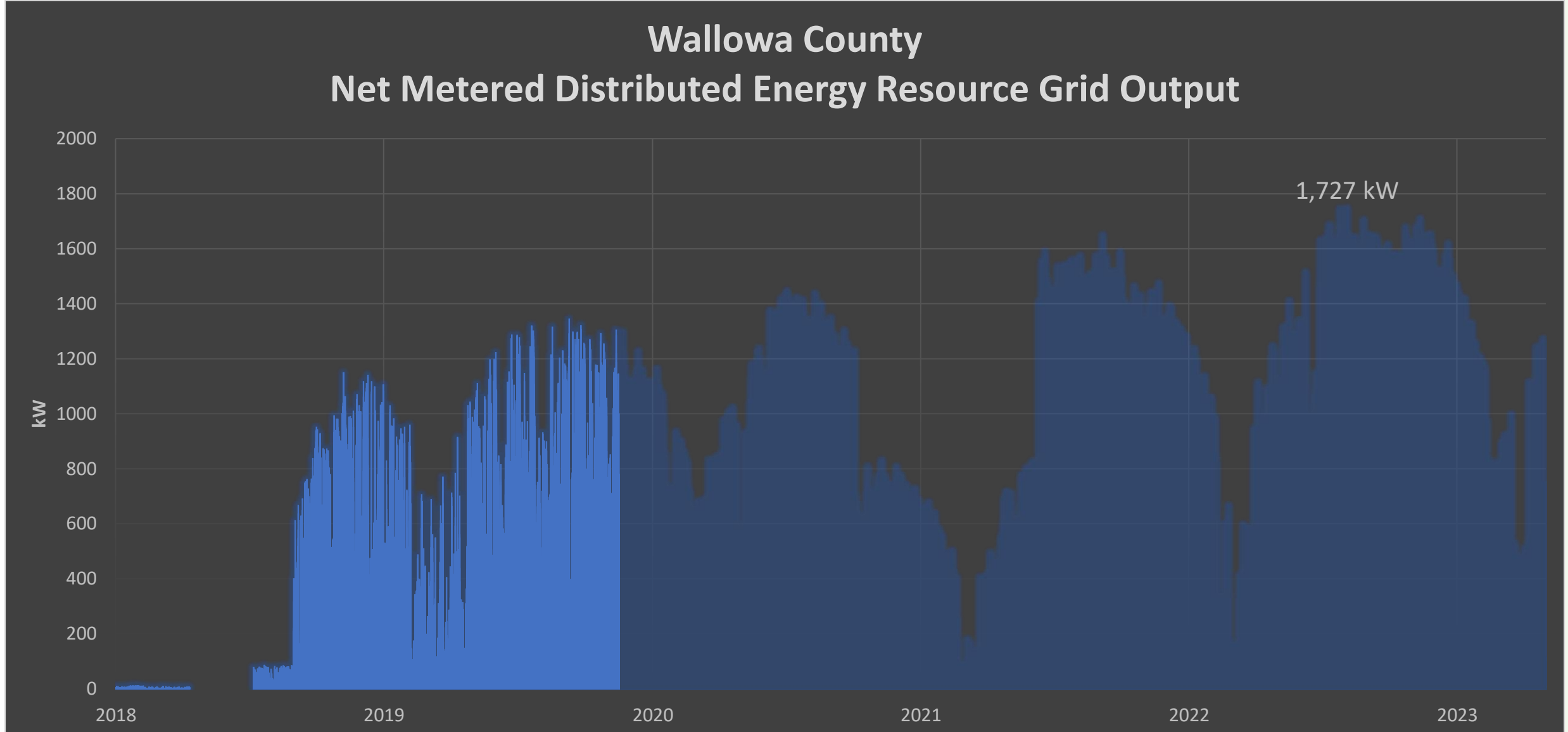
# DER Installations 2006 – Present

3/24/2006

2/10/2024



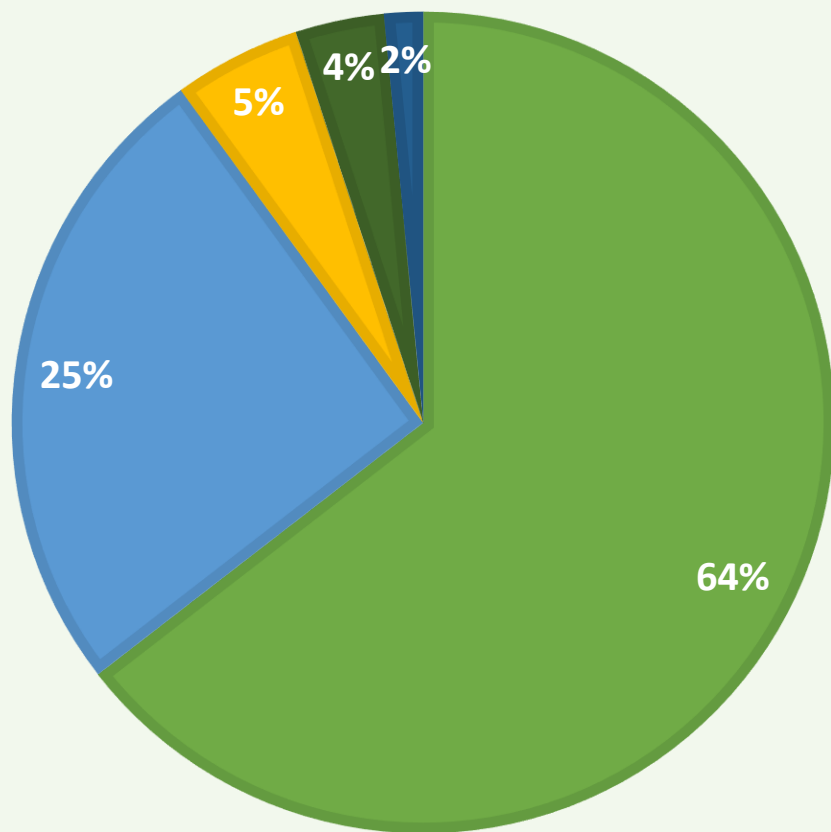
# Walla Walla County DER Grid Output Over Time



# Wallowa County Net Metered DER Output by Capacity Range

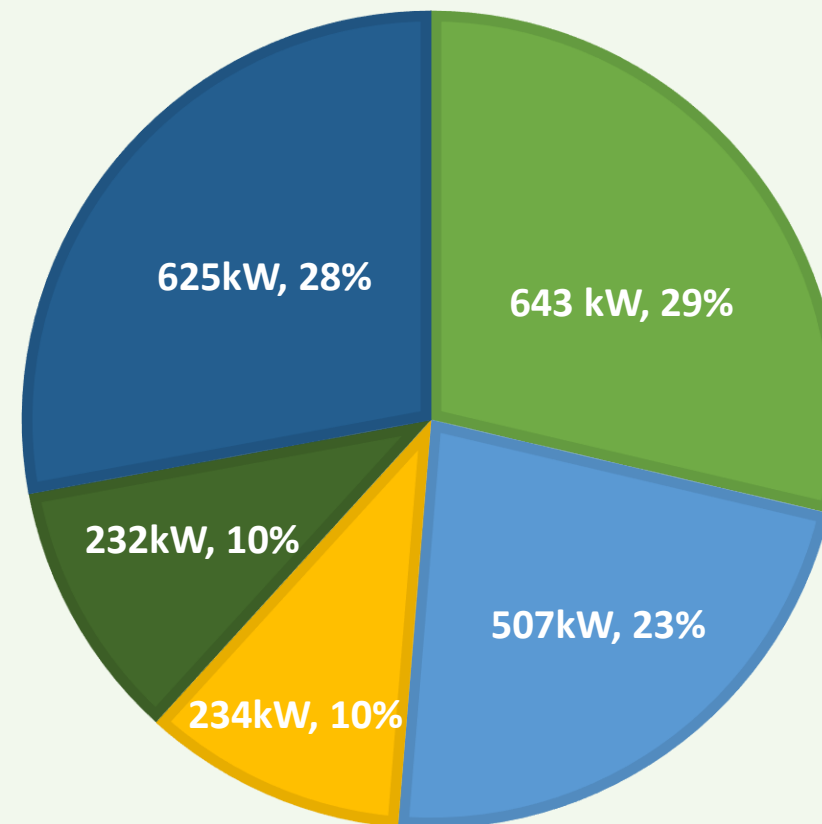
## PERCENTAGE OF NET METERS BY DER RATED CAPACITY

0kW to 10kW    10kW to 20kW    20kW to 50kW  
50kW to 100kW    100kW to 500kW



## SUM OF MAX OBSERVED GRID OUTPUT BY CAPACITY RANGE

0kW to 10kW    10kW to 20kW    20kW to 50kW  
50kW to 100kW    100kW to 500kW



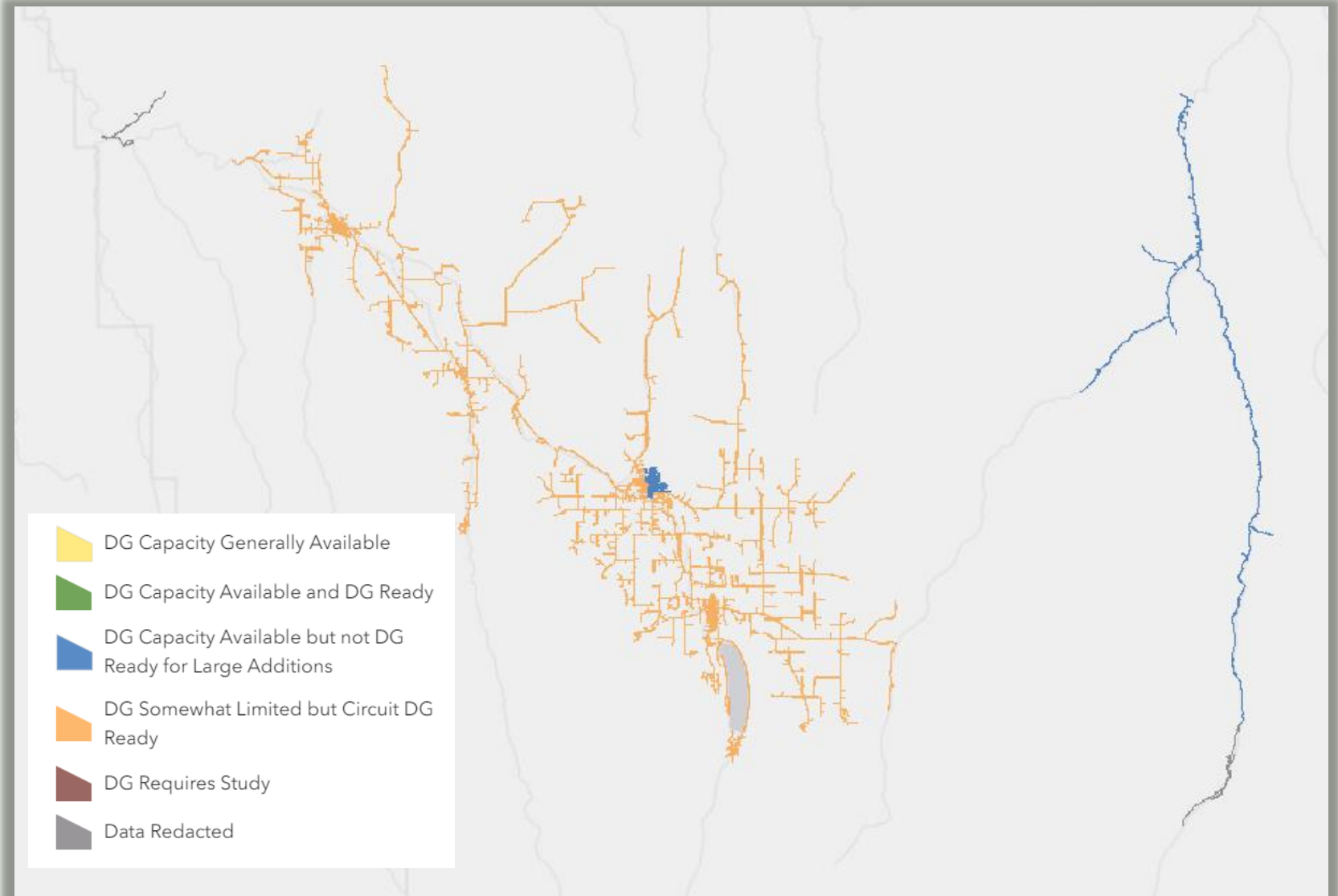
# Distributed Generation Readiness

The Distribution Generation (DG) Readiness Layer informs users of the ability to add large generation projects to a circuit.

Wallowa County area is not currently restricted for small and mid-sized distributed generation.

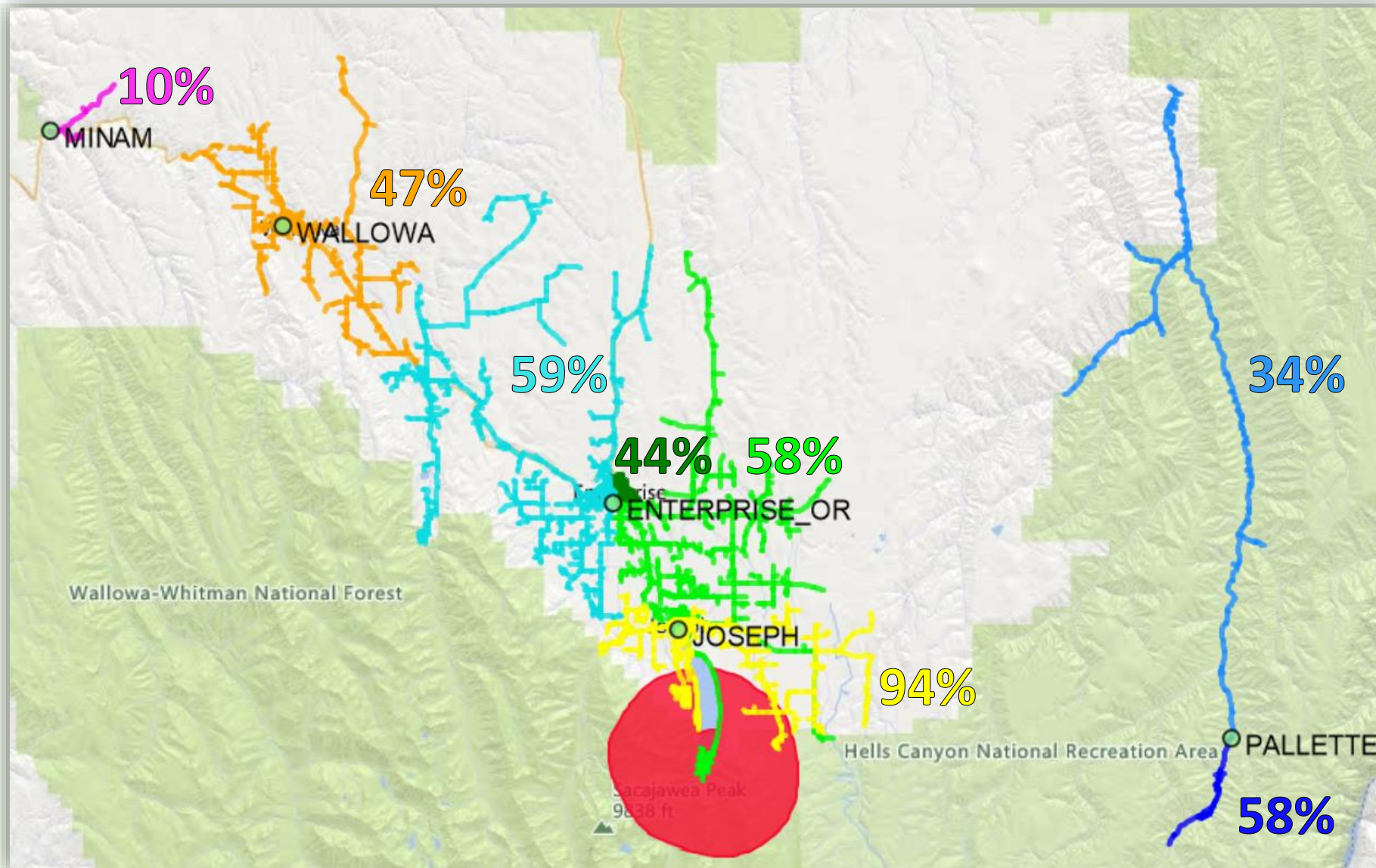
Large installations may exceed system capacity depending on location and configuration.

System impact studies are necessary to approve further large installations.

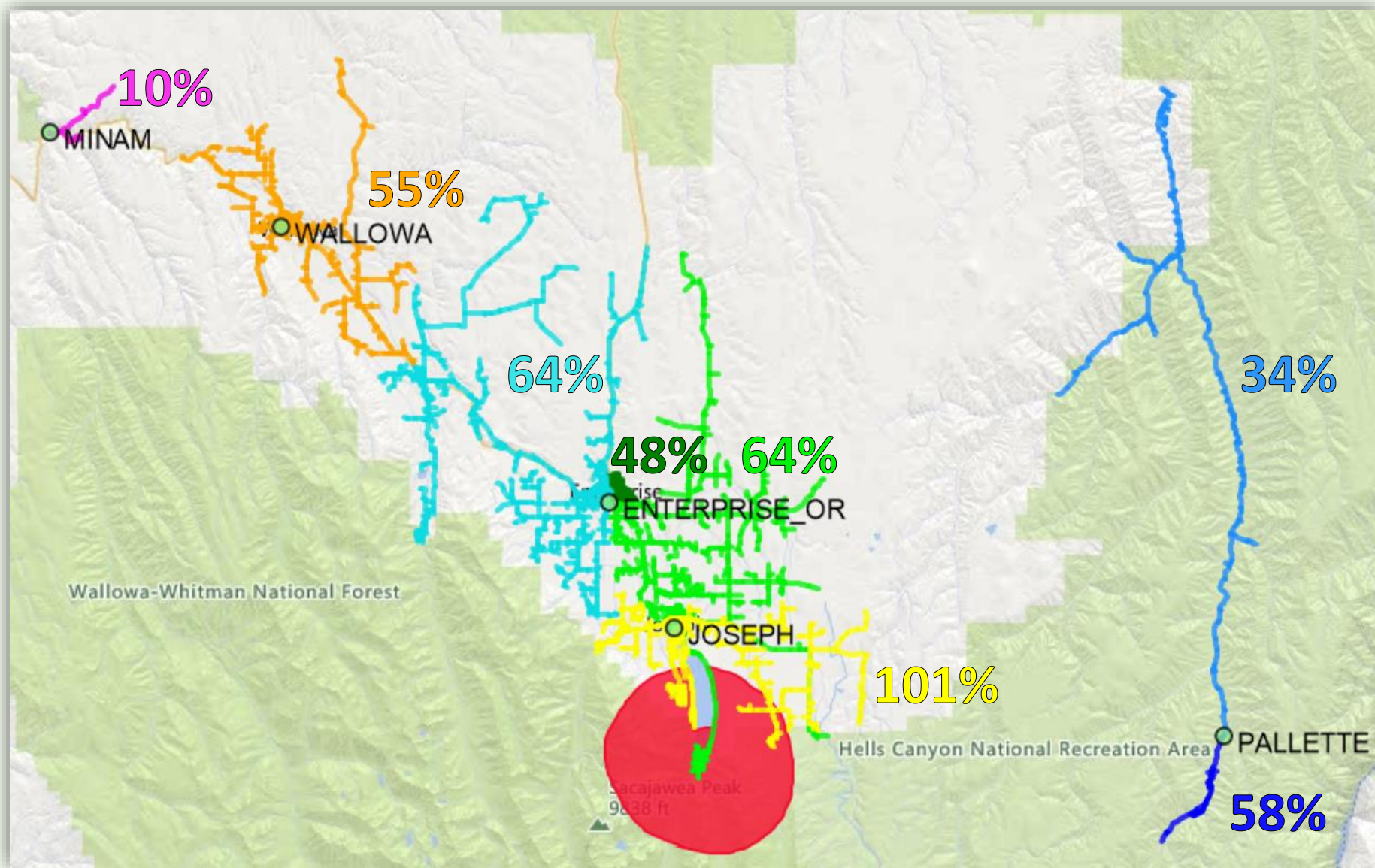




# 2029 Capacity Utilization - Load



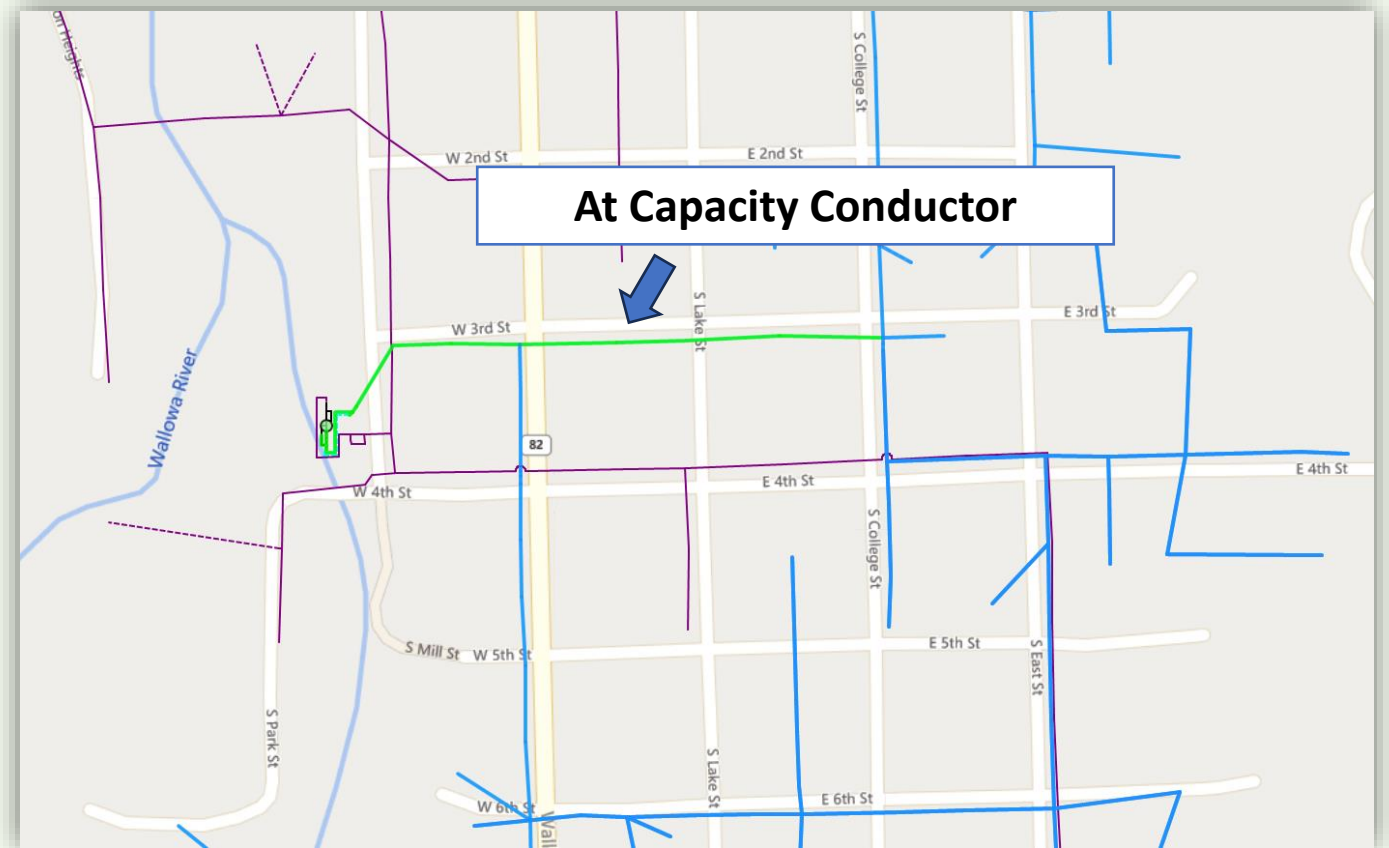
# 2034 Capacity Utilization - Load





# Preliminary Grid Needs: Joseph 5W21

- 5W21 feeder #4 CU and #4 ACSR out of Joseph substation
- Currently showing 500 ft of wire that is projected to reach its capacity limit by 2034
- The most likely solution would be to upgrade conductor to increase capacity
- Such an upgrade would be relatively simple and inexpensive
- Phase balancing may also be a solution



# Update on Wildfire Mitigation Plans

# Wildfire Planning

PacifiCorp continues to lead in wildfire mitigation, and our system-wide, six state plan continues to grow and evolve – it includes in-house emergency management, meteorology and data science teams and features the installation of over 450 weather stations, grid hardening, fire-risk modeling software and an enhanced vegetation management program.

The safety of our employees, customers and communities remains our top priority.





# Wildfire Mitigation Plan - Grid Hardening in Wallowa County

**Expulsion Fuse Replacements:** Replacement of expulsion type fuses in FHCA areas with non-expulsion type fuses.

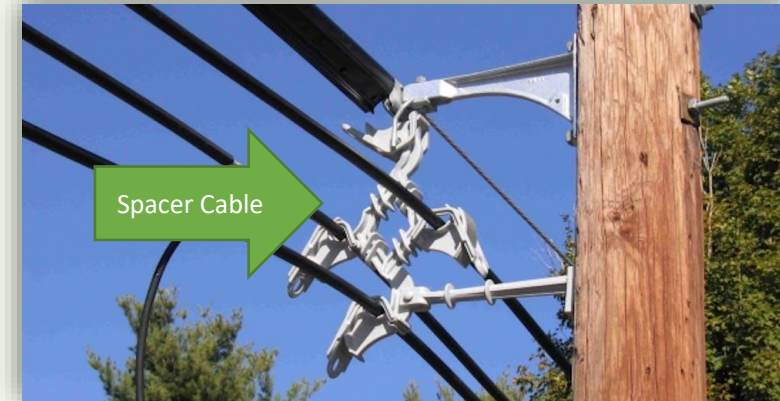
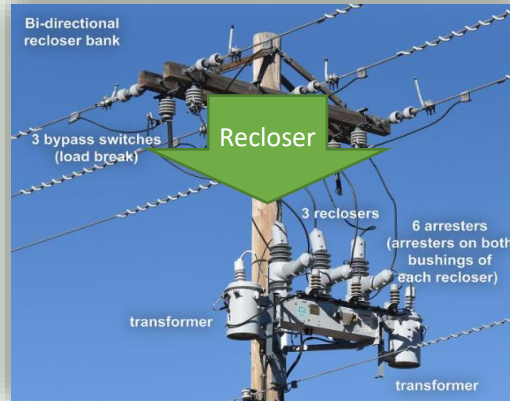
## **Substation Relays and Recloser Upgrades:**

Upgrading relays and field reclosers with new capabilities including Elevated Fire Risk (EFR). These settings are designed to clear faults in <1 second and limit arc energy, as compared to traditional schemes where clearing times can be 4-10 seconds.

## **Distribution Line Rebuild:**

Replacing overhead bare conductor lines with covered conductor to reduce wildfire risk.

Feeder	Recloser upgrades	Substation relay replacement	Expulsion fuse replacements
4W8	2 in 2022	Scheduled 2026	72 planned 2024
5W13	N/A	Scheduled 2026	N/A
5W15	N/A	Scheduled 2026	N/A
5W21	4 in 2023	Scheduled 2025	46 planned 2024
5W26	1 in 2023	Scheduled 2026	N/A



## Enhanced Safety Settings

- In 2023, **67% of all overhead distribution circuits** within California were placed in enhanced safety settings
- Enhanced safety settings are **enabled across the service territory**; well in advance of weather conditions that have historically been related to catastrophic fires

## Encroachment Strategy

- Fires within a specified distance of assets (based on voltage and material) results in emergency de-energization

## Fire Season is a condition... not a date

Modeling is completed daily through the entire year to determine conditions of risk

### Enhanced Safety Settings Enabled in high fire risk areas

- Modified Hot-Dry-Windy Index above the 60<sup>th</sup> percentile
- Windy weather relative to normal above 60<sup>th</sup> percentile (~20 to 30 mph gusts)
- Slightly dry vegetation, dead fuel moisture 14-16%
- Vegetation grasslands curing

### Enhanced Safety Settings Enabled on all Circuits

- Modified Hot-Dry-Windy Index above the 80<sup>th</sup> percentile
- Abnormally windy relative to normal above 80<sup>th</sup> percentile (~30 to 35mph gusts)
- Dry vegetation, dead fuel moisture 12-14%

### PSPS Potential

- Modified Hot-Dry-Windy Index above the 95<sup>th</sup> percentile
- Very strong winds relative to normal above 95<sup>th</sup> percentile (> 40 mph gusts)
- Very dry vegetation, dead fuel moisture lower than 10%

Probability of  
Catastrophic Wildfires

Low Fire Risk

Elevated Fire Risk

Significant Fire Risk

Extreme Fire Risk

# Planned Distribution/Transmission Work

- Work on lines near Imnaha is currently scheduled to commence in fall of 2027
- A large section of existing bare wire overhead conductor to be replaced with covered conductor
- Several redundant fuses to be removed
- Existing line fuses to be replaced with reclosers
- This is expected to significantly reduce the chance of ignition events within the area.





# Want to Know More About Wildfire Mitigation?

The screenshot shows the Pacific Power website's 'Outages & Safety' page. The header includes the Pacific Power logo and navigation links: MY ACCOUNT, OUTAGES & SAFETY, SAVINGS & ENERGY CHOICES, a search icon, a phone icon, a mail icon, and SIGN IN. The left sidebar lists 'Outages & Safety' with sub-links: Report outage or check status, Streetlight outages, Storms & emergencies, Home & work safety, Wildfire safety (highlighted), Public Safety Power Shutoff, Tree pruning & planting, and Reliability. The main content area is titled 'Safety and reliability, year-round' and contains text about wildfire mitigation strategies, including investing in meteorology programs, grid equipment upgrades, and vegetation maintenance. It also includes a 'Stay informed' section with a link to 'UPDATE CONTACT' and the phone number 1-888-221-7070.

The screenshot shows a presentation slide titled '2023 Wildfire Mitigation Plan' dated May 8, 2023. The slide features a background image of a power line tower in a hilly landscape. A text box on the right is titled 'Backup electric power' and explains that an electric generator can be a valuable addition to a preparedness plan. It notes that generators not connected to the power grid can keep lights on and appliances operating, as well as charge important electronic devices. It also offers assistance in determining if a portable generator or power station is right for a home and how to safely use these sources. To the right of the text is an image of a yellow portable generator.

## Wildfire Safety Website

Company's current Wildfire Mitigation plans:

<https://pacificcorp.com/community/safety/wildfire-mitigation-plans.html>

For links to our YouTube Webinars, tips for our customers on how to keep homes safe, Public Safety Power Shutoff map, meteorology tools, and additional resources:

<https://pacificpower.net/outages-safety/wildfire-safety.html>

The screenshot shows a YouTube video player for the 'Oregon Wildfire Safety Webinar | June, 2023'. The video content includes a map of the Oregon Service Territory and a list of 'Strategic Programs & System Hardening' initiatives. The 'General Stats' section lists that PacificCorp 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. The 'FHCA' section highlights that approximately 2,700 miles or 15% of all overhead lines are located within the HFTD, and 2,300 miles of overhead distribution in the HFTD are being replaced with insulated covered conductor. The '2022 Accomplishments' section lists the replacement of 91 miles of bare conductor with insulated covered conductor, upgraded 62 relays and reclosers for enhanced protection and control, and replaced 1000 expulsion fuses. The 'Program Changes' section lists increased frequency of asset inspections, enhanced vegetation management, covered conductor installation, advanced protection and control, and expulsion fuse replacements. The video player interface shows a progress bar at 6:58 / 33:41 and a Pacific Power channel with 2.47K subscribers.

Further analysis of distribution circuits

Evaluation of non-traditional solutions  
for grid needs



# Next Steps/Open Discussion



## Conclusion:

*We have identified preliminary grid needs in this study area. The feedback we have received today, and further study will guide our project proposals.*

*Nontraditional solutions should be cost effective and benefit all parties. Thank you for engaging in the discussion today.*

# Questions/Comments?

# Online Participants Questions/Comments?

### DSP Email / Distribution List Contact Information

- [DSP@pacificorp.com](mailto:DSP@pacificorp.com)

### DSP Webpages

- [Pacific Power Oregon DSP Website](#)
- [DSP Map](#)
- [Planificación del Sistema de Distribución de Oregon \(pacificorp.com\)](#)

### Additional Resources

- [PacifiCorp's DSP Part 1 Report](#)
- [PacifiCorp's DSP Part 2 Report](#)
- [DSP Pilot Project Suggestion Form](#)
- [PacifiCorp Wildfire Mitigation Plans](#)
- [Energy Trust of Oregon](#)
- [Optimal Time Rewards \(pacificpower.net\)](#)
- [Commercial & Industrial Demand Response \(pacificpower.net\)](#)
- [Time of Use \(pacificpower.net\)](#)

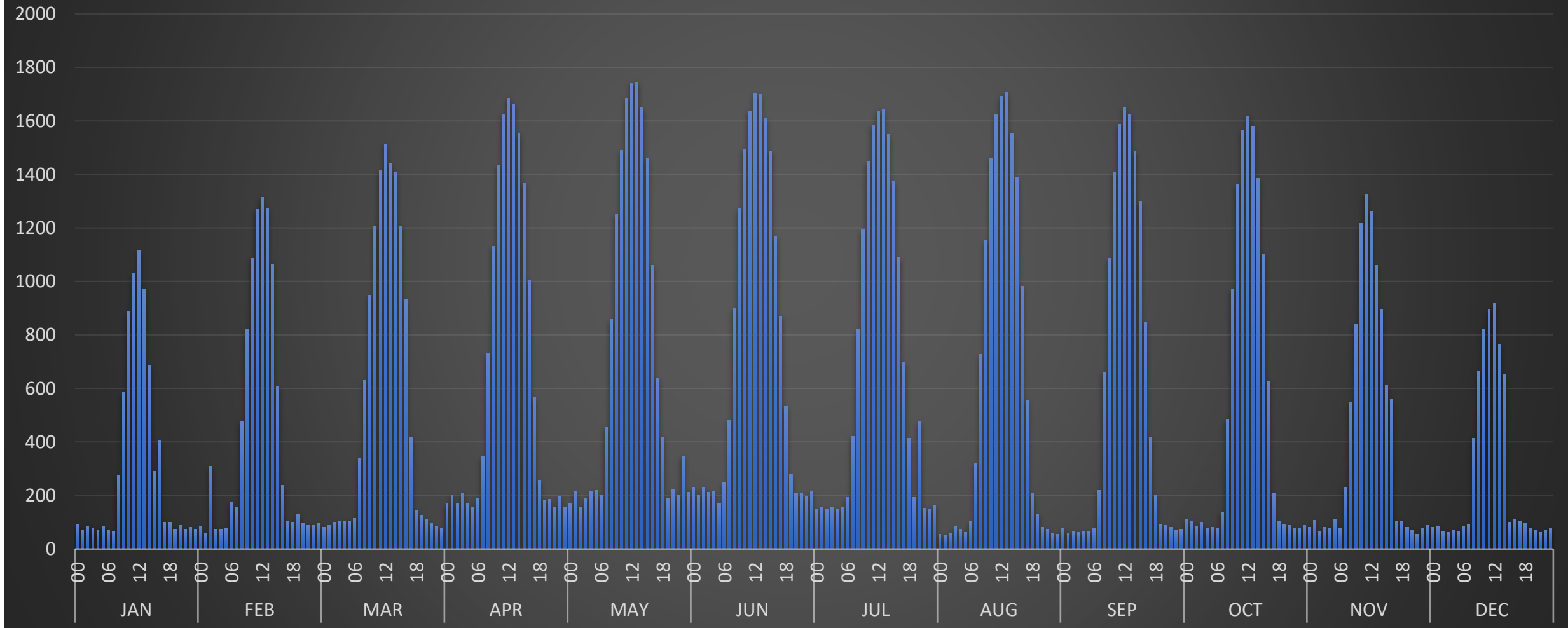


# Thank you!

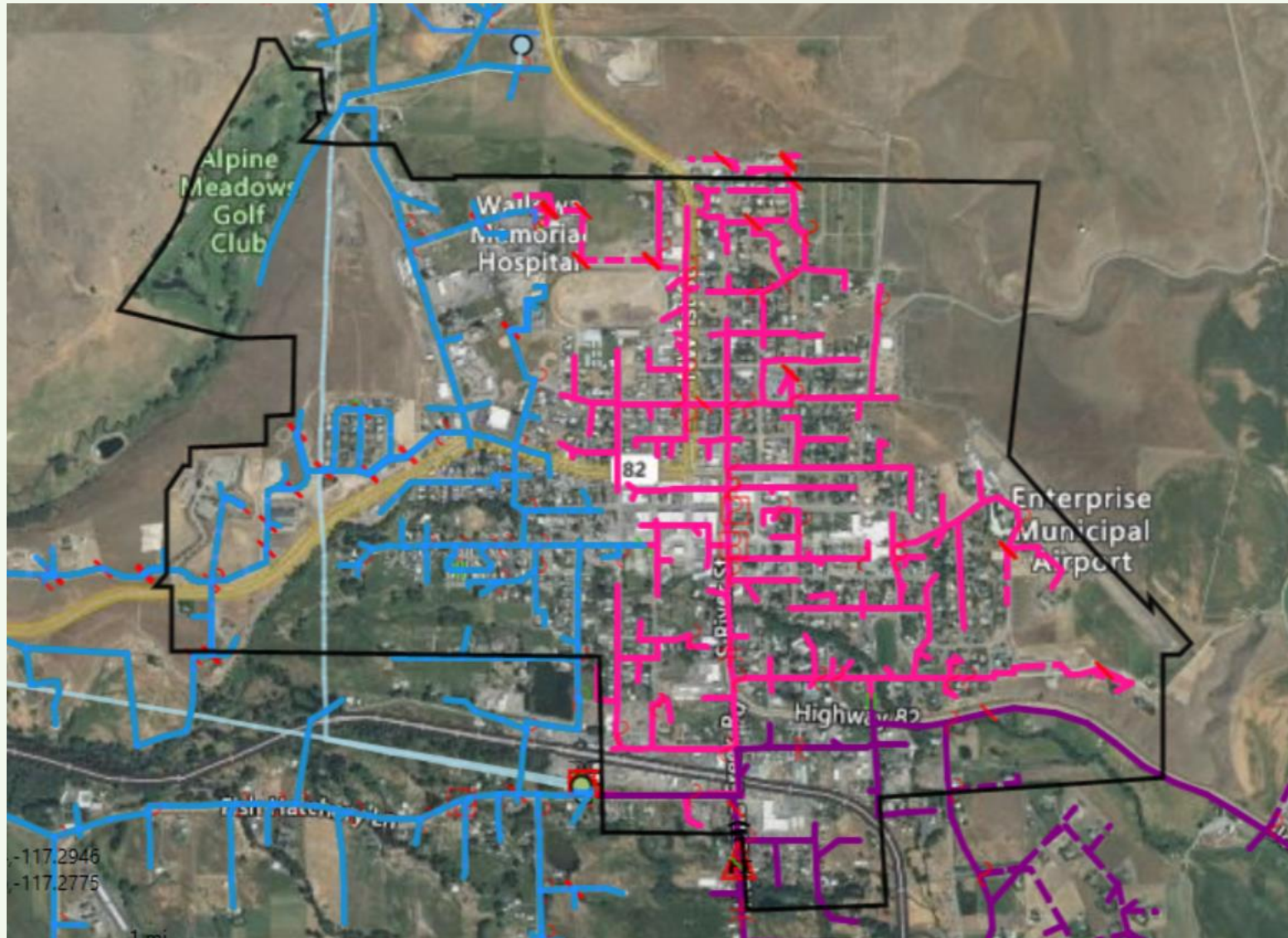
# Appendix

# Max Distributed Energy Resources Output by Month and Hour

**Wallowa County**  
**Net Metered Observed Max DER Grid Output by Month and Hour**



# Enterprise Urban Growth Boundary



# Elevated Fire Risk (EFR) Settings

- During the peak of the 2023 fire season **24% of all overhead circuits** were placed in EFR settings
- EFR settings are **enabled across the service territory**; well in advance of weather conditions that have historically been related to catastrophic fires
- PacifiCorp is still analyzing the data from the 2023 fire season to measure effectiveness; other utilities in California have experienced a **68% reduction in ignitions** from fast trip settings

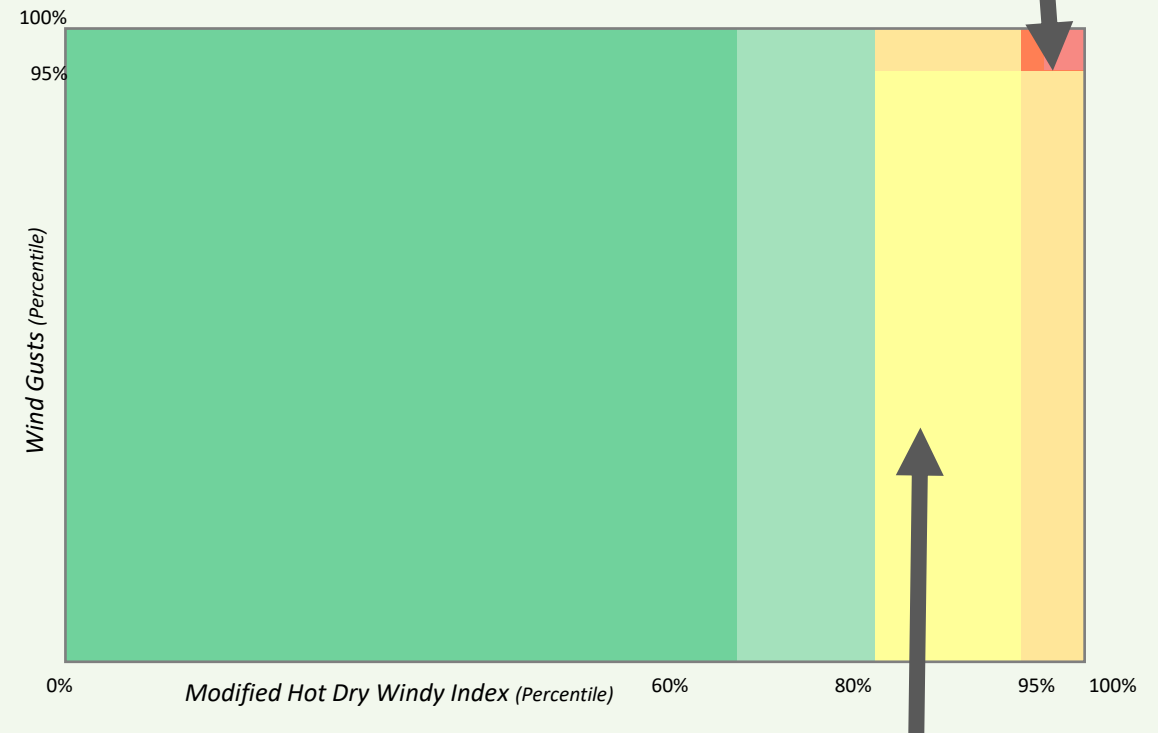


The proactive deployment of EFR settings is based on 30 years of utility related wildfires in the western U.S. and the weather conditions at the time of those fires

## WILDFIRE IMPACT

**0%** Damage to Structures or Injuries in Green and Yellow Areas

**98%** Of catastrophic fires occur in the Red Area, which is Public Safety Power Shutoff conditions



## EFR

Is enabled when weather conditions reach **yellow for a given area** and stay on for FHCA throughout the fire season. Providing a safety buffer between enablement and when wildfire impacts are historically experienced