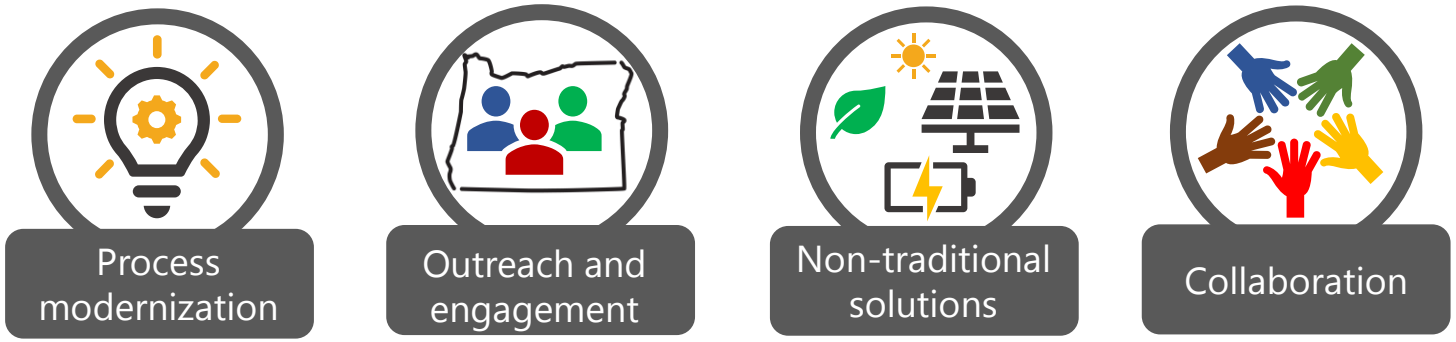
Pendleton Area
Distribution System Planning
Community Workshop #1
April 8th, 2024

Presenters:

Ian Hoogendam – DSP Manager, Daniel Talbot– Engineer, Ryan Harvey – CBRE Product Manager



DISTRIBUTION SYSTEM PLANNING

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Workshop #1 Information

Microsoft Teams meeting info:

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Click here to join the meeting
Meeting ID: 250 445 903 478
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- 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
15	Utility and Distribution System Planning Overview
10	Community Based Renewable Energy Pilot
15	Break
15	Study Area Overview
15	Forecasting/Preliminary Grid Needs
15	Open Discussion

Introductions – Pacific Power Team Members

Distribution System Planning

- 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

Local Pendleton Team

- Doug Guttromson– Field Engineer
- Lori Wyman– Regional Business Manager

Introductions – Pendleton Participants

- Paul Howland – Umatilla County
- John Shafer – Umatilla County
- Celinda A. Timmons – Umatilla County
- Cheri Rosenberg-LaBoy – Pendleton Chamber of Commerce
- Caryn Appler – Energy Trust of Oregon
- Jim Cheney – Hill Meat Company
- Rita Campbell – Greater Eastern Oregon Development Corporation
- Kara Woolsey – Travel Pendleton
- Robb Corbett – City of Pendleton – Mayor
- John Turner – City of Pendleton – City Manager

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

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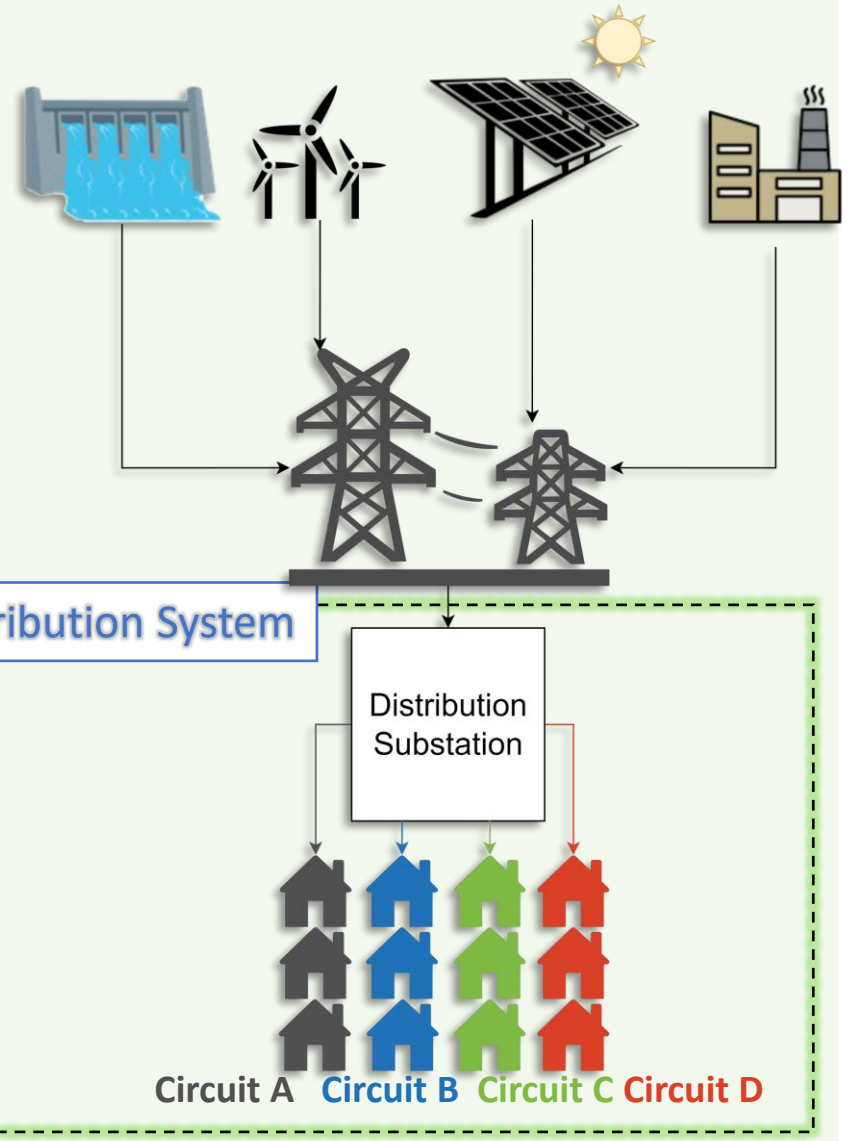
Electric Grid Overview

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)



What is Distribution System Planning (DSP)?

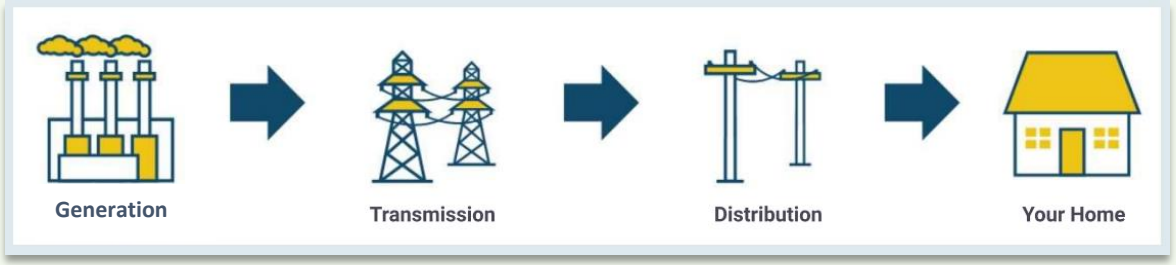
What is Oregon DSP?

- 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

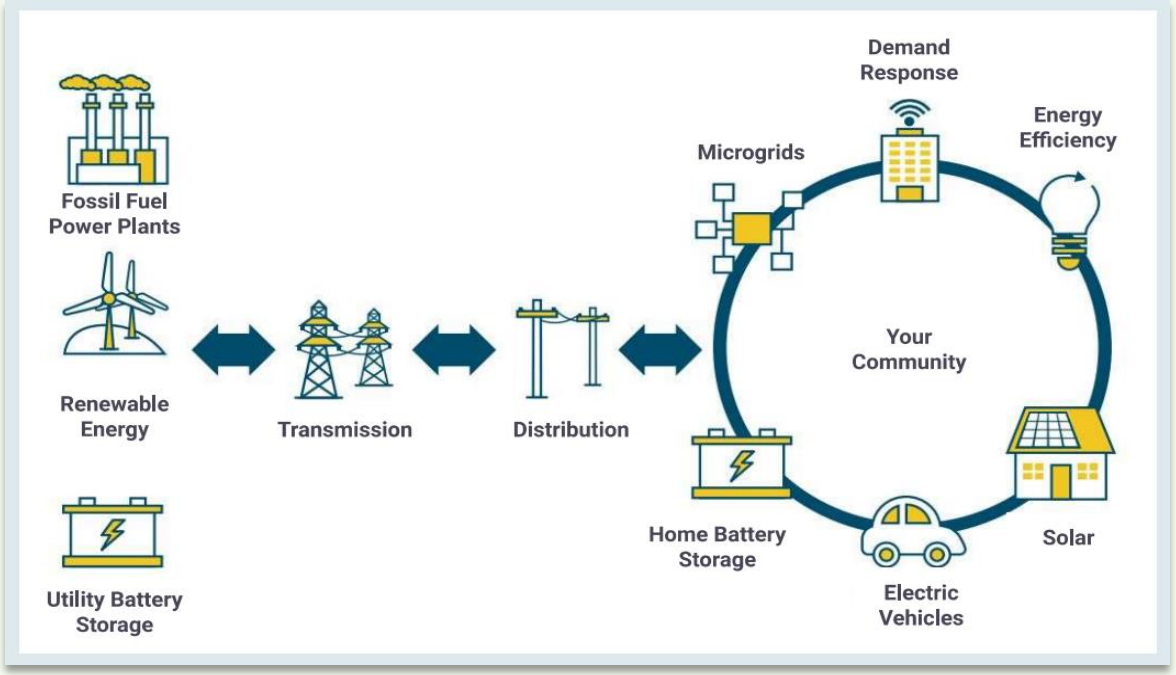
Key Changes to Traditional DSP

- 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

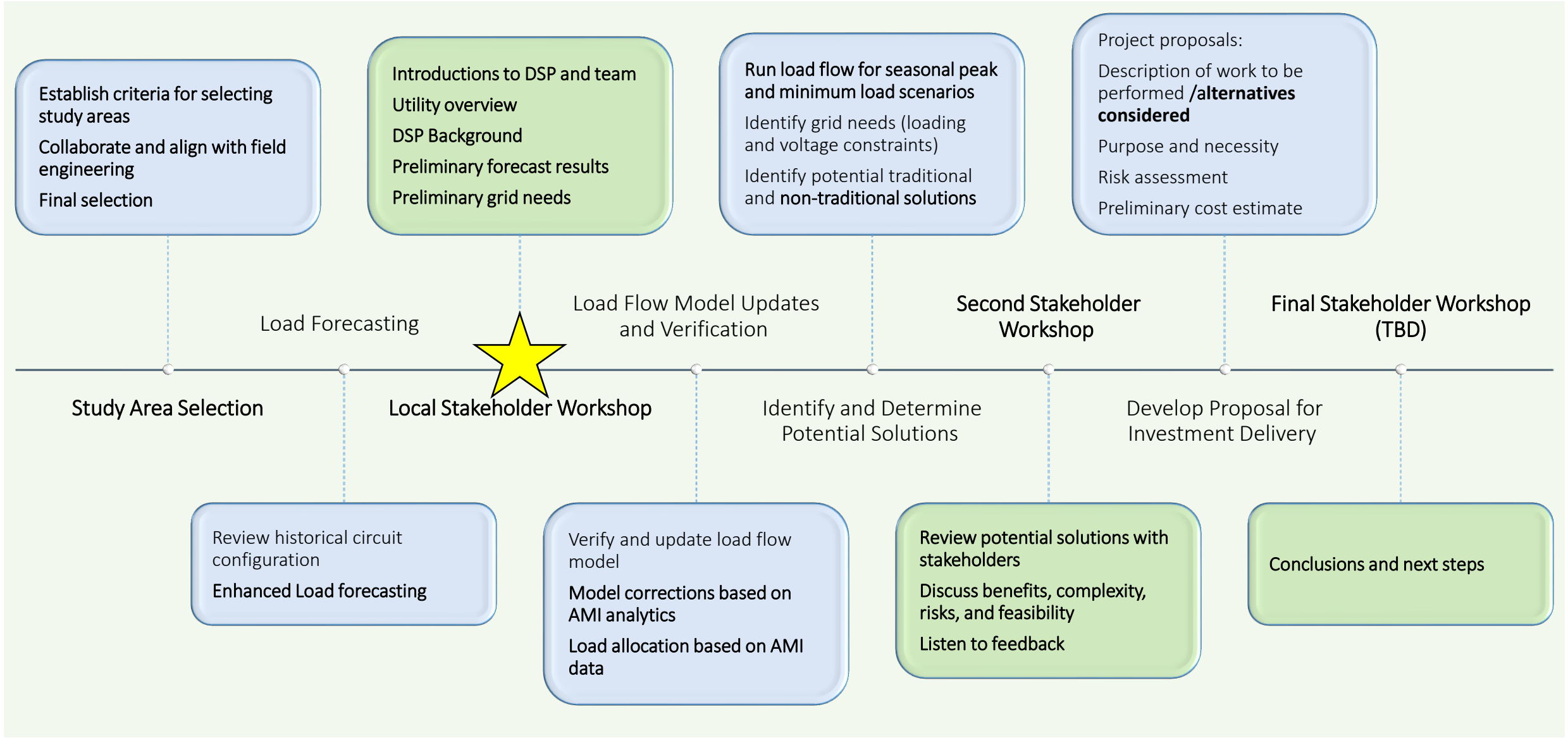
Distribution System Planning Studies

- 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

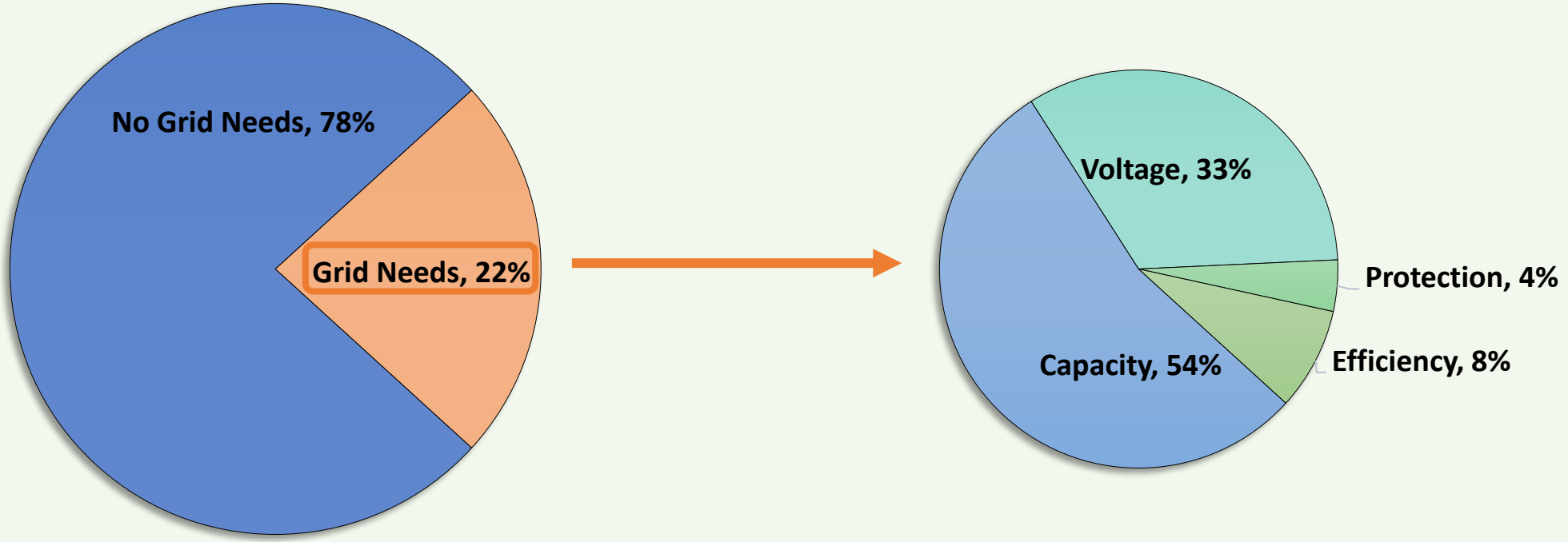
2024 DSP Study Process and Local Engagement Plan



Types of Grid Needs

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

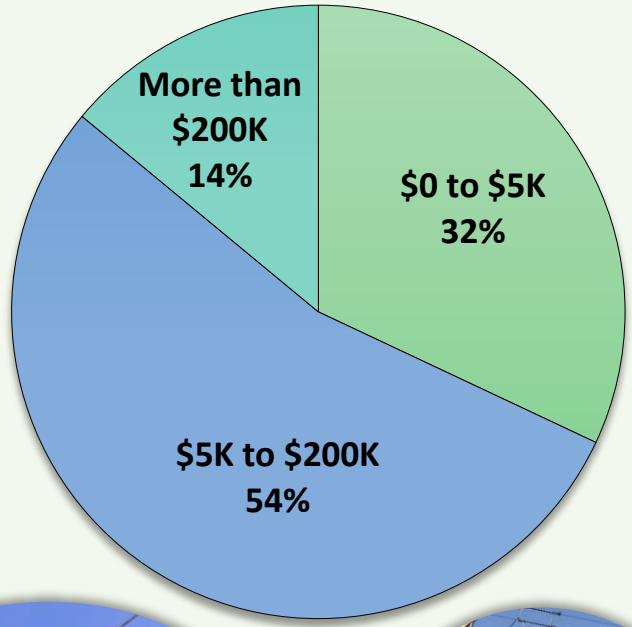
Oregon Distribution Circuit Grid Needs from Recent Studies



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

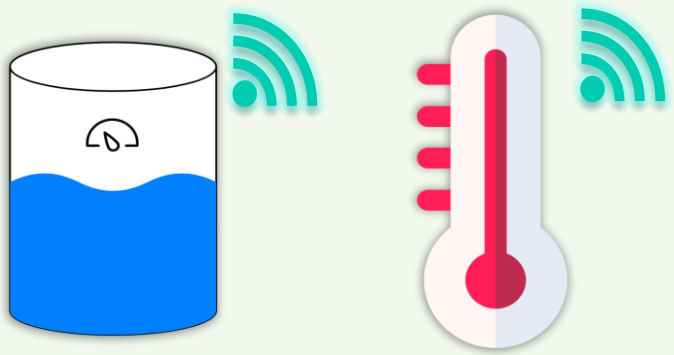
Demand Response

- 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

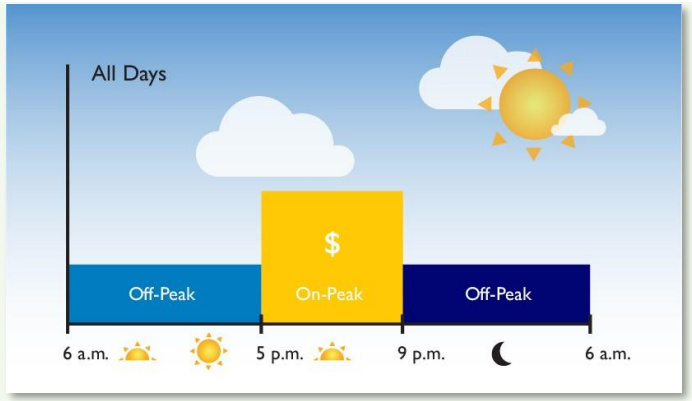


Optimal Time Rewards

- 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 timing



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

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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:

RENEWABLE ENERGY RESOURCE(S)

- Solar, wind or other renewable energy
- Could include microgrids, storage systems
- Potential for demand response participation

CONNECTS TO THE GRID

Interconnects to power company distribution or transmission assets

BENEFITS THE COMMUNITY

- Includes Community benefits agreements, ownership or other form of direct benefit
- Benefits may include increased resilience, community stability, local jobs or economic development

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

DRAFT CONCEPTS FOR DISCUSSION ONLY

Break (10 Mins)

Ti Start Timer g

TIME TO RESUME

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Study Area Overview

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Pendleton Area Overview

Distribution System

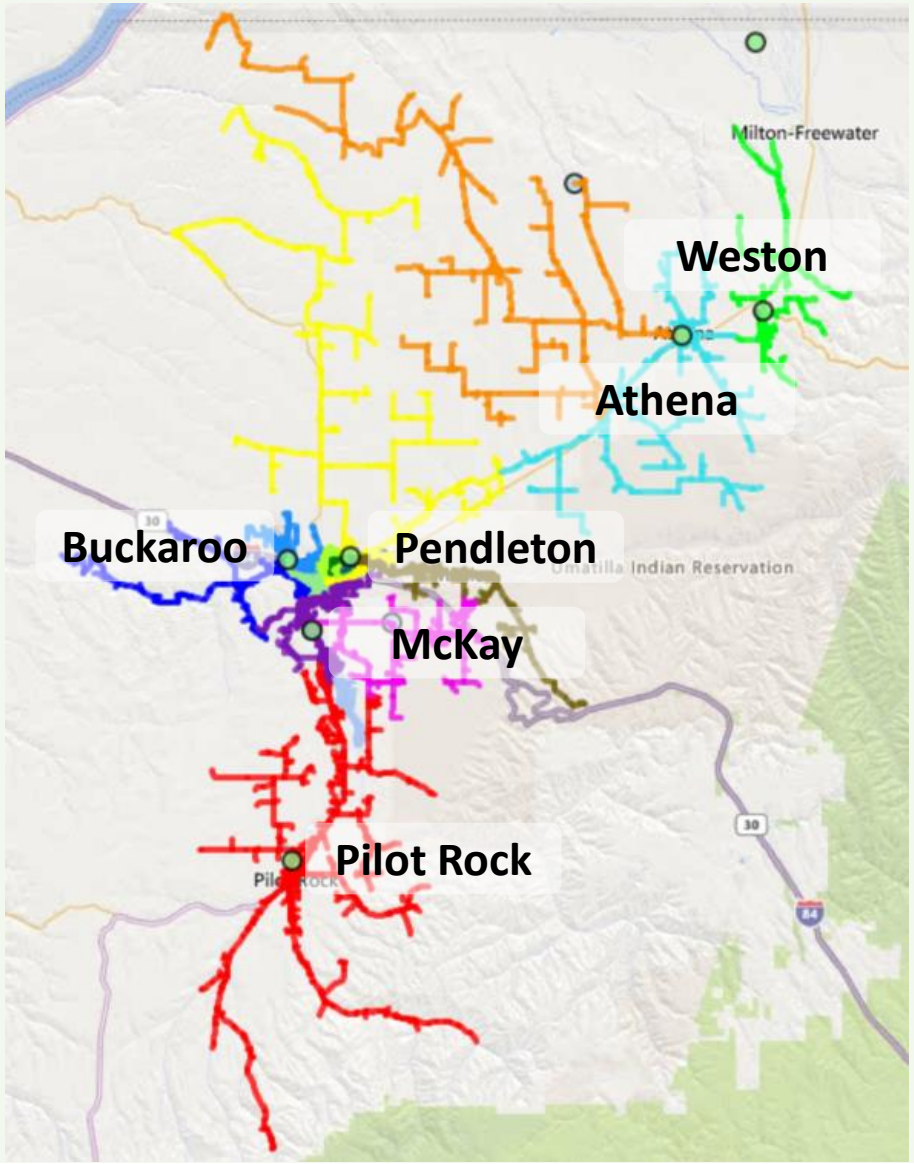
- Substations: 6
- Circuits: 18
- Line miles: 1,356 miles (sum of pole-to-pole distance)
  - Overhead : 724 miles
  - Underground: 632 miles

Customer Makeup

- Residential: 11,093 meters
- Commercial: 2,136 meters
- Irrigation: 207 meters
- Industrial: 26 meters

Other Characteristics

- New substation (McKay 2022)
- Historically greatest electrical use in winter, but transitioning to summer
- System more constrained in summer



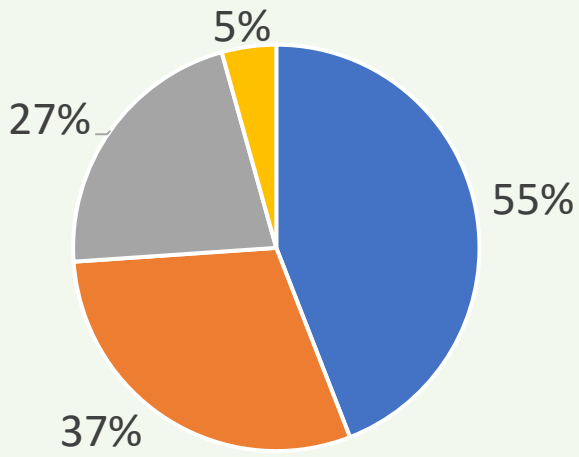
Pendleton Area Percentage Peak Load by Customer Type

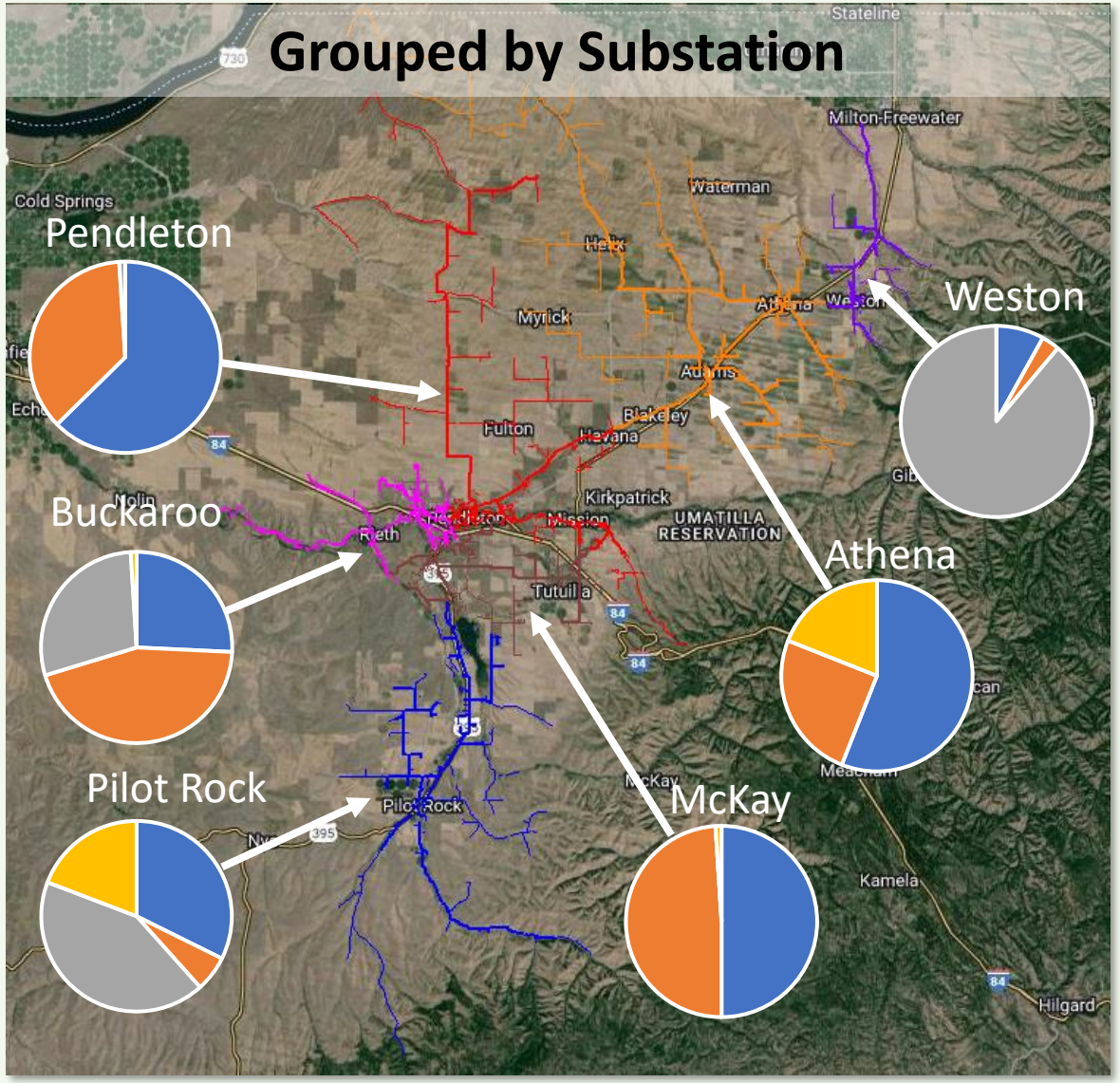
Different customer types have different use patterns.

Circuit peaks occur on different days and times depending on the types of customers served.

Residential	Commercial	Industrial	Irrigation

Pendleton Area Total





Pendleton Area Distribution Generation Growth

Distribution Net Energy Metering only*

Solar: 60%

Advanced solar options: 14%

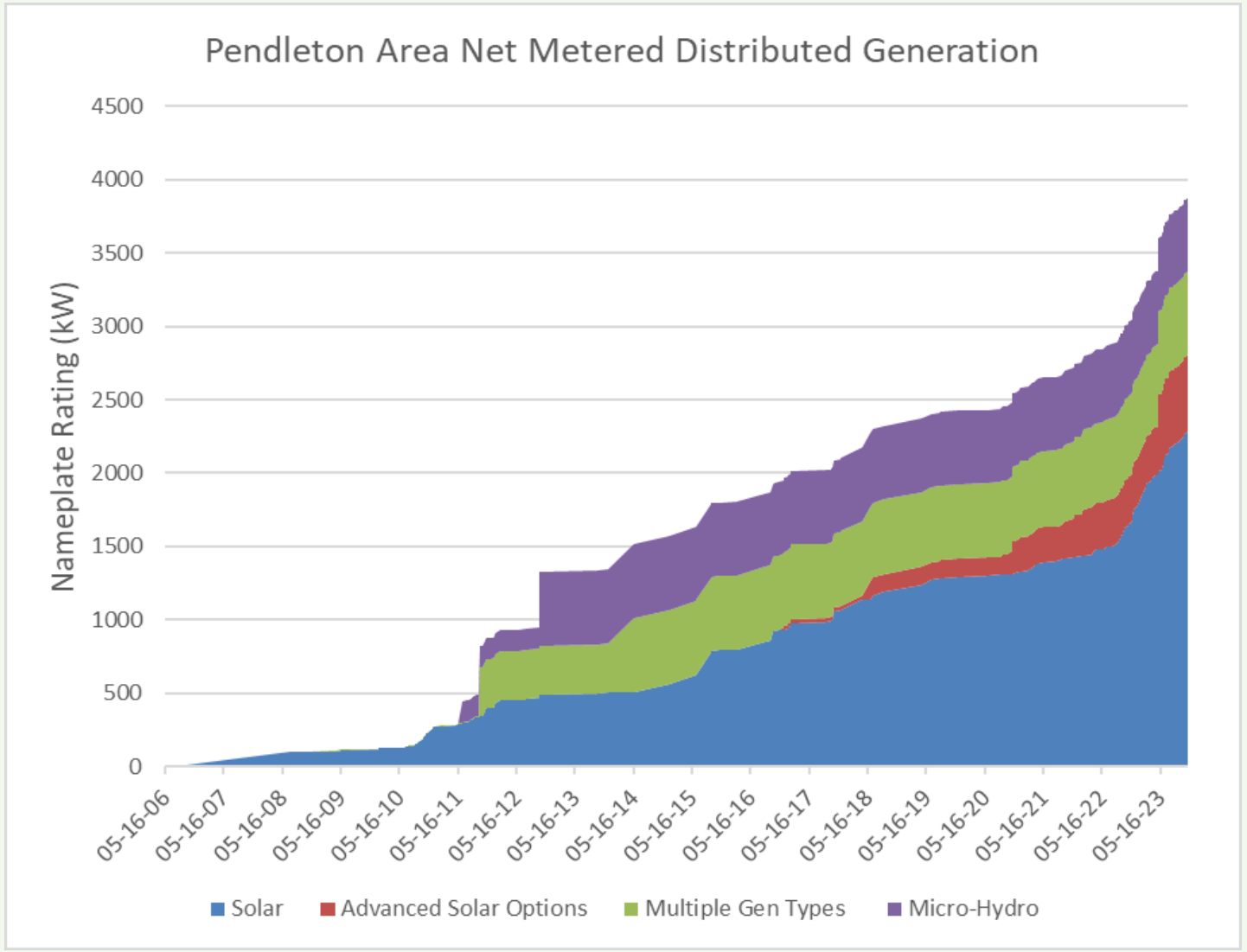
Ex: Solar & battery, solar aggregate, etc.

Multiple generation types: 15%

Ex: Wind & solar

Micro-hydropower : 13%

*** As of Oct 2023**



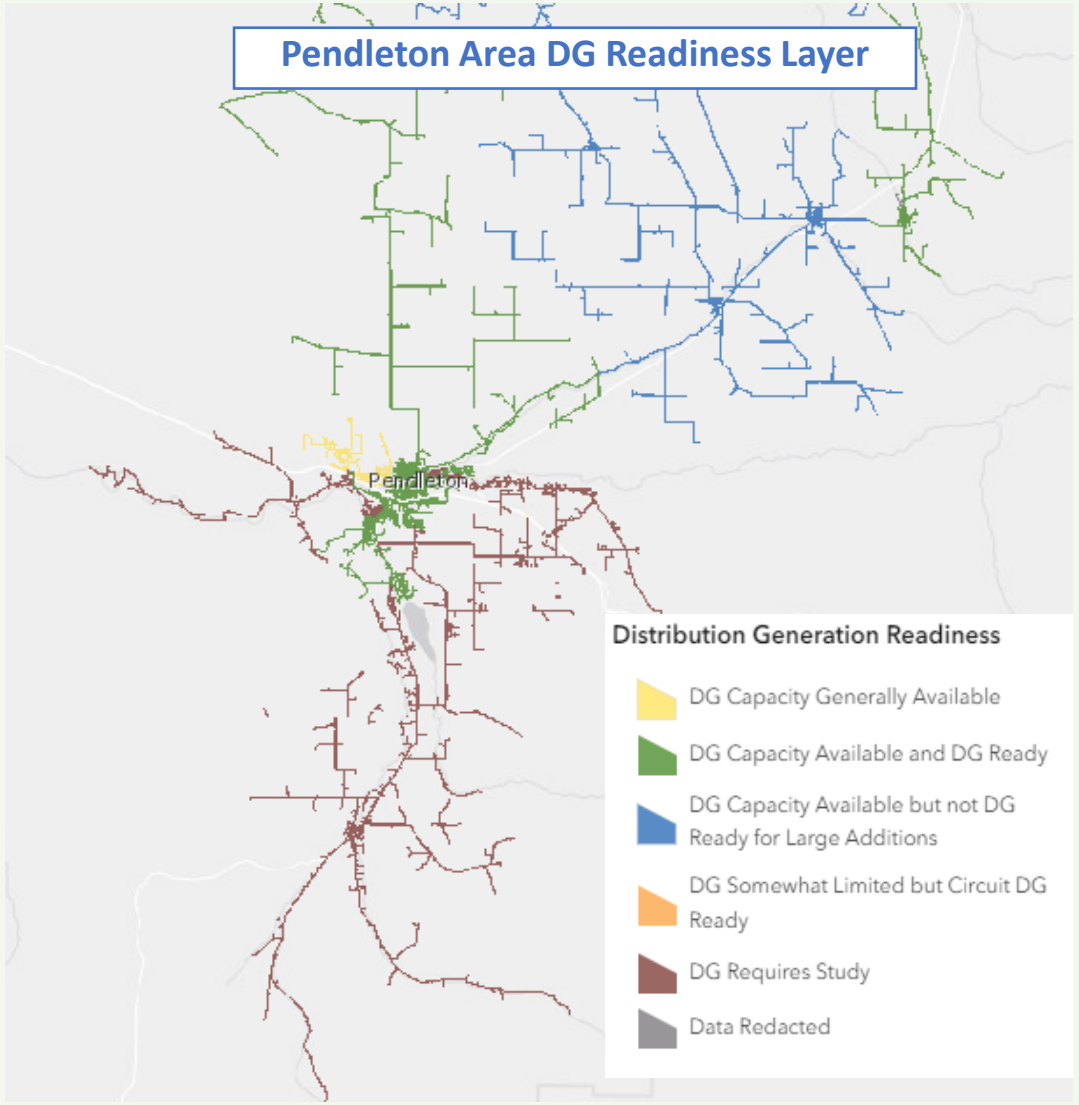
DSP Map- Distribution Generation Readiness Layer

DSP Map

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

Notable Pendleton Area Circuits:

- Two circuits primarily serve a single customer
- Three circuits are generation limited
- One circuit is categorized as DG Capacity Generally Available
    - Has substation equipment and capacity



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

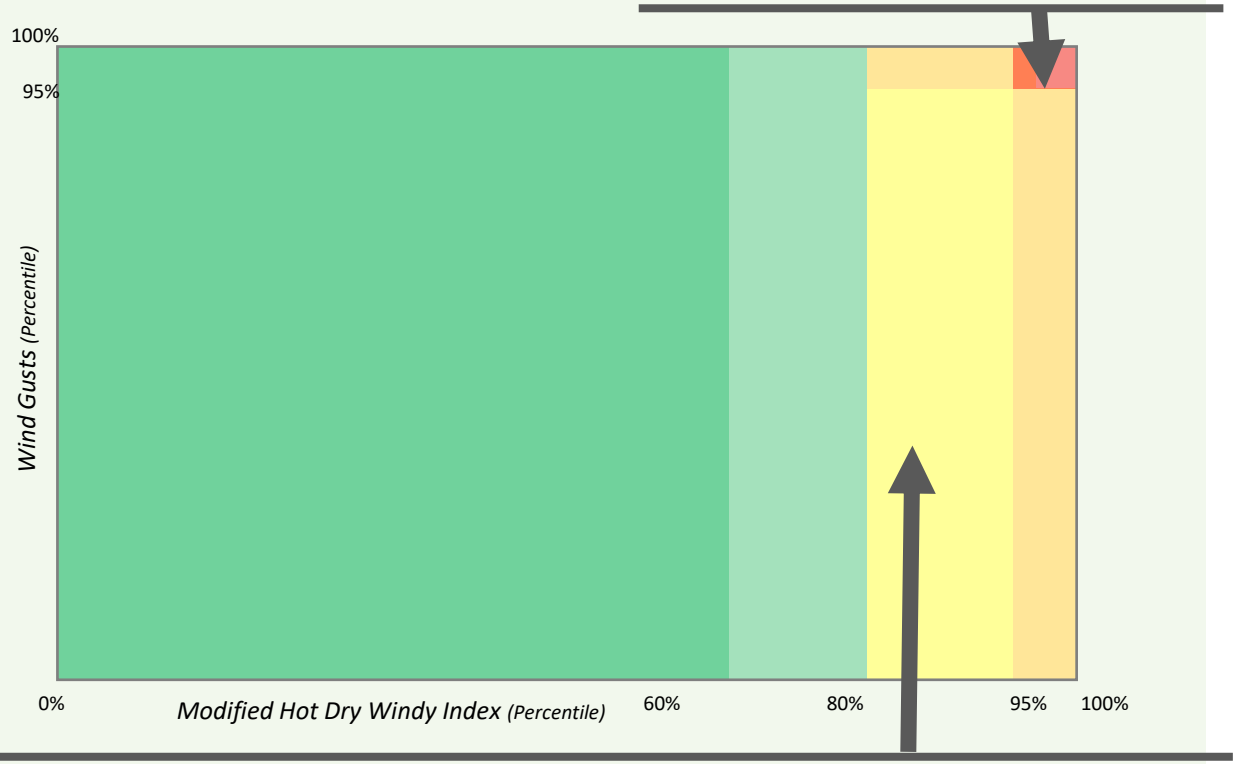
Non-Fire Season
Low Fire Risk
Elevated Fire Risk
Significant Fire Risk
Extreme Fire Risk

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

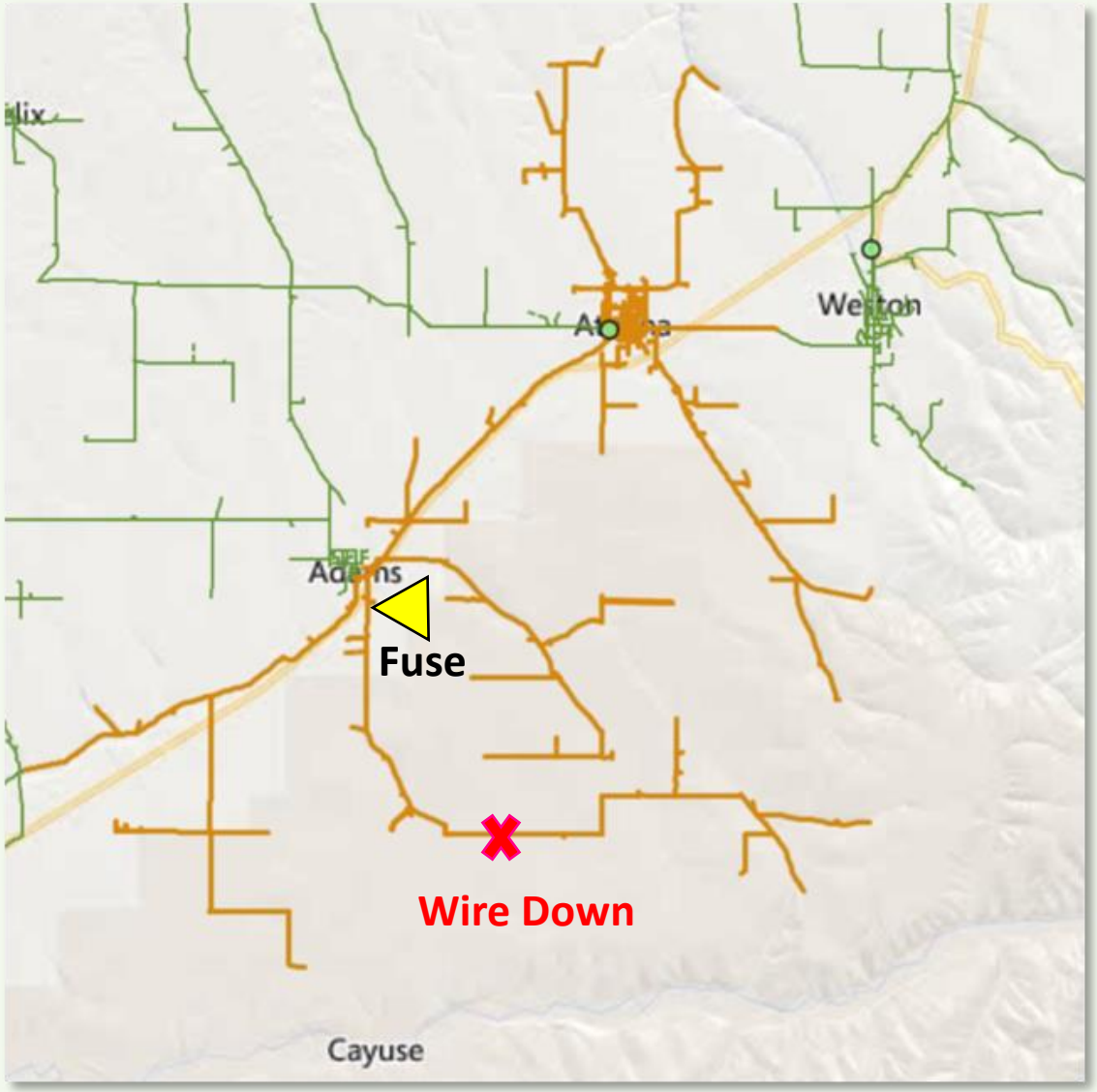


EFR Is enabled when weather conditions reach **yellow for a given area** and stay on for FHCA throughout the fire season. Providing a safety buffer between enablement and when wildfire impacts are historically experienced

Grid Protection Basics: Fuses

What is a fuse? What does it do?

A protection device designed to limit fault damage and outage effect



Load Forecasting and Preliminary Grid Needs

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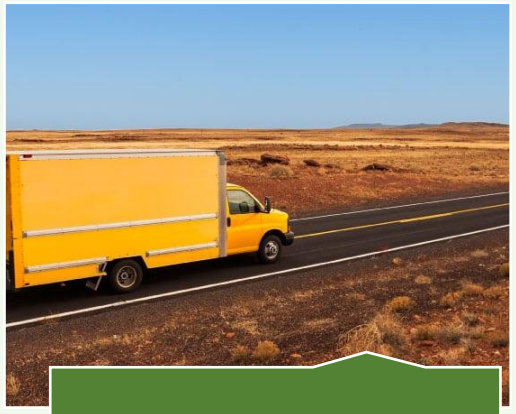
Drivers for Load Growth

What drivers of load growth have you seen in your community and where are they occurring?

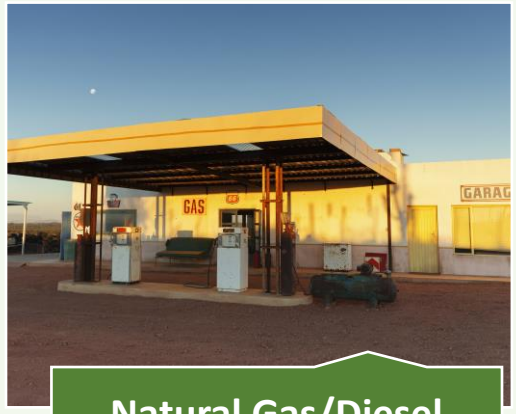
Commercial/Industrial Development



Population Growth

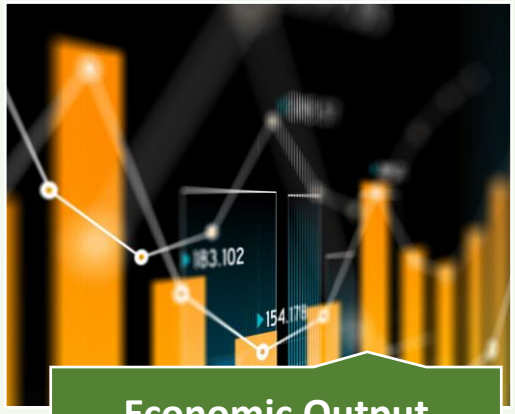
Heat Electrification

A/C Adoption



Natural Gas/Diesel Prices

Policy



Economic Output (Gross County Product)

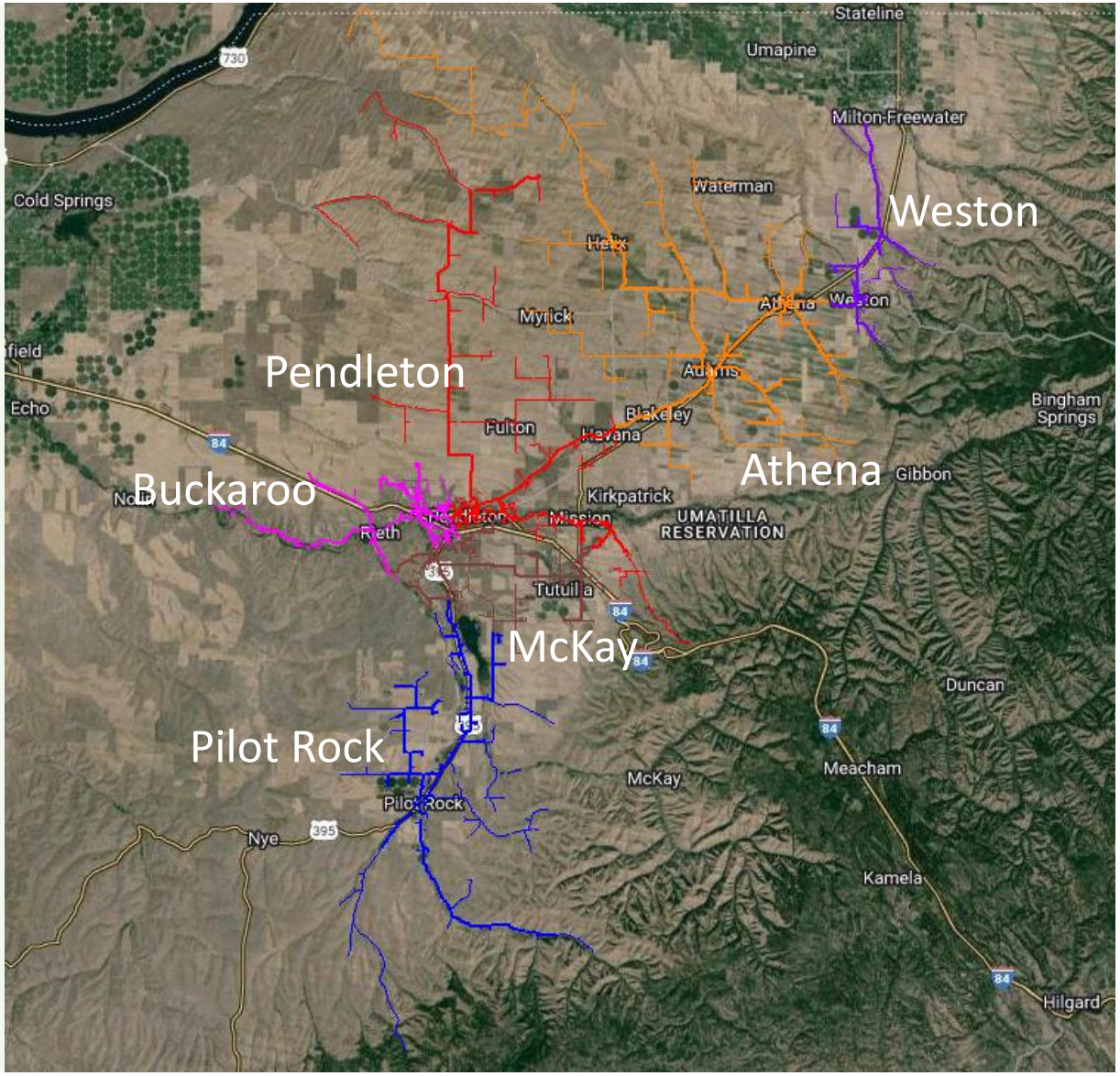
Technology

Pendleton Area Load Growth Forecast

DSP load forecasts use additional data, weather normalization and a longer time window compared to traditional methods

Substation	Summer	Winter
Athena	0.5 %	0.3 %
Buckaroo	1.8 %	1.5%
McKay	2%	0.9%
Pendleton	0.1%	0.5%
Pilot Rock	0.3%	0.2%
Weston	0.2%	0.2%
OVERALL AVG	0.8%	0.7%

Annual growth rate through 2033



Preliminary Grid Needs

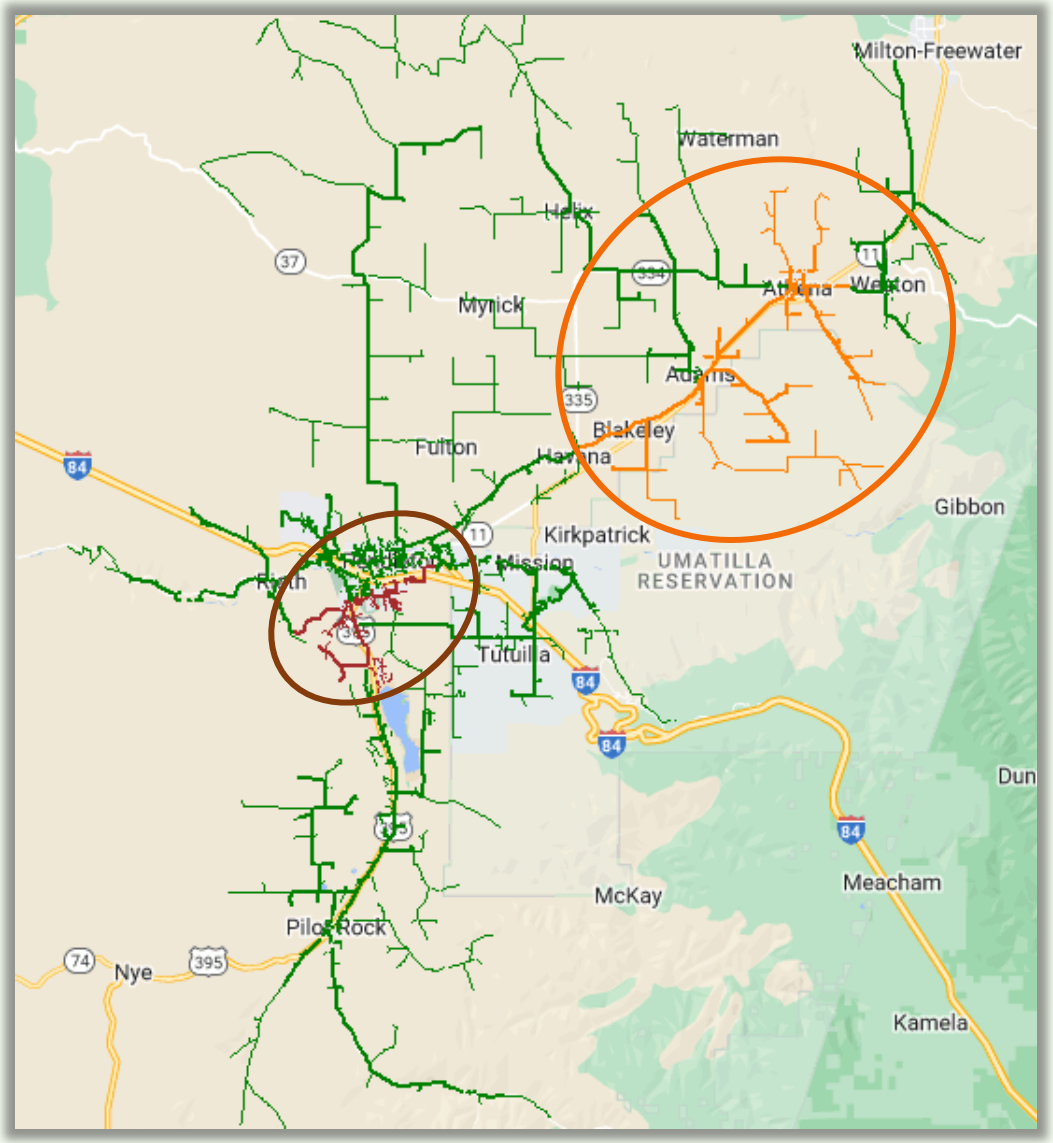
Athena - 5W703

Potential substation capacity need

McKay - 5W856

Potential substation capacity need

Potential wire need



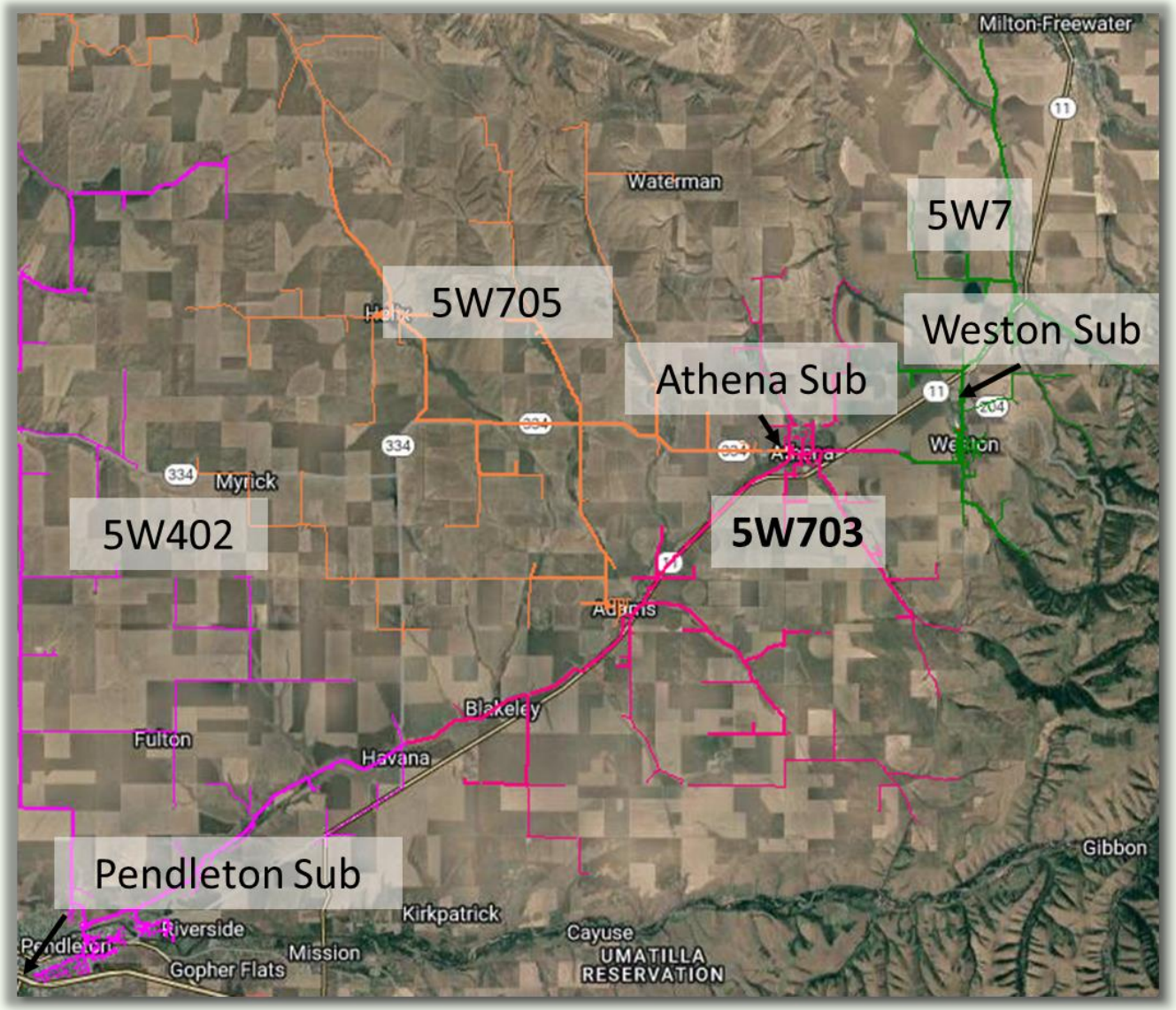
Preliminary Grid Needs: 5W703

Capacity grid need:

- Potential overload of substation equipment in 5 years

Potential traditional solutions:

- Equipment upgrade
  - ❑Check substation ratings
- Load transfer (preferred option)
  - ❑Check connection to other circuits
  - ❑Check adjacent circuit loading
  - ❑Check transmission loading



Potential Nontraditional Solutions

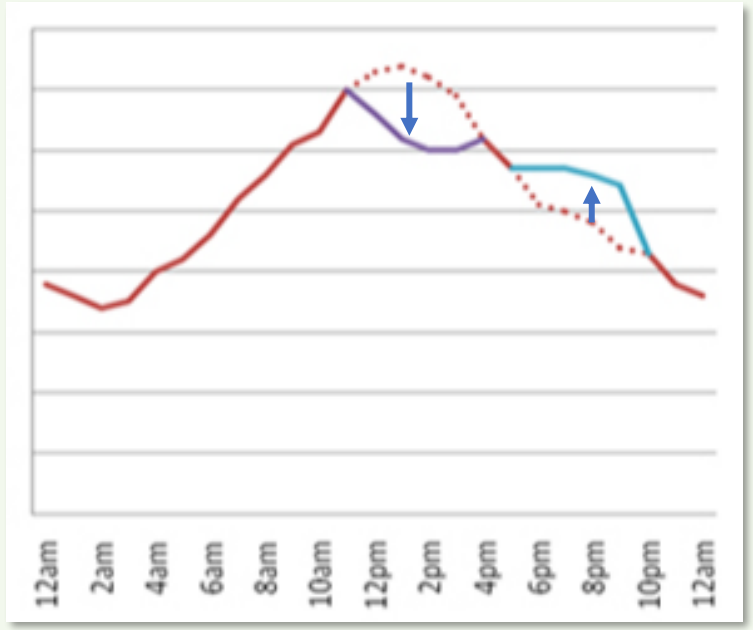
DSP non-traditional solution guidelines*:

- Time: forecasted grid need occurs in 5-10 years
- Cost: traditional solution cost > $250k

*Guidelines have some flexibility

Additional steps to determine viability:

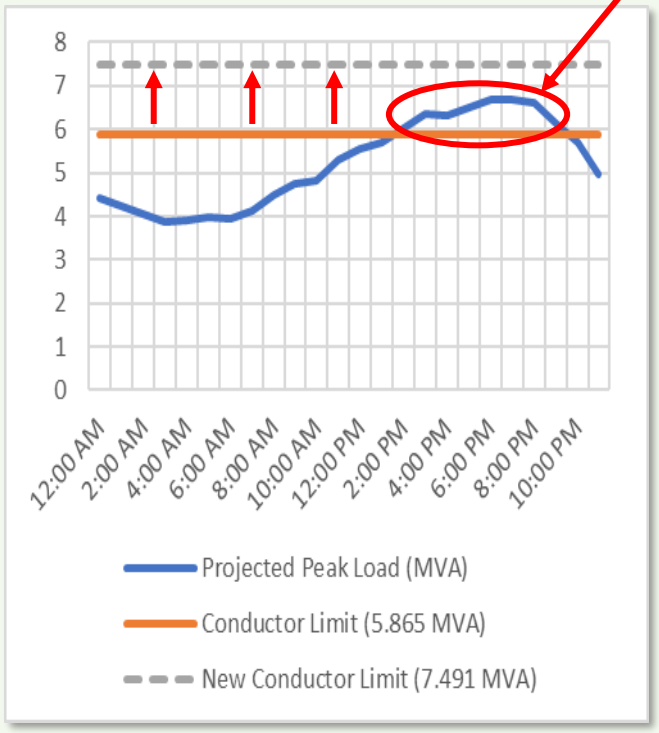
- ❑Check peak time and grid need amount
- ❑Check customer type, count and load patterns
- ❑Check PV output for peak time and location
- ❑Compare PV vs storage amounts
- ❑Check existing offers for energy efficiency or time of use rates



Traditional and Nontraditional Solution Examples

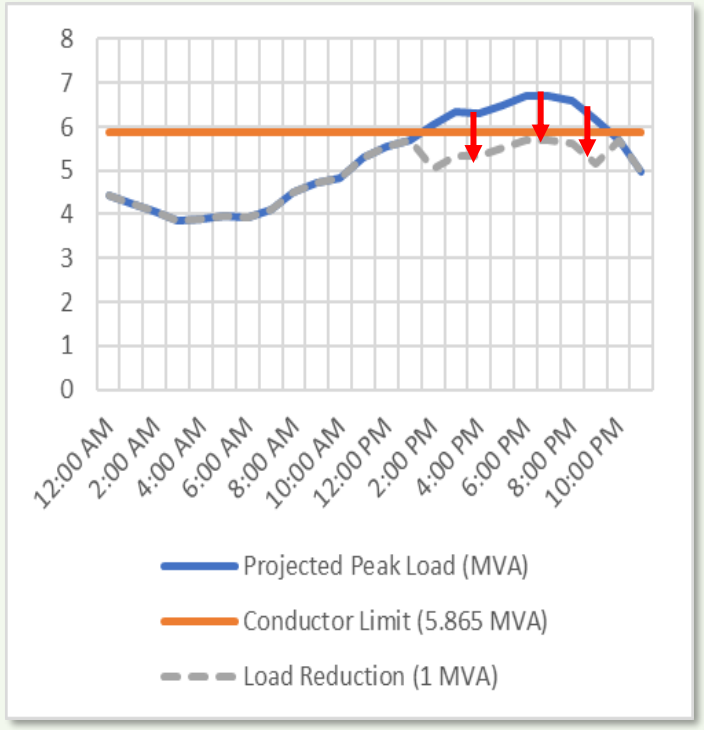
Traditional solution

Increase Wire Size - Raises load limit

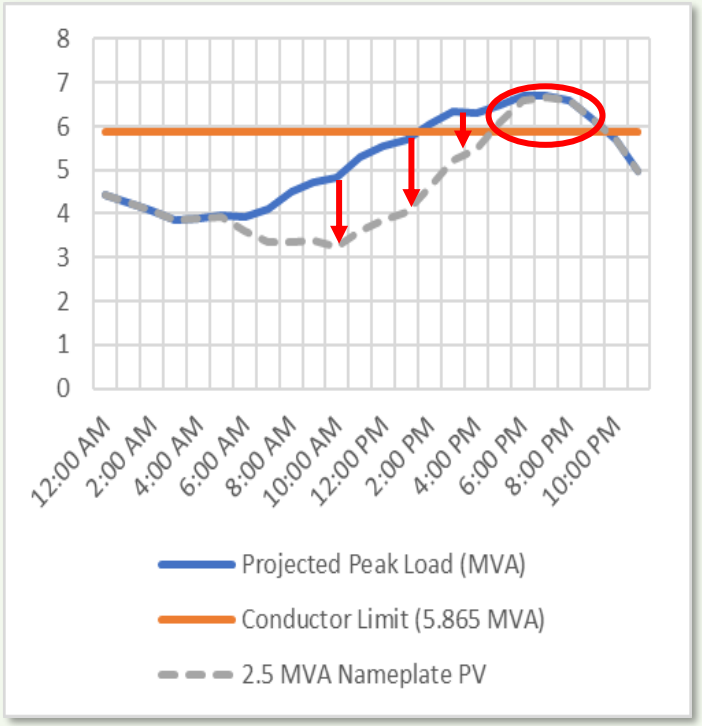


Nontraditional solutions

Demand Side Management (DSM) Solution - Reduces peak load



Distributed Generation (DG) Solution - Solar offsets load



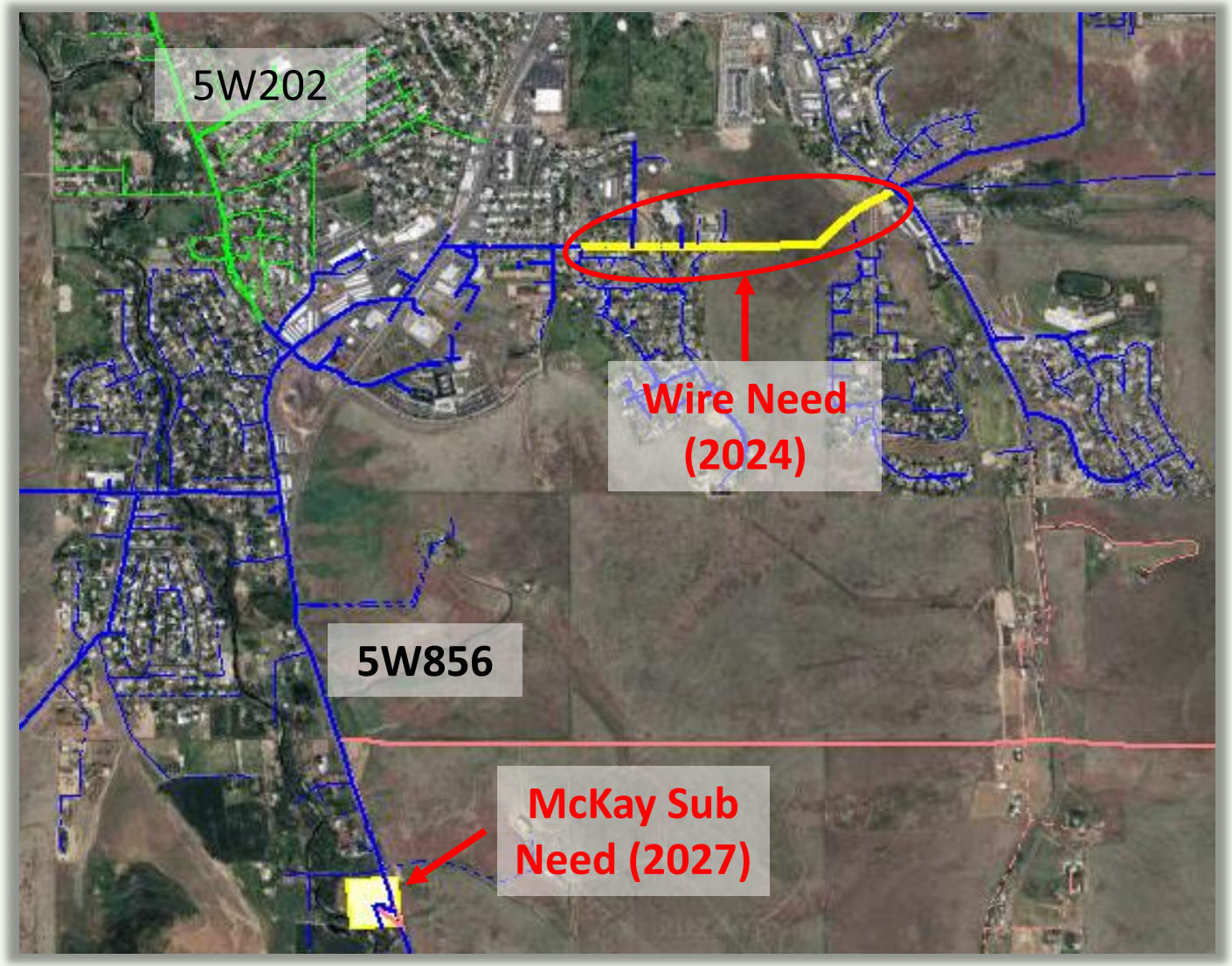
Preliminary Grid Needs: 5W856

Capacity grid need:

- Modeled wire capacity need (Summer 2024)
- Potential substation equipment capacity need (Summer 2027)

Potential traditional solutions:

- Wire need
  - Reconductor
  - Load transfer
- Substation need
  - Load transfer
  - Can’t upgrade because of general substation limits



Next Steps/Open Discussion

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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.

Non-traditional solutions could be cost effective and benefit many parties. Thank you for engaging in the discussion today.

Questions/Comments?

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Online Participants Questions/Comments?

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Additional DSP Information

DSP Email / Distribution List Contact Information

- DSP@pacificorp.com

DSP Webpages

- Pacific Power Oregon DSP Website
- DSP Map
- Planificación del Sistema de Distribución de Oregón (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!

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Appendix

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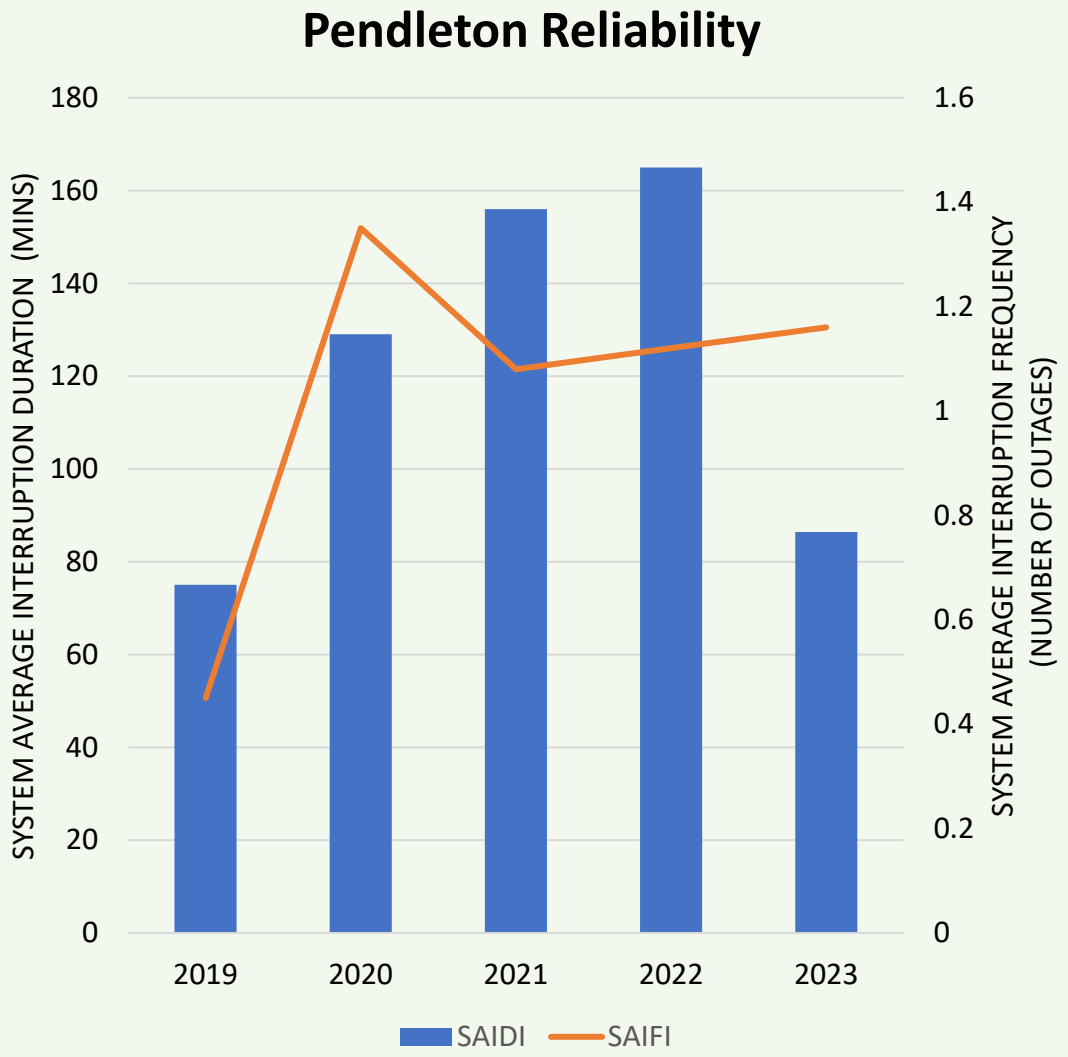
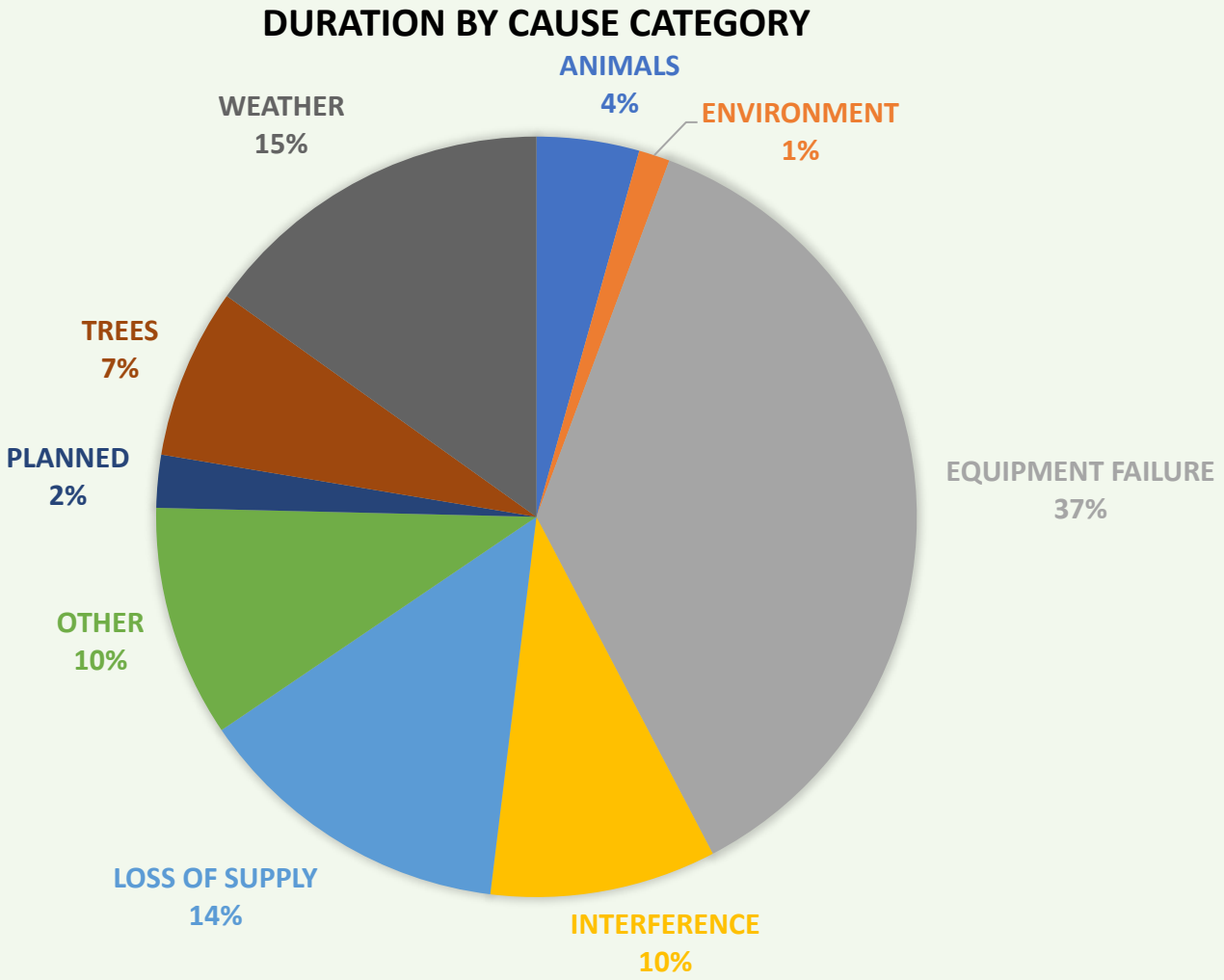
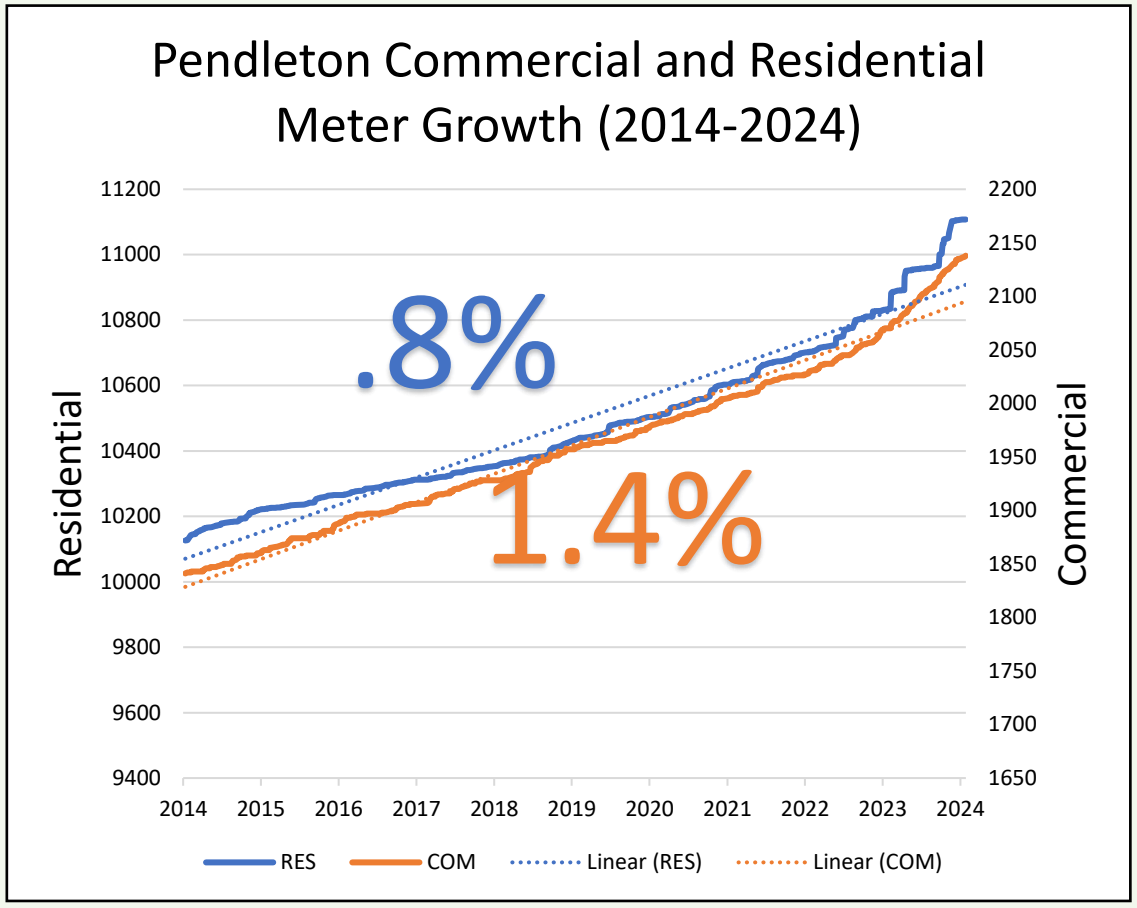
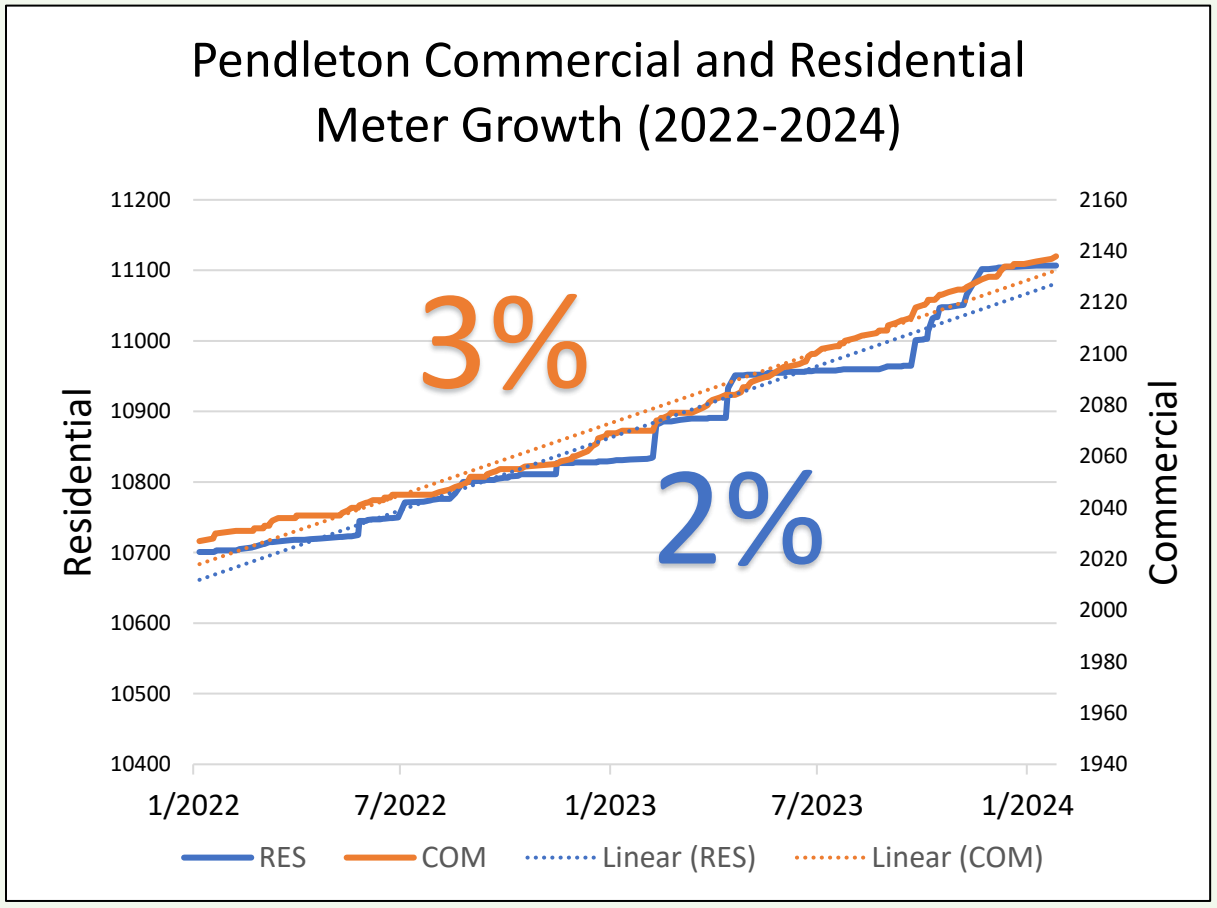
Pendleton Reliability





Pendleton Commercial And Residential Meter Growth





10 Year Meter Growth (’14—’24): 981 for Res, 297 for Commercial and 0 for Industrial
2 Year Meter Growth (’22-’24): 677 for Res, 181 for Commercial