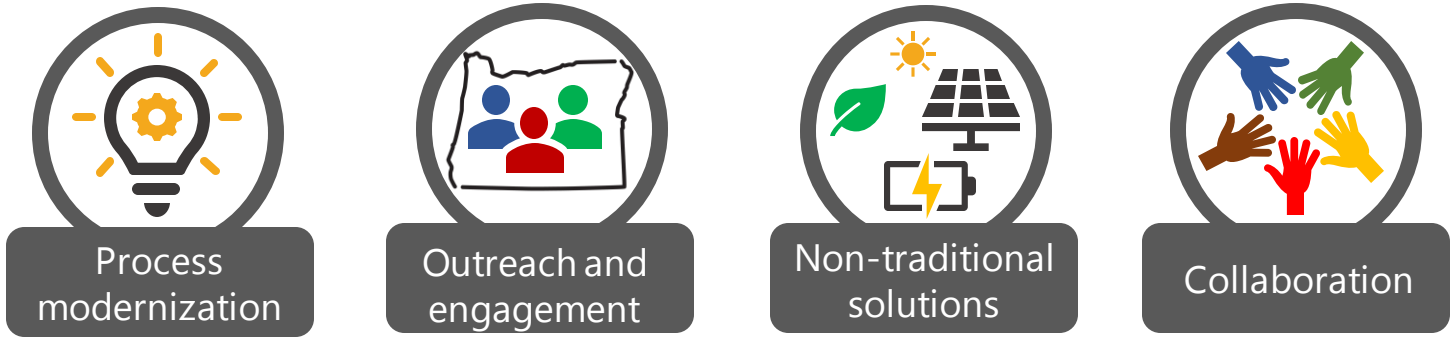
Oregon
Distribution System Planning
Public Workshop #1
February 17th, 2023

Presenters:

Distribution System Planning (DSP): *Ian Hoogendam – DSP Manager, Daniel Talbot – Sr. Engineer, Daniel Morgan – Engineer*

Clean Energy Plan (CEP): *Stephanie Meeks – Regulatory Manager*

Community Benefits and Impacts Advisory Group (CBIAG): *Christina Medina – Stakeholder Policy and Engagement Manager*



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Workshop #1 information

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This meeting will be recorded and posted to the PacifiCorp DSP website.

Today's Agenda

- 5 Mins — Introductions
- 10 Mins — Distribution System Planning (DSP) Overview
- 35 Mins — Near-Term Action Plan Update
- 50 Mins — DSP Area Selection and Study Process

BREAK(10 mins)

- 20 Mins — Clean Energy Plan Update
- 20 Mins — Outreach and Engagement Update
- 30 Mins — Next Steps/Open Discussion

DSP Overview

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Distribution System Planning (DSP) Overview

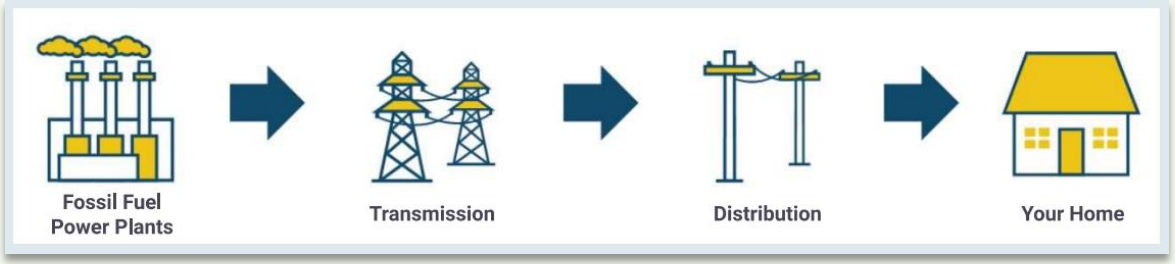
What is Oregon DSP?

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

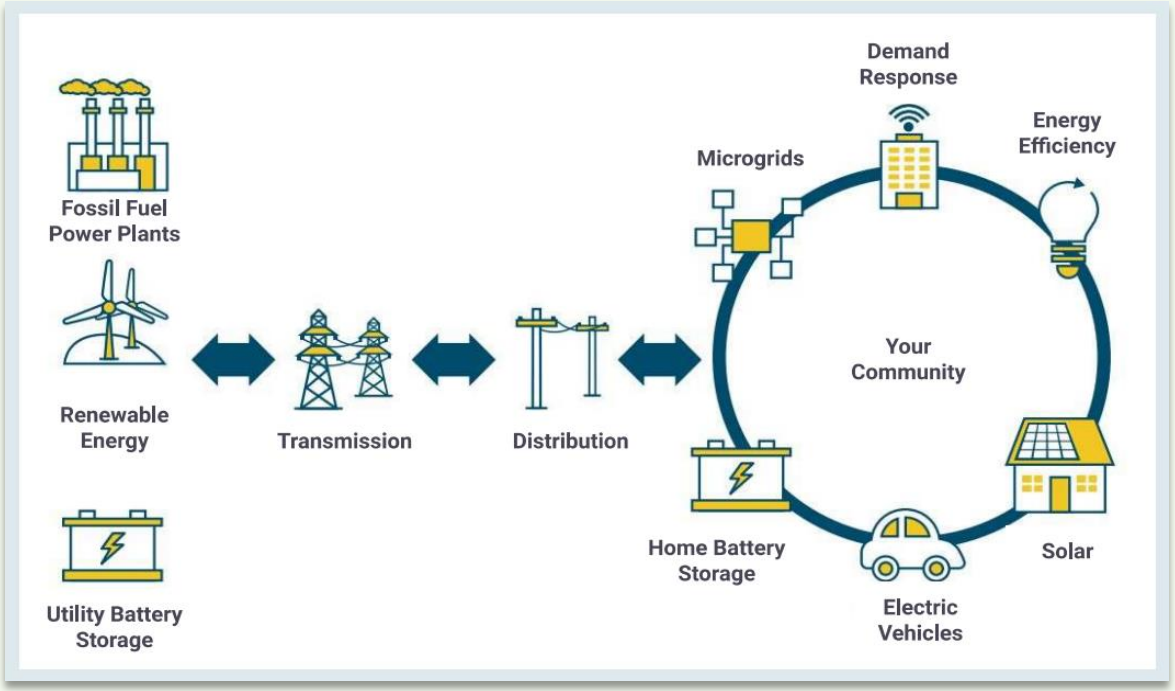
Key changes to traditional DSP:

- Increased community engagement
- Consideration of non-traditional solutions to meet grid needs
- Enhanced forecasting
  - 24-hour load profiles
  - Inclusion of incremental electric vehicle and solar adoption rates

Past Grid



Modern Grid



Overview of Pacific Power - Oregon

Oregon Service Area

- 502 distribution circuits
- 191 distribution substations

	NORTH REGION			CENTRAL REGION			SOUTH REGION	
	Portland	Walla Walla	Yakima	Bend	Albany	Roseburg	Klamath Falls	Medford
Operating Areas / Districts								
	Clatsop (Astoria) Portland	Walla Walla Hermiston Umatilla Pendleton Enterprise Dalreed	Sunnyside Yakima	Madras Hood River Bend Redmond	Albany Corvallis Dallas Independence Cottage Grove Stayton Lebanon Lincoln City	Coos Bay Roseburg	Alturas Lakeview Tulelake Mt Shasta Klamath Falls Yreka	Crescent City Medford Grants Pass
Distribution System Profile								
	95 Circuits 1,200 Line Miles 107,000 Customers	42 Circuits 2,500 Line Miles 54,000 Customers	106 Circuits 3,300 Line Miles 108,000 Customers	65 Circuits 2,800 Line Miles 77,000 customers	86 Circuits 3,700 Line Miles 137,000 Customers	66 Circuits 2,300 Line Miles 70,000 Customers	110 Circuits 5,000 Line Miles 75,000 Customers	138 Circuits 5,700 Line Miles 156,000 Customers
Unique Attributes								
	Portland Underground Mesh Network Distributed Automation Pilot Project	Fire High Consequence Area	Fire High Consequence Area	High Growth Rate/New Connections	Distributed Automation Pilot Project Energy Storage Pilot	Fire High Consequence Area	California Code Requirements Fire High Consequence Area	Distribution Automation Pilot Project Fire High Consequence Area

Near-Term Action Plan Update

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Distribution System Plan Part 2 filing and Near-Term Action Plan

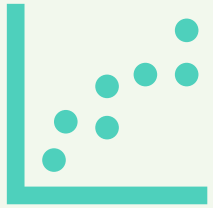
Distribution System Plan Part 2 Filing:

- Filed on August 15th, 2022
- Presented summary of filing to the OPUC on September 15th, 2022

Near-Term Action Plan (‘23-’26):

1. Analytical projects and pilot evaluations
2. Data evaluation and improvement
3. Toolset evaluation and implementation
4. Process improvements
5. Outreach and engagement (local and statewide)
6. Utility staffing and development

Progress on Near-Term Action Plan

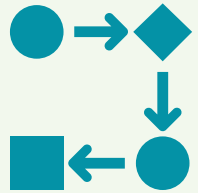


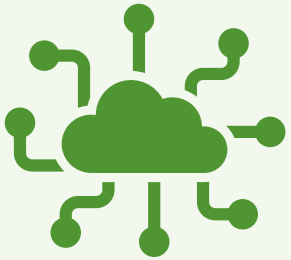
Analytical Projects and Pilot Evaluations:

- Klamath Falls non-traditional solution pilot analysis
- Irrigation solar sizing analysis

Process Improvements:

- New study area selection process (in progress)
- New area study process



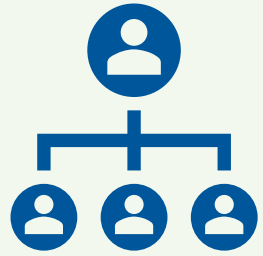


Data Evaluation and Improvement:

- Advanced Metering Infrastructure (AMI) use cases:
  - Substitute for missing SCADA
  - Voltage violations during peak and minimum loading
  - Load profiles by customer class

Utility Staffing and Development:

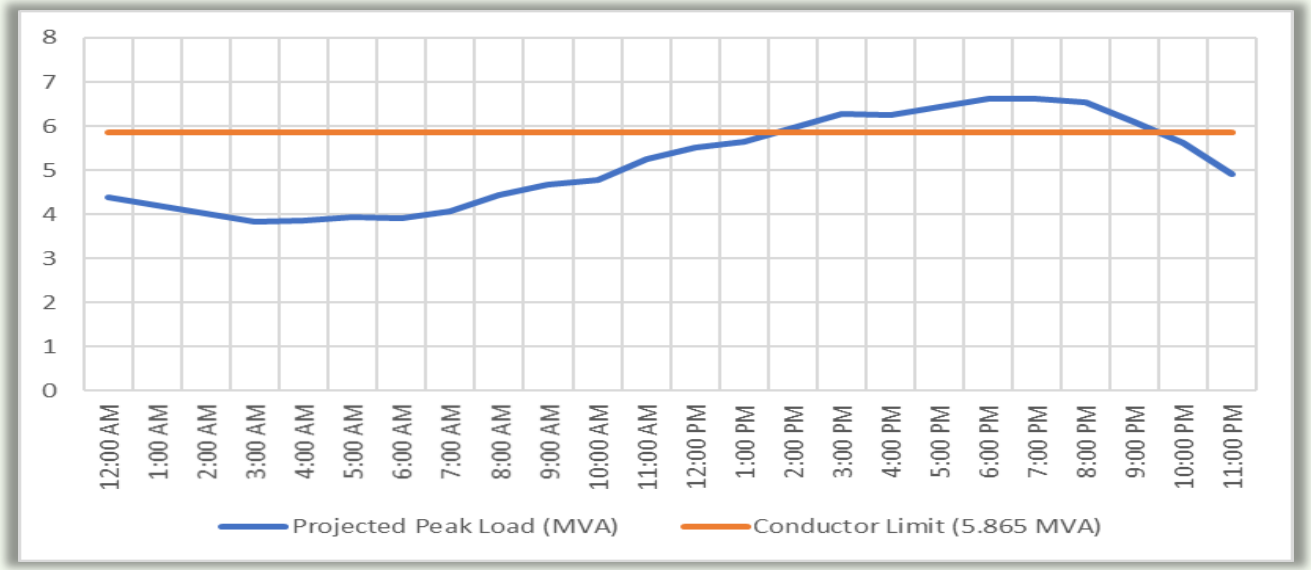
- Manager (started September 2022)
- Data Governance Specialist (position posted)
- Program Specialist (position posted)

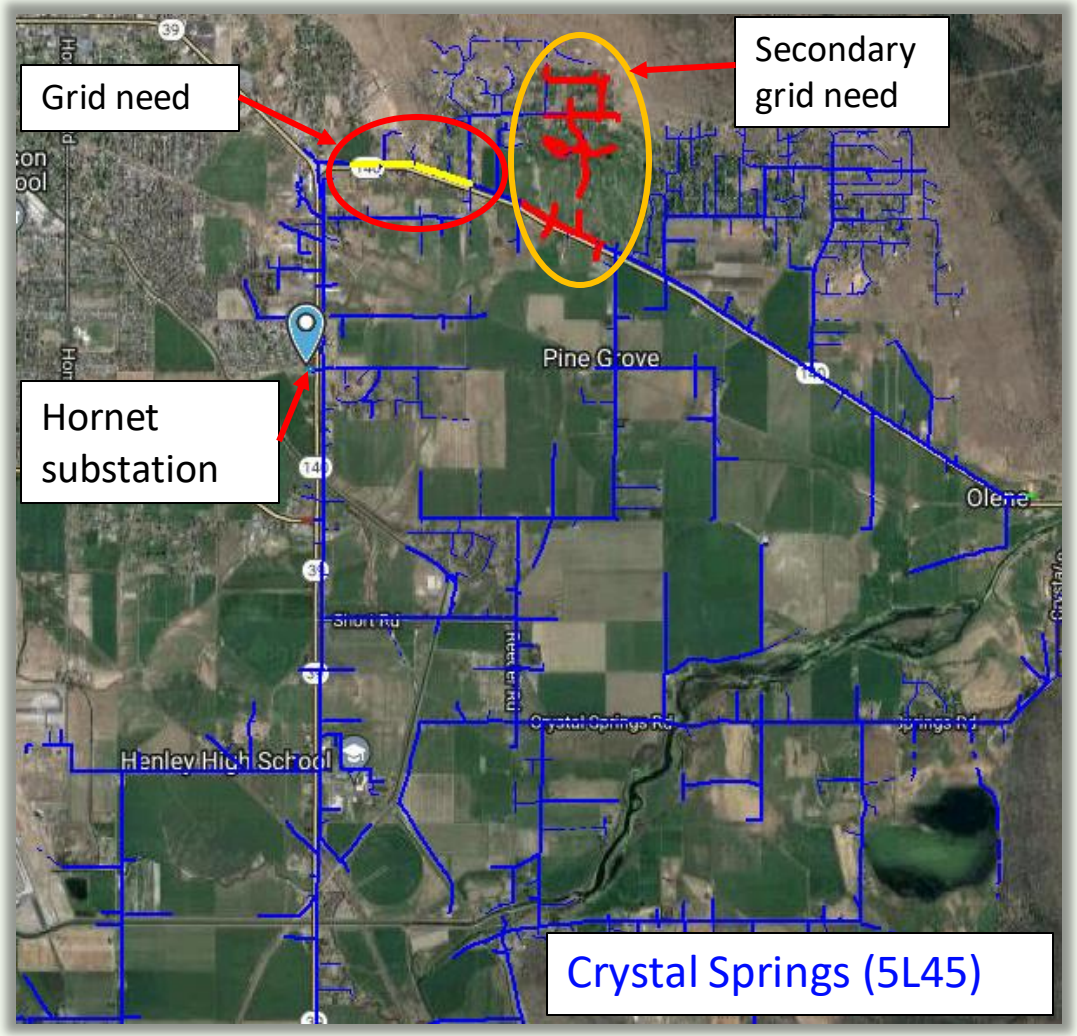


Klamath Falls Grid Need Review

Grid Needs:

- Study identified an overcapacity issue causing conductor overload
- Also causes low voltage downstream
- Needs to be addressed in 2-3 years
- Approximately 750 kW over existing conductor limit
- Occurs ~20 – 50 hours total per year in Summer





Grid Need Solution Options Review

Traditional Solutions:

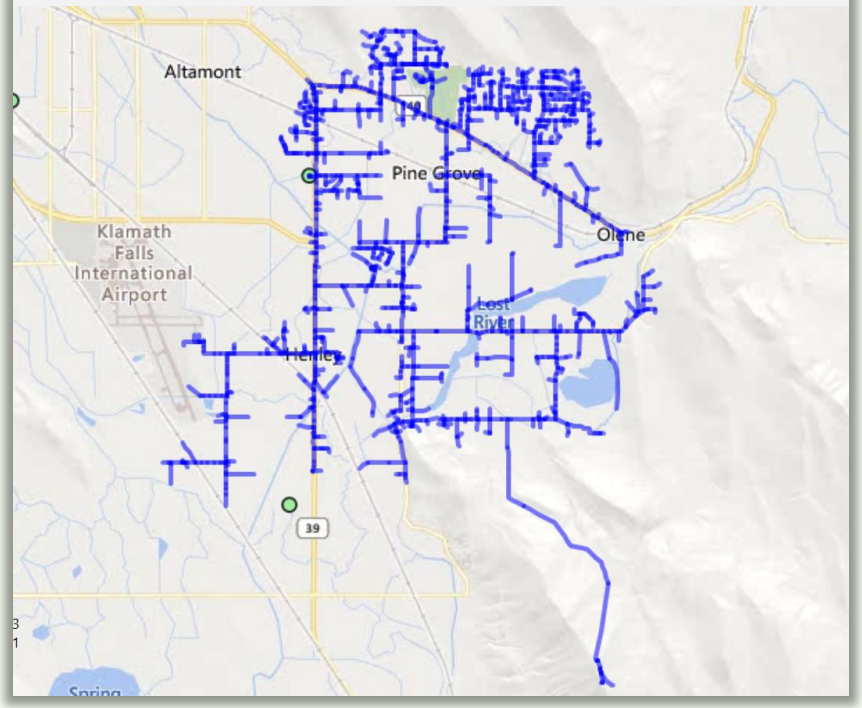
- **Reconductor overloaded wire**
- Load balancing (alternative solution not chosen due to not fully meeting grid needs)

Non-traditional solution concepts Company considered to address grid need included:

- Solar
- ***Solar + Battery Storage (Evaluation #1)***
- Load Control, Curtailment, Demand Response
- ***Targeted Energy Efficiency (Evaluation #2)***
- Other Renewables

Klamath Falls – Crystal Springs – 5L45

- Overloaded conductor during peak summer load
- Low voltages downstream of overload
- Phase loading imbalance



Estimated Total Cost Residential Solar + Battery Storage

Solution Participation Requirements

- 290 – 310 residential customer participants
- 2.4 MW of solar and 2.44 MWh of storage needed

	Customer Cost*	+ Utility/Energy Trust of Oregon incentives*
Per Customer (Solar + Storage)	$50k - $75k	$45k - $70k
Per Customer (Just Storage)	$20k - $35k	$14k - $26k

Estimated total customer costs: $15 M– $23 M

Estimated 10-year utility costs: $1.7M – 2.6M

Estimated time to set up program 3-5 years

Additionally, this would potentially offset a cumulative total of 1224 tons of carbon from 2023 to 2028**

* Based on NREL and DNV Studies **Based off PacifiCorp's 2021 IRP emissions forecast

Traditional solution cost estimate: $225k

For discussion only, values subject to change

Estimated Total Cost Energy Efficiency

Load Reduction Requirements:

- Estimated annual load: 26,430 MWh
- 0.75 MW peak load reduction needed **within 3 years**
- Aggressive program (4525 MWh savings): 3% yearly load reduction, 17% **over 5 years**
- Standard program (1290 MWh savings): 1% yearly load reduction, 5% **over 5 years**

Case	Total Customer Incremental Costs	Total Program Costs (incentives + admin)	Total MWh Savings	Total kW Savings	Levelized Cost of Energy $/kWh
Business as Usual	$550,000	$440,000	1,290	215	$0.042
Accelerated Acquisition (typical measure mix)	$1,930,000	$1,850,000	4,525	750	$0.050
Accelerated Acquisition (targeted measure mix*)	$645,386	$930,000	3,652	750	$0.031

*Assumes half of all savings come from cooling-based measures

Traditional solution cost estimate: $225k

For discussion only, values subject to change

Solar Sizing Analysis for Irrigation Loads

Theory:

- Irrigation loads have large solar sizing potential resulting in:
  - Participation requirements ↘
  - Risk and complexity ↘

Grid Need Analysis:

- Solar sizing estimated for irrigation loads and districts impacting grid need
- Sizing estimates larger than residential, but not large enough to meet grid need alone or to significantly reduce the need for residential customer participation

Statewide Analysis:

- Some areas have larger irrigation solar sizing potential, but still smaller than expected

Klamath Falls Non-traditional Solution Pilot Evaluation Conclusions

Conclusion:

- ***After thorough evaluation of the Klamath Falls grid need, and feedback from stakeholders, the Company will proceed with the traditional reconductor solution due to the time constraints, cost, complexity and risk of the non-traditional solutions evaluated.***

Going Forward:

- While the irrigation focused solar sizing analysis did not result in a feasible single solution, the Company plans to use the evaluation methodology in future solar projects

2023 Preliminary Near-Term Action Plan Roadmap

Q1	Q2	Q3	Q4
DSP Process Improvements *DSP Study Areas:* • Finalize study area selection • Local meetings to review study areas and forecasts *Collaboration:* • Provide DSP Input to Clean Energy Plan and IRP • Participate in Community Benefits and Impacts Advisory Group • Educate Internal Stakeholders on DSP • Coordination with ETO **Outreach and Engagement** • Statewide workshop #1 **Utility Staffing & Development** • Hire Data Governance Specialist • Hire Program Specialist • Set 2023 Development Goals **Data Evaluation and Improvement** • Document current data structures and flows	**DSP Process Improvements** *DSP Study Areas:* • Grid need and solution Identification • Develop new methods/approaches within studies including analysis of non-traditional solutions *Collaboration:* • Continued collaboration with Clean Energy Plan and IRP • Continued participation in Community Benefits and Impacts Advisory Group • Coordination with ETO **Toolset Evaluation and Implementation** • Document data requirements and use cases based on input from DSP study area analysis (As Needed)	**DSP Process Improvements** *DSP Study Areas:* • Continued work from Q2 *Collaboration:* • Continued collaboration with Clean Energy Plan and IRP • Continued participation in Community Benefits and Impacts Advisory Group • Coordination with ETO **Outreach and Engagement** • Local meetings to review DSP study area findings • Statewide workshop #2 **Toolset Evaluation and Implementation** • Define toolset requirements (As Needed) • Begin preliminary toolset evaluation (As Needed)	**DSP Process Improvements** *DSP Study Areas:* • Finalize studies • Define next steps *Collaboration:* • Continued collaboration with Clean Energy Plan and IRP • Continued participation in Community Benefits and Impacts Advisory Group • Coordination with ETO **Outreach and Engagement** • Local meetings to communicate final findings and next steps • Statewide workshop #3 **Toolset Evaluation and Implementation** • Implement data improvements and new toolsets (As Needed)

Questions/Comments?

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DSP Area Selection and Study Process

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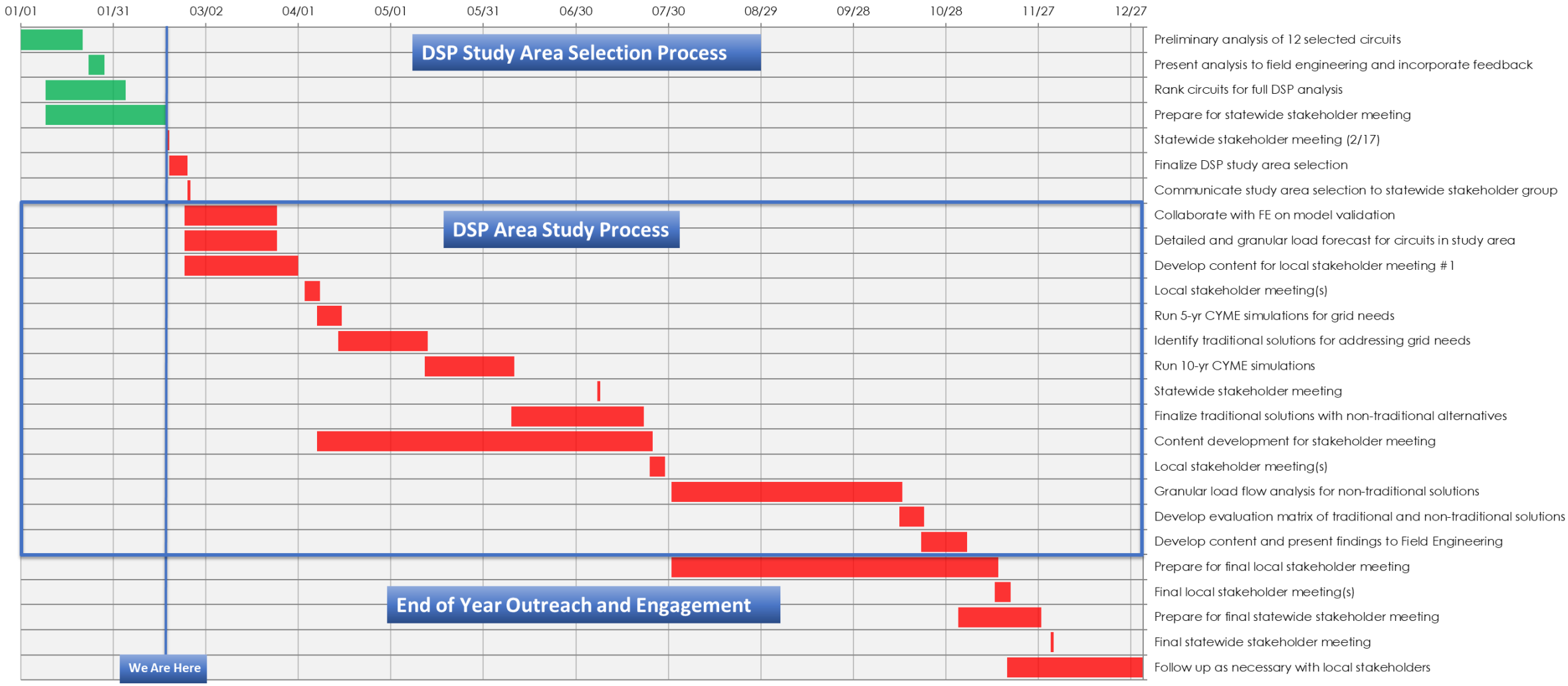
DSP Area Study Plan Timeline



Local Engagement in Study Cycle

Study Kick-off +
Load Forecasting & Model Validation

Engagement tasks:

- ✓ Provide overview of DSP Process
- ✓ Review study area and substations/circuits to be analyzed
- ✓ Provide overview of load forecast

Granular Load Study to Identify Grid Needs and Solutions

Engagement tasks:

- ✓ Review study area and substations/circuits analyzed
- ✓ Provide overview of grid needs found
- ✓ Provide overview of potential traditional and non-traditional solutions

Local Stakeholder Meeting #1 (in-person)

- ✓ Discuss plans that could impact load forecast
- ✓ General feedback on process

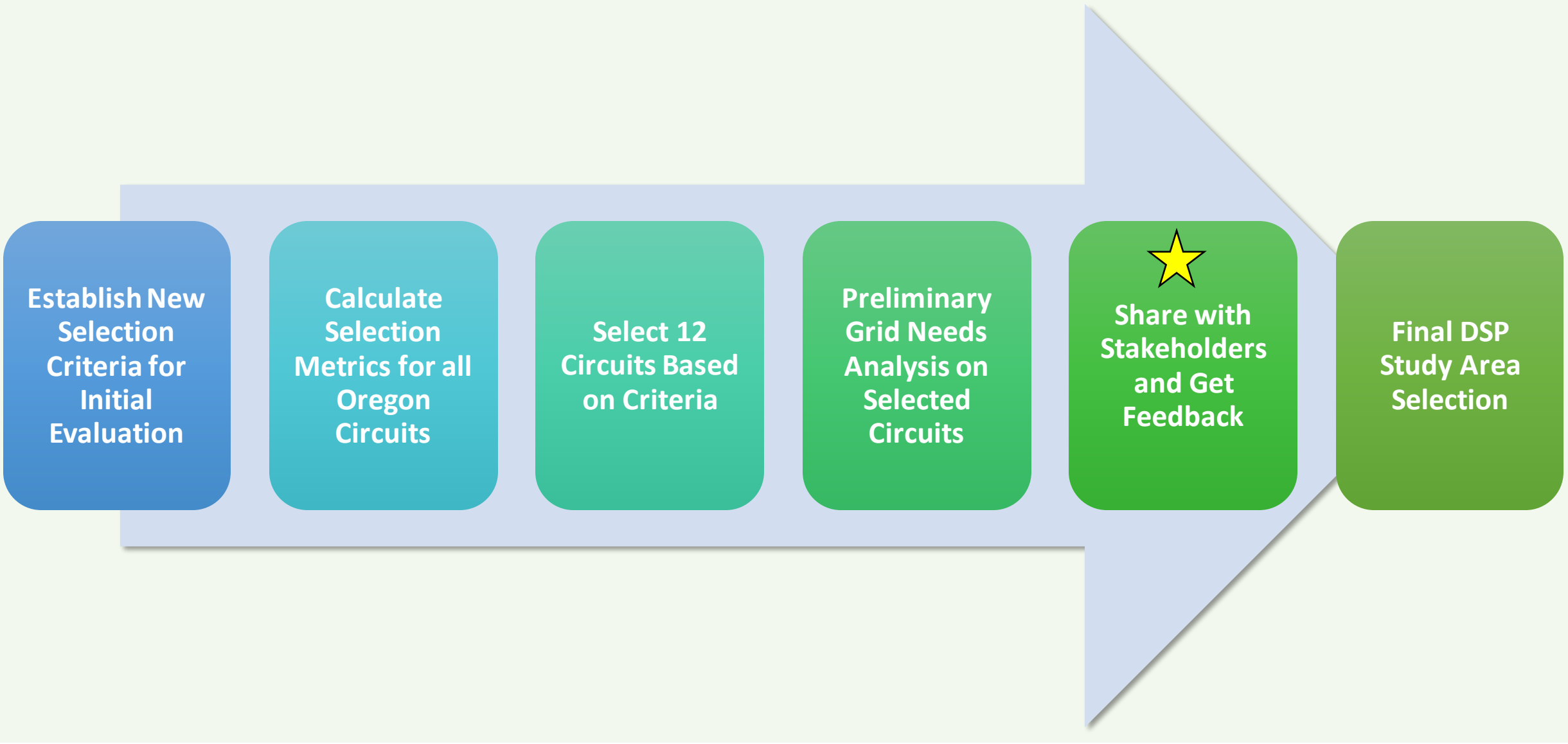
Local Stakeholder Meeting #2 (as needed)

- ✓ Feedback on traditional and non-traditional solutions

Local Stakeholder Meeting #3 (as needed)

- ✓ Feedback on follow-up analysis of traditional and non-traditional solutions

2023 DSP Study Area Selection Process



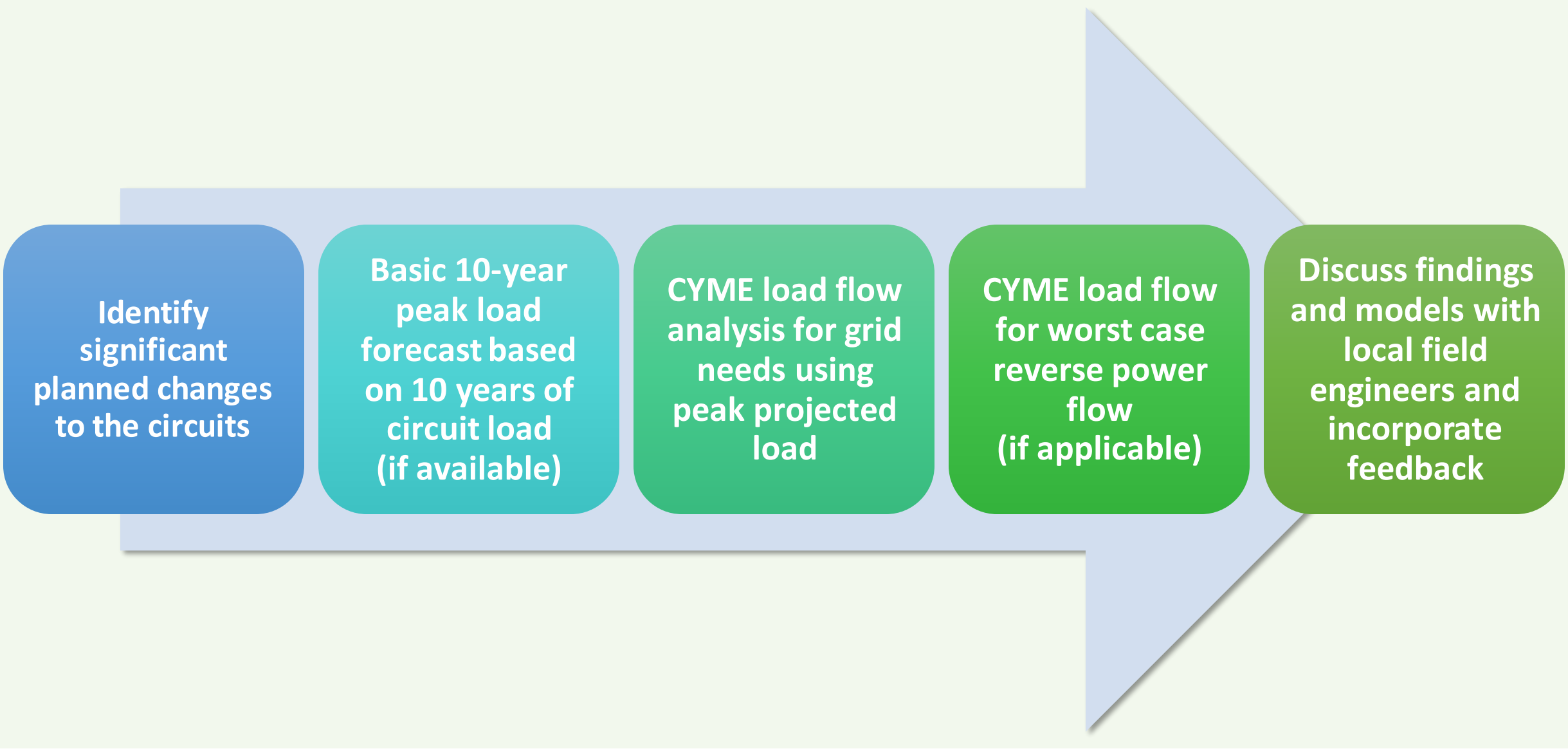
Selection methodology: Criteria and Metrics

- Forecasted Solar Generation Growth (*MW*)
- Forecasted Electric Vehicle Growth (*Count*)
- Larger Potential Solar Sizing *(Ranked by kWH for targeted customers)*
- Reliability (*3-year Average Reliability Metric)*
- Equity (*Median Income, Households Below 200% Poverty Level)*
- Reverse Power Flow *(MW)*
- Availability of SCADA at Circuit Breaker *(Y/N)*

Selection Methodology: Results

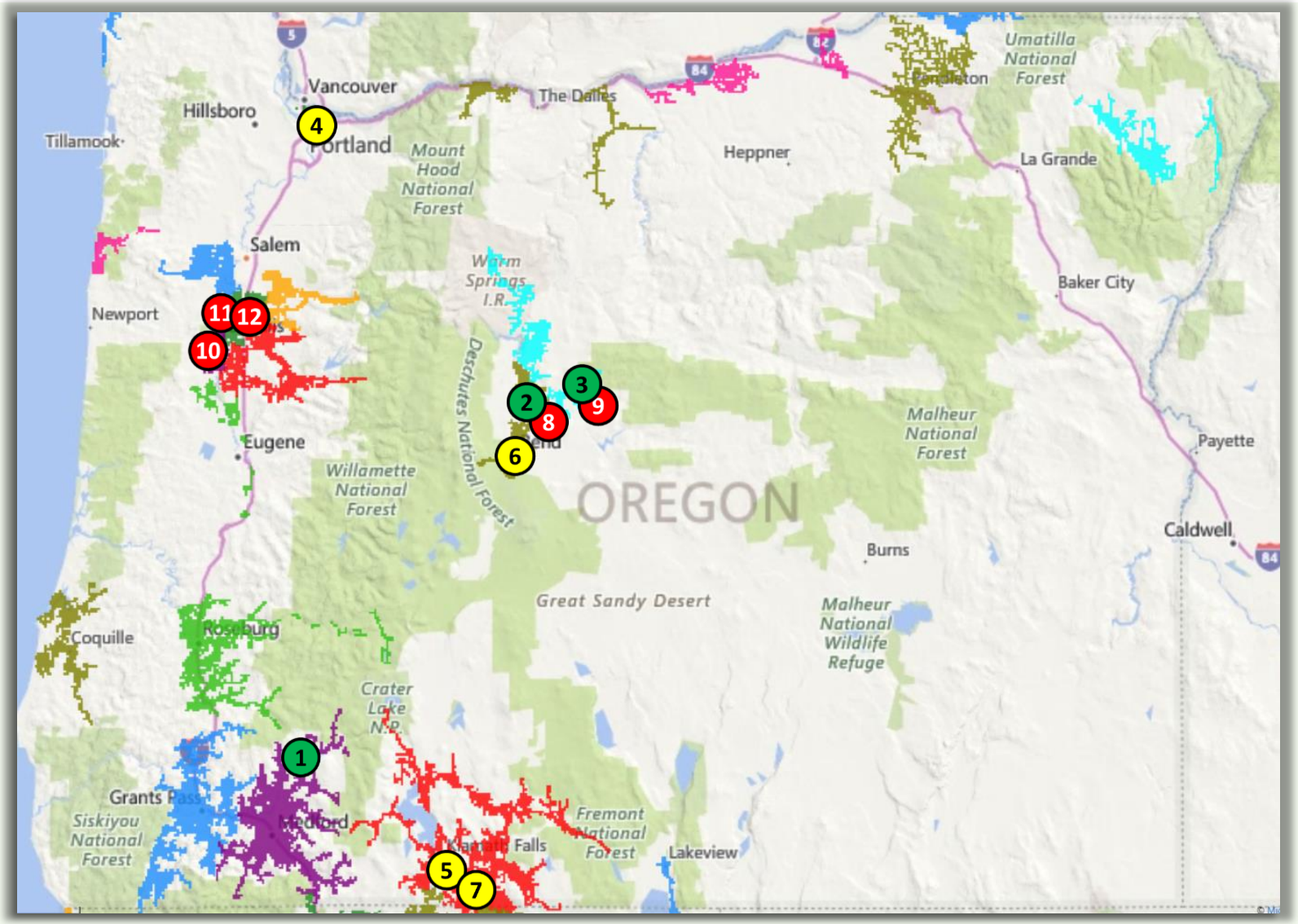
Circuit	High Solar Generation Growth	High Electric Vehicle Growth	Low Reliability Score	Larger Potential Solar Sizing	High Potential for Reverse Power Flow	SCADA Available	Median Income ≤ $50k	High Amount of Households Below 200% Poverty Level
4R9	✓	✓	✓			✓	✓	✓
5D22	✓	✓		✓		✓		
5D167	✓	✓				✓		✓
5P395	✓	✓				✓		
5L45	✓	✓	✓	✓		✓		
5D261		✓			✓	✓		
5D227		✓			✓	✓		
5L27				✓		✓	✓	
5D50			✓	✓		✓		✓
4M182		✓				✓		✓
4M16	✓	✓						
4M15	✓	✓					✓	✓

Selection Methodology: Preliminary Grid Needs Analysis



Preliminary Selection for Full Area DSP Study

#	Circuit	Evaluation Likelihood: High / Low / Disqualified
1	4R9	Grid needs identified
2	5D22	Grid needs identified
3	5D167	Grid needs identified
4	5P395	No grid needs identified
5	5L45	No grid needs identified
6	5D261	No grid needs identified
7	5L27	No grid needs identified
8	5D227	New substation
9	5D50	Large planned load transfer
10	4M182	New substation
11	4M16	New substation
12	4M15	New substation



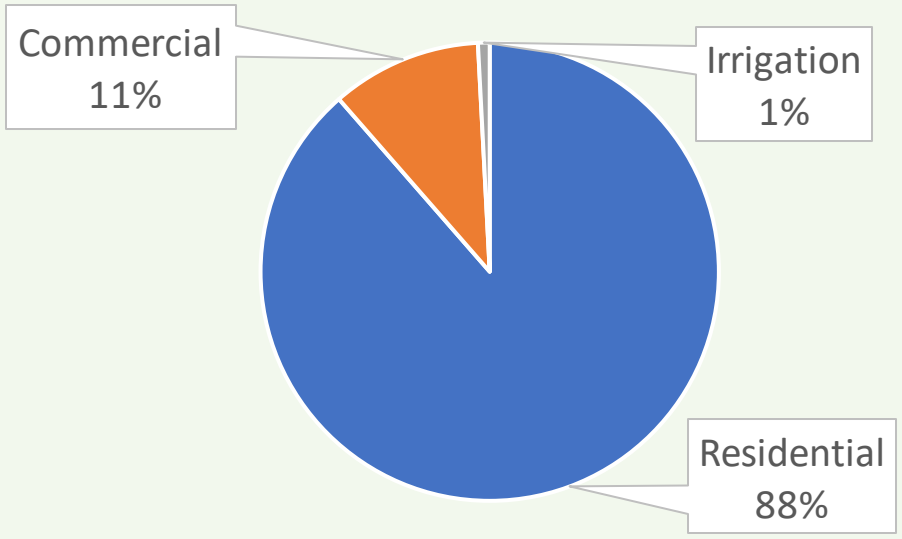
4R9 – North of Medford

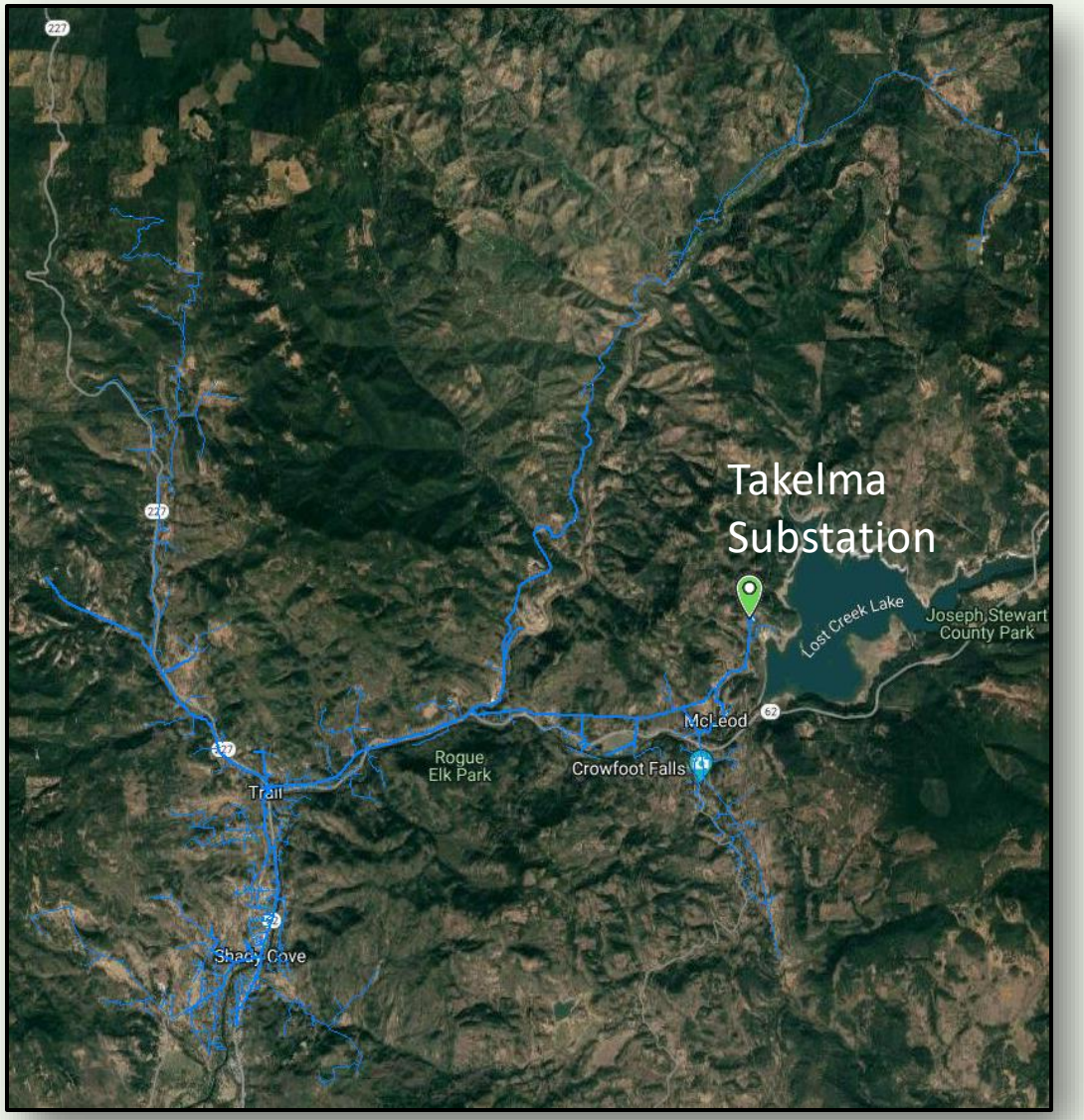
Selection Criteria:

- High forecasted DG growth
- High forecasted EV growth
- Median income below $50k (equity)
- Low reliability score

Other Considerations:

- One of the longest PAC circuits in Oregon
- High customer count





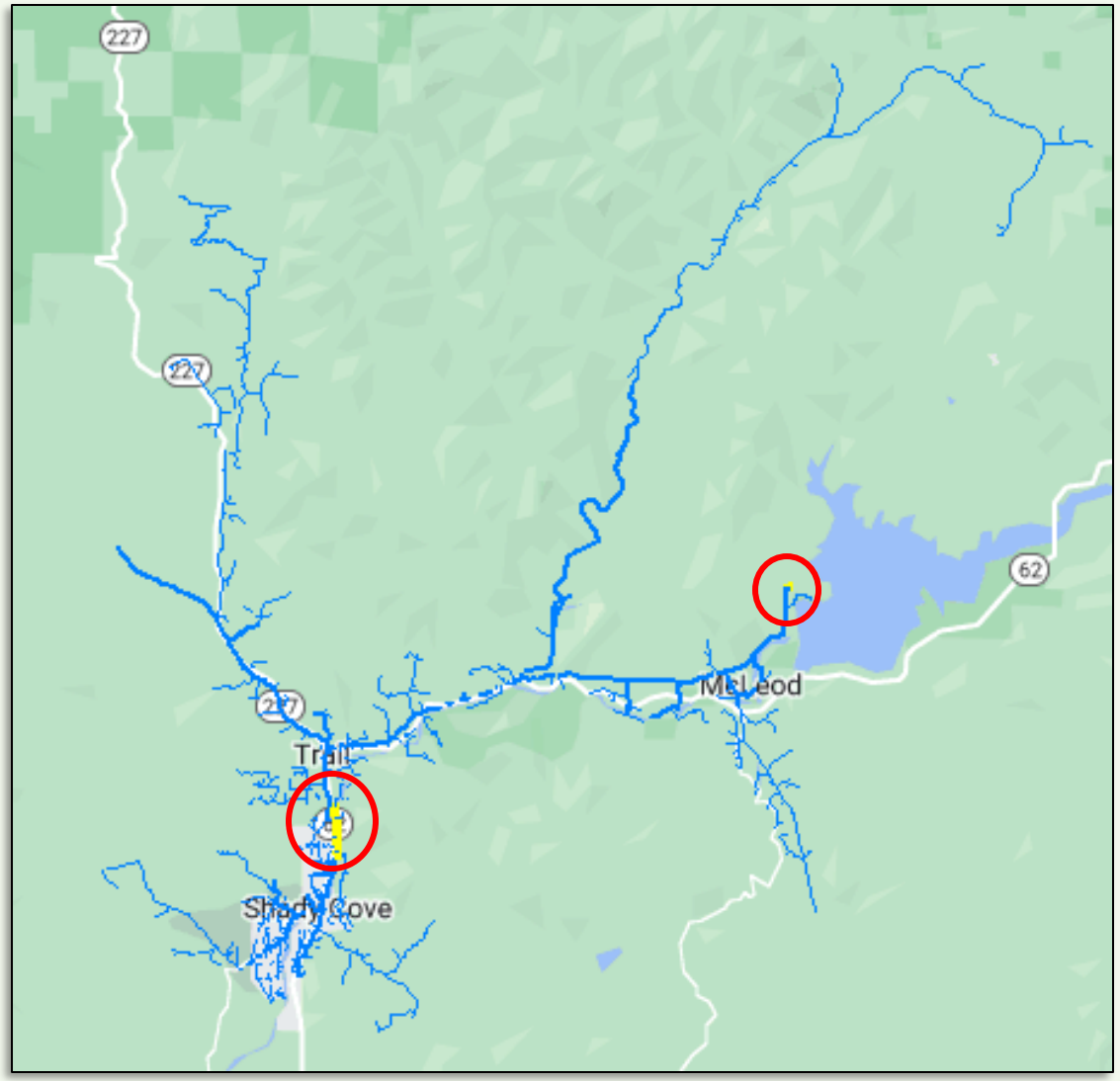
4R9 Preliminary Analysis Results

	Summer	Winter
Growth Factor	2.2%	2.3%
Current Peak Load (MVA)	10.3	12.2
5 Year Projected Peak Load (MVA)	11.5	13.3
10 Year Projected Peak Load (MVA)	12.8	14.9
Operational Limit (MVA)	12.5	15.6

Grid needs assessment:

- Substation transformer overcapacity in summer
- Thermal overload on overhead conductor in summer (yellow segment)
- Substation transformer almost at capacity in winter

DSP study candidacy: High



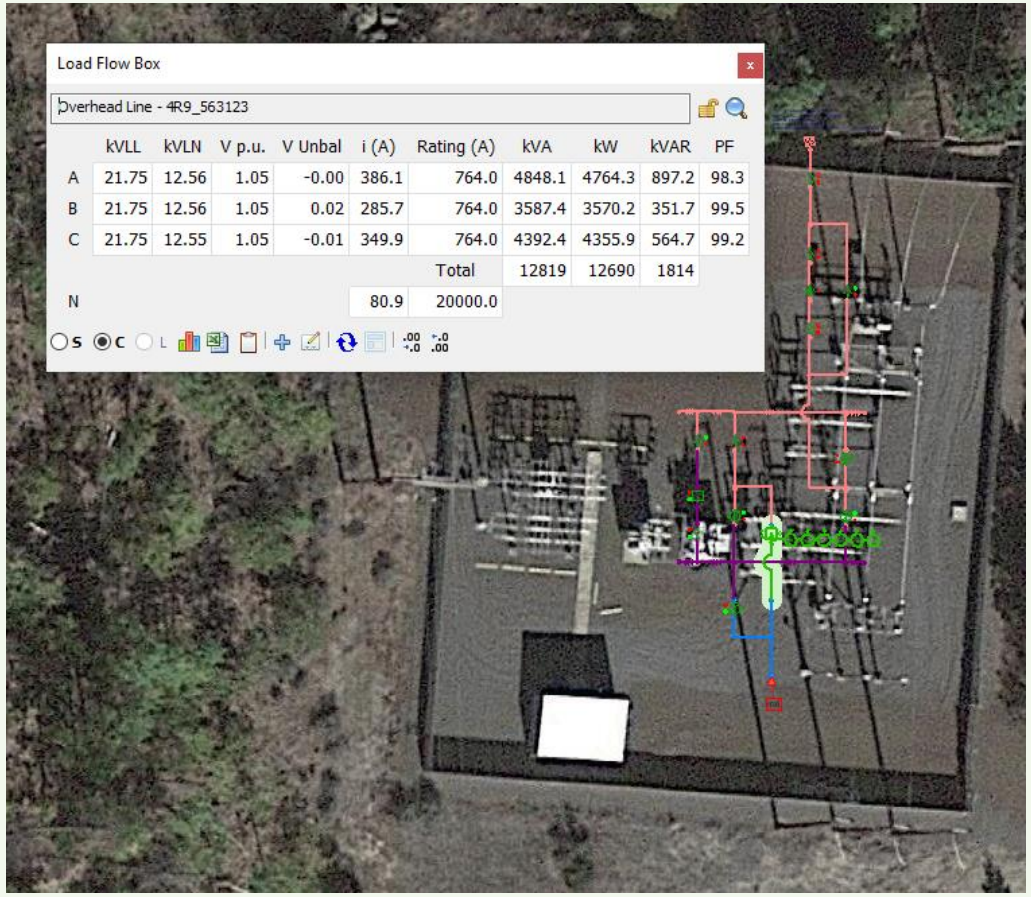
4R9 Preliminary Grid Needs Assessment: Substation Overcapacity

Grid Needs Summary:

- Projected peak summer load to exceed substation transformer capacity of 12.5 MVA in 2032
- Only one circuit on the substation

	Residential	Commercial	Irrigation	Combined
Customer Count	2372	284	22	2678
% of Total Count	88%	11%	<1%	100%
% of Peak Load	84%	16%	<1%	100%
Projected 2032 Peak Load (kW)	8962	1697	63	10722

Note: these figures are based off meter data and do not include line losses



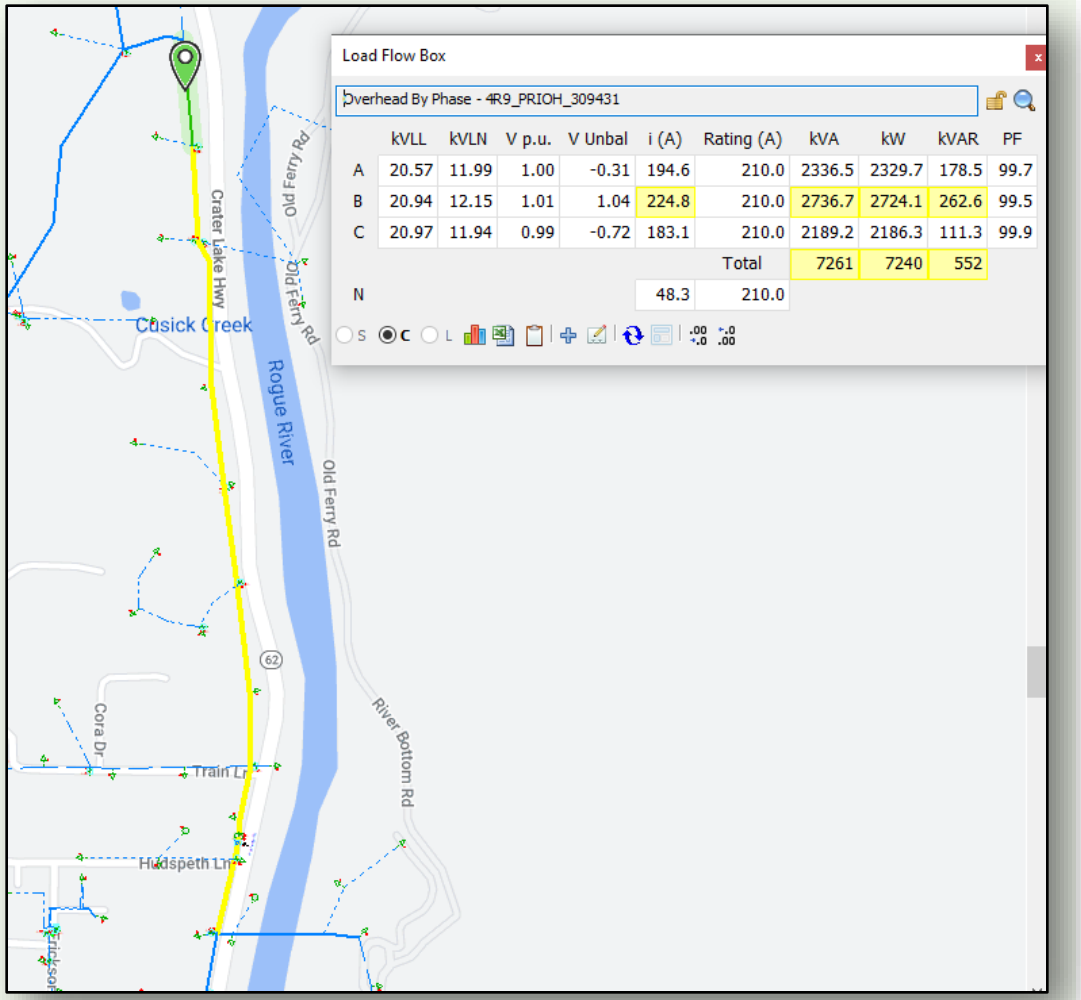
4R9 Preliminary Grid Needs Assessment: Conductor Thermal Overload

Grid Needs Summary:

- 3863 feet of main line projected to reach thermal overload in peak summer condition in 2031
- Downstream of conductor is the most populated part of the circuit (town of Shady Cove)

	Residential	Commercial	Irrigation	Combined
Customer Count	1488	201	3	1692
% of Total Count	56%	8%	<1%	63%
% of Peak Load	57%	13%	<1%	69%
Projected 2032 Peak Load (kW)	6067	1345	7.6	7419

Note: these figures are based off meter data and do not include line losses



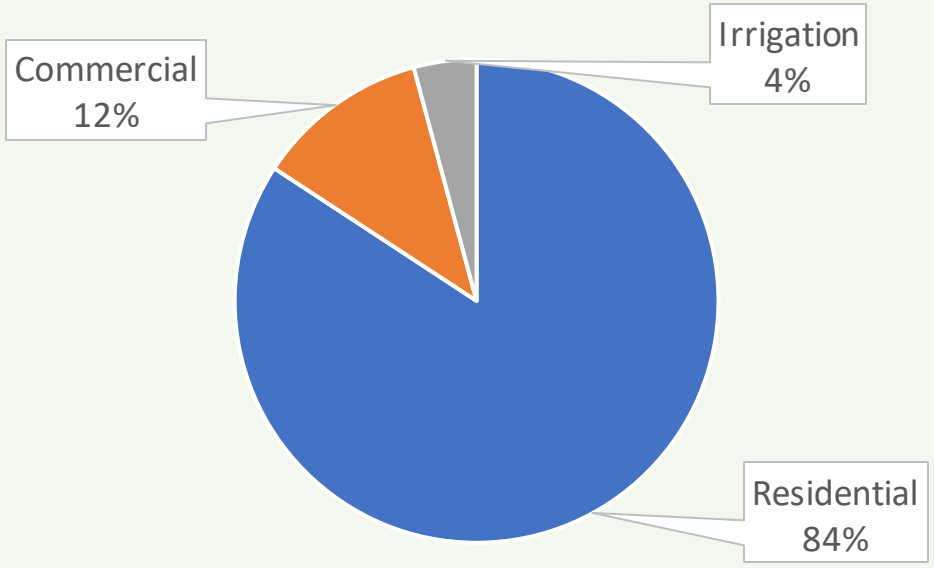
5D22 – North Redmond and Terrebonne

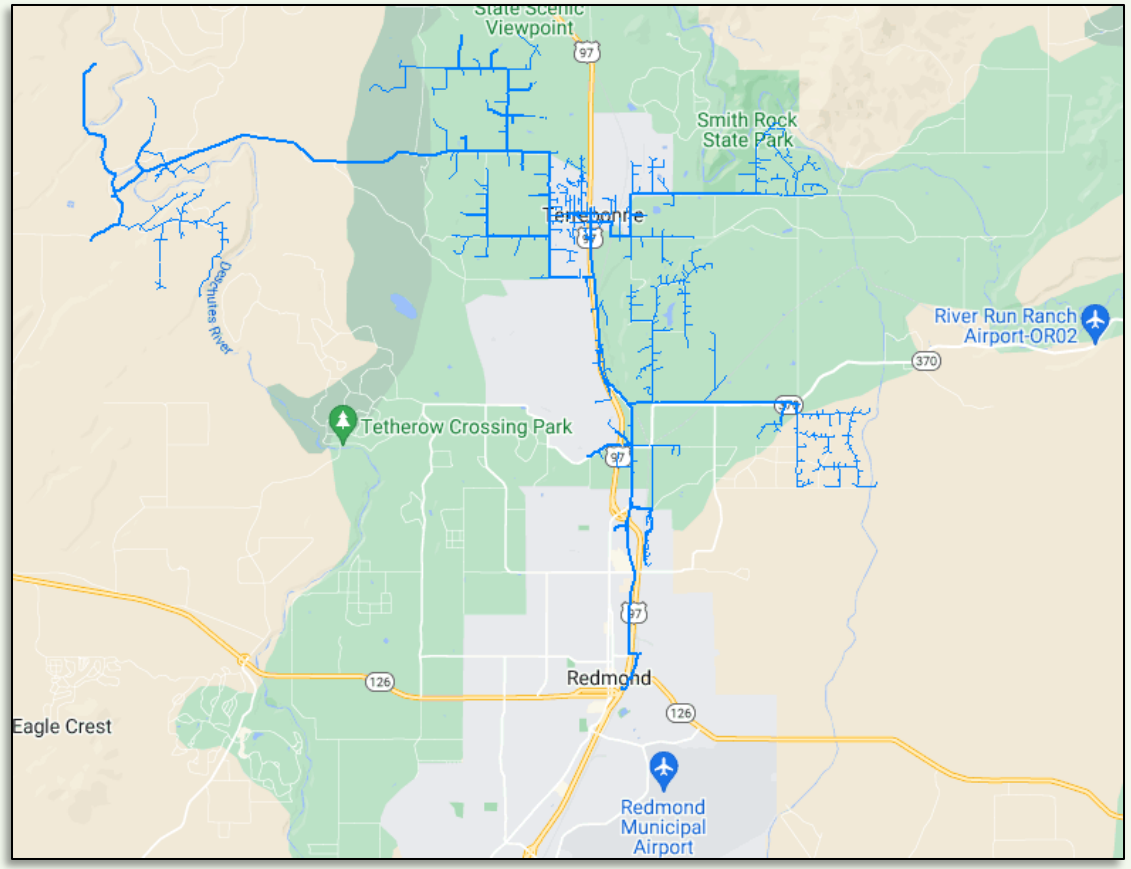
Selection Criteria

- High distributed generation growth predicted
- High proportion of irrigation circuits

Other Considerations

- Large proportion of customers on this circuit have electric-source heating
- Large residential development expected in near future



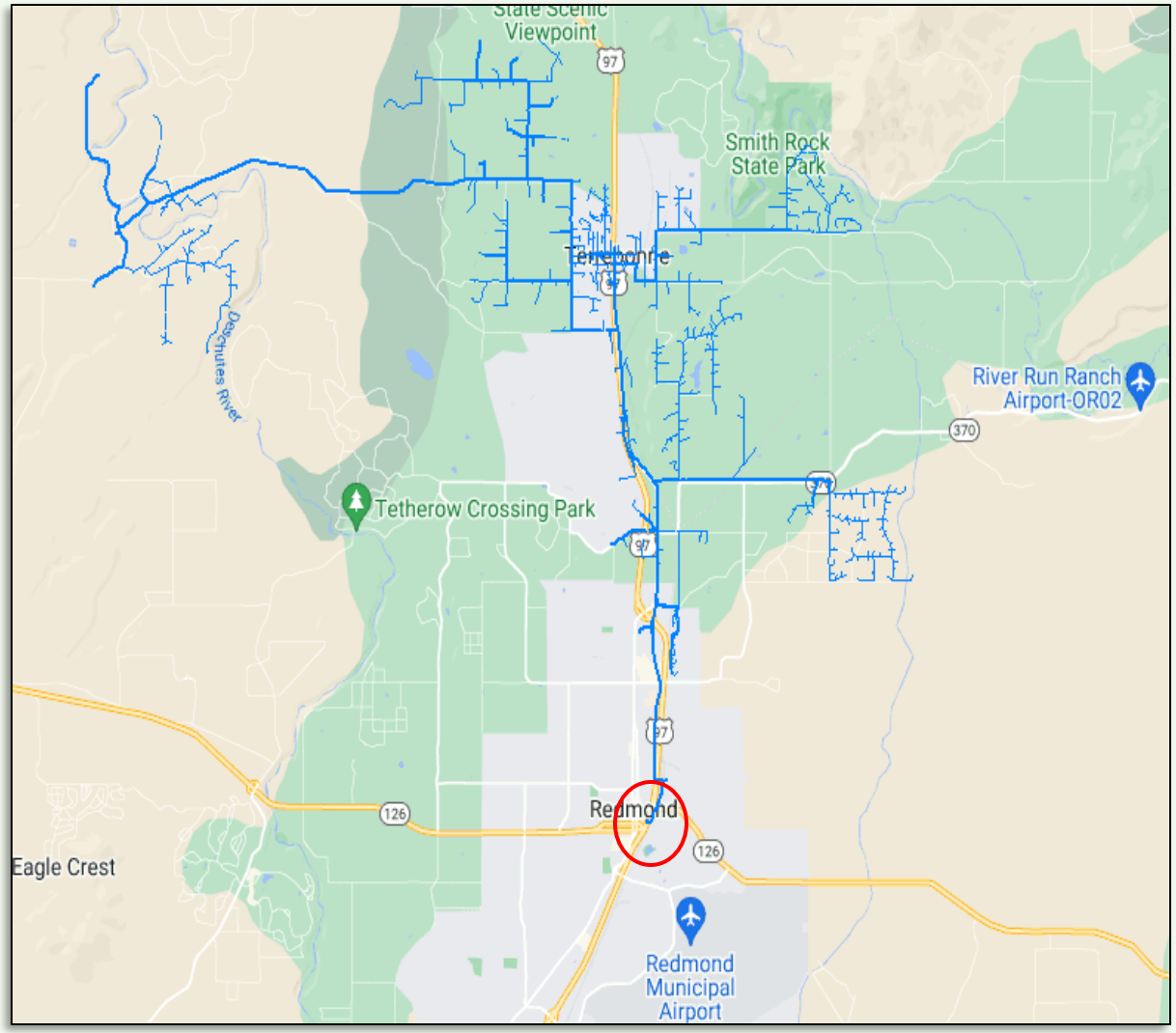


5D22 Analysis Results

	Summer	Winter
Projected Load Growth Rate	1.10%	3.30%
Current Peak Load (MW)	7.2	10.3
5 year projected peak load (MW)	8.3	12.4
10 year projected peak load (MW)	10.2	15.3
Operational Limit (MW)	13.5	13.9

Initial Findings

- Base studies suggest transformer loading issues within 10 years
- Large subdivision planned with load split between PacifiCorp and Central Oregon Electric Co-operative
- Anticipated voltage problems stemming from long distribution lines on rural loads
- Planned Redmond substation not expected to impact 5D22 topology



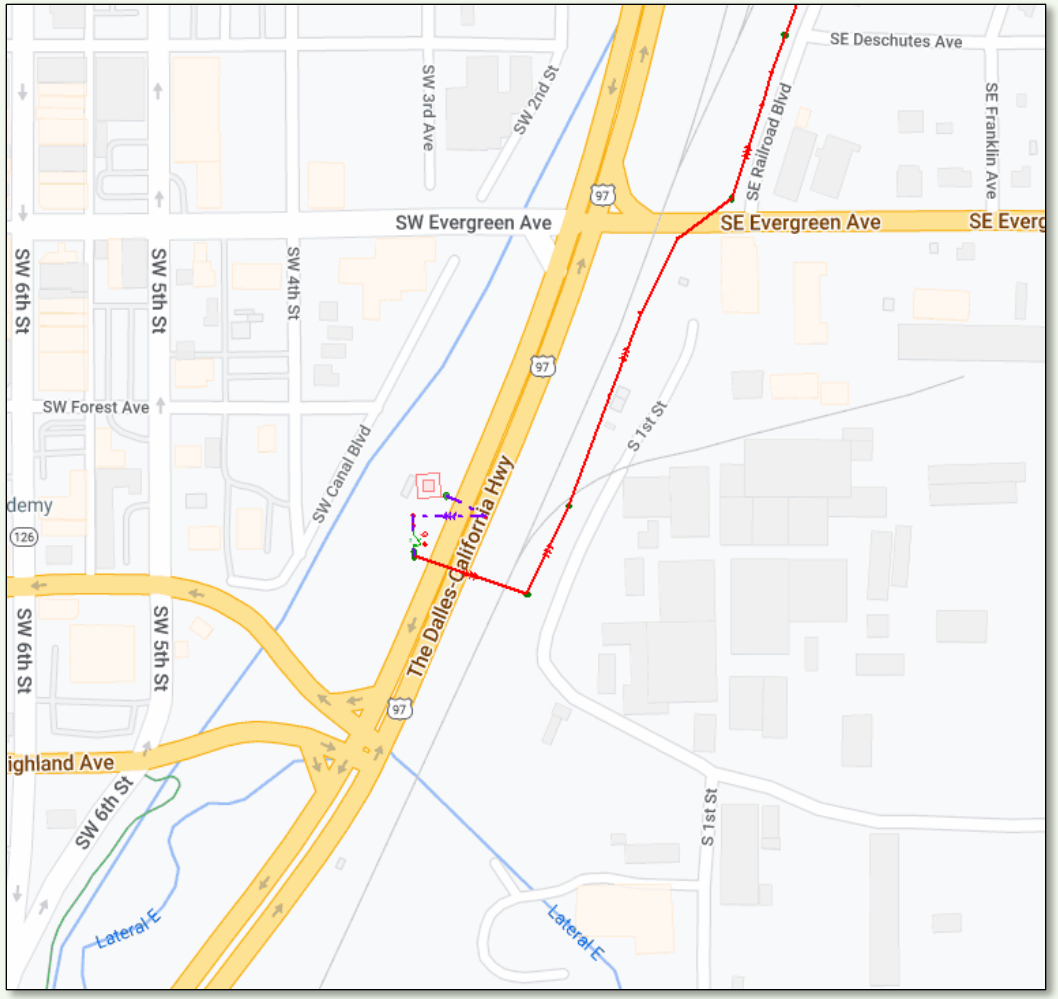
5D22 Grid Needs Assessment: Circuit Guidelines Exceeded

Grid Needs Summary:

- Previous winter peak appears to have been driven by residential heating loads
- Circuit Guidelines projected to exceed limits by 2032
- Impacts to protection schemes and system-wide voltage levels

	Residential	Commercial	Irrigation	Combined
Customer Count	1368	188	68	1626
% of Total Count	84%	12%	4%	100%
% of Peak Load	86%	14%	<1%	100%
Projected 2032 Peak Load (kW)	11675*	1945*	9.7*	13634*

*figures are based off meter data and do not include line losses



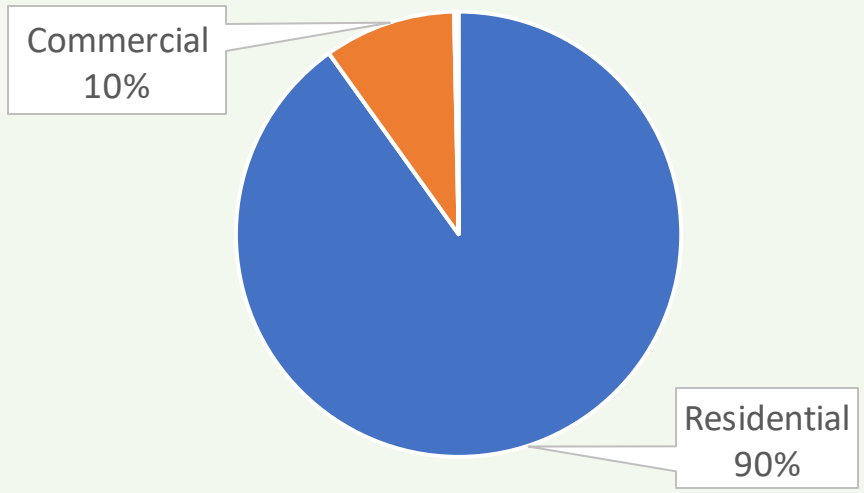
5D167 Summary - Prineville

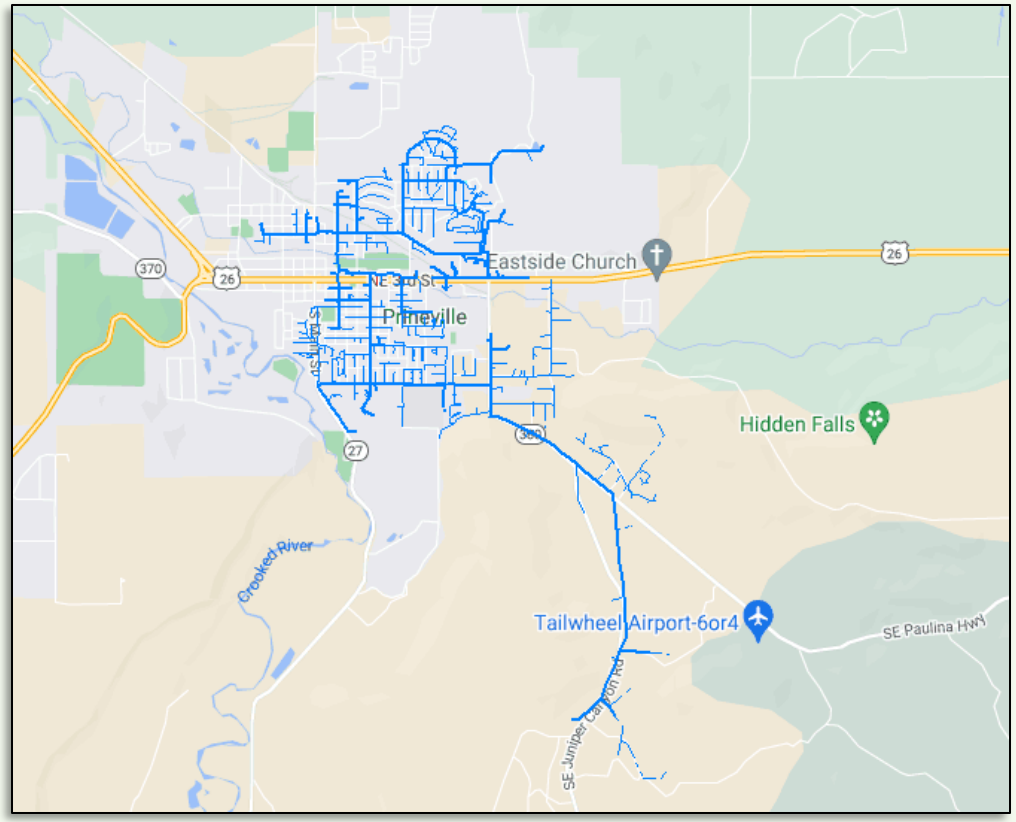
Selection Criteria

- High distributed generation growth predicted
- 35.6% of household incomes on this circuit have median incomes below 200% of Federal Poverty Limit

Other Considerations

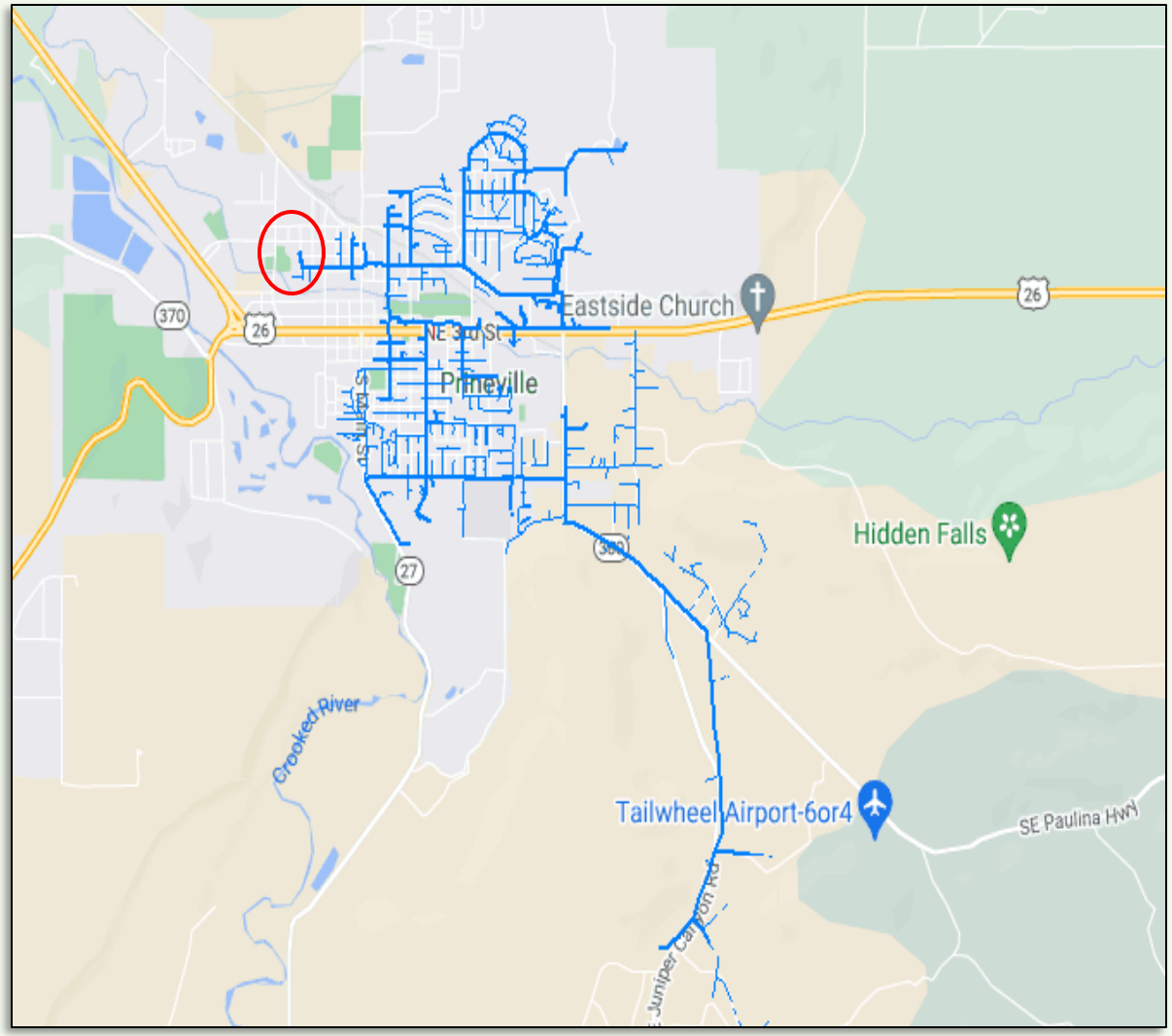
- Approximately half of customers on this circuit have electric-source heating





5D167 Analysis Results

	Summer	Winter
Projected Load Growth Rate	1.40%	1.90%
Current Peak Load (MW)	10.5	10.3
5 year projected peak load (MW)	11.6	11.5
10 year projected peak load (MW)	12.3	13
Operational Limit (MW)	11.3	13



Initial Findings

- Overall ten-year growth trend low, but recent upswing suggests acceleration of load growth
- Initial studies suggest circuit loading issues within 5 years if recent growth trends continue.
- With lower growth rates from ten-year trends, circuit loading issues are seen at 7-10 years.

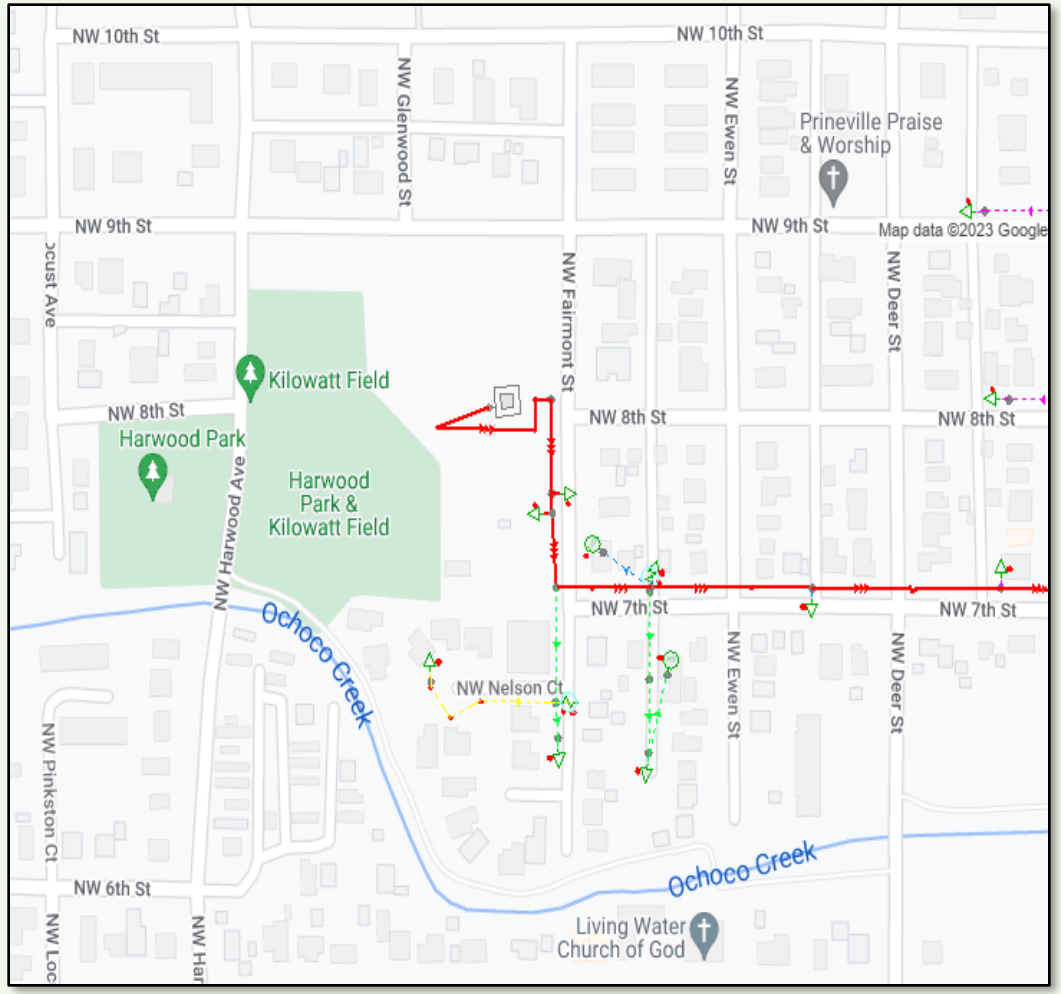
5D167 Grid Needs Assessment: Circuit Guidelines Exceeded

Gird Needs Summary:

- Summer and winter show similar peaks—summer peaking due to seasonal equipment ratings
- Past two years show much higher load growth rates than previous ten.

	Residential	Commercial	Irrigation	Combined
Customer Count	2550	260	4	2819
% of Total Count	90%	10%	<1%	100%
% of Peak Load	68%	31%	<1%	100%
Projected 2032 Peak Load (kW)	8333*	3847*	3.6*	12,290*

*figures are based off meter data and do not include line losses



Questions/Comments?

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Break (10 Mins)

Ti Start Timer g

TIME TO RESUME

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Clean Energy Plan Update

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Clean Energy Plan: The Basics

In 2021, Oregon Governor Brown signed House Bill (HB) 2021 into law, which provides an emissions-based clean energy framework for electricity providers to develop Clean Energy Plans (CEP). The plan requires retail electricity providers to reduce greenhouse gas (GHG) emission associated with electricity sold to Oregon consumers by:

Outcomes:

- 80% below baseline emissions levels by 2030
- 90% below baseline emissions levels by 2035
- 100% below baseline emissions levels by 2040

(Baseline is average annual emission of greenhouse gases for the years 2010, 2011, and 2012 associated with the electricity sold to electricity customer.)

Timeline:

- July 2021 - CEP signed into law
- January 2022 – Ongoing UM 2225 Staff's Investigation into CEP (guidance on implementation)
- March 2023 – PacifiCorp will file first Oregon Clean Energy Plan with IRP filing

Oregon Clean Energy Plan

- The Oregon Clean Energy Plan (CEP) works in conjunction with Pacific Power's system Integrated Resource Plan (IRP) and provides certainty to our target emissions reductions.
- The company will file its first CEP concurrently with its IRP in spring 2023.
- The CEP will include:
  - A clean energy strategy with milestones;
  - A path for additional stakeholder and community engagement; and
  - Discussion of how the company will comply with the requirements to provide 100% carbon free electricity to its Oregon retail customers by 2040.

Outreach and Engagement Update

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Clean Energy Plan Engagement Series

- Open to the public
- Focused deep diving into the details and intersectionality of clean energy planning with topics including:
  - Clean Energy Plan
  - Integrated Resource Plan (IRP)
  - Community Based Renewable Energy (CBRE)
  - Community Benefit Indicators (CBI)
  - Resiliency
  - Distribution System Planning (DSP)
  - Community Benefits + Impacts Advisory Group (CBIAG)

TIMING & TACTICS

1-4 pm PT Feb. 24 Kick Off

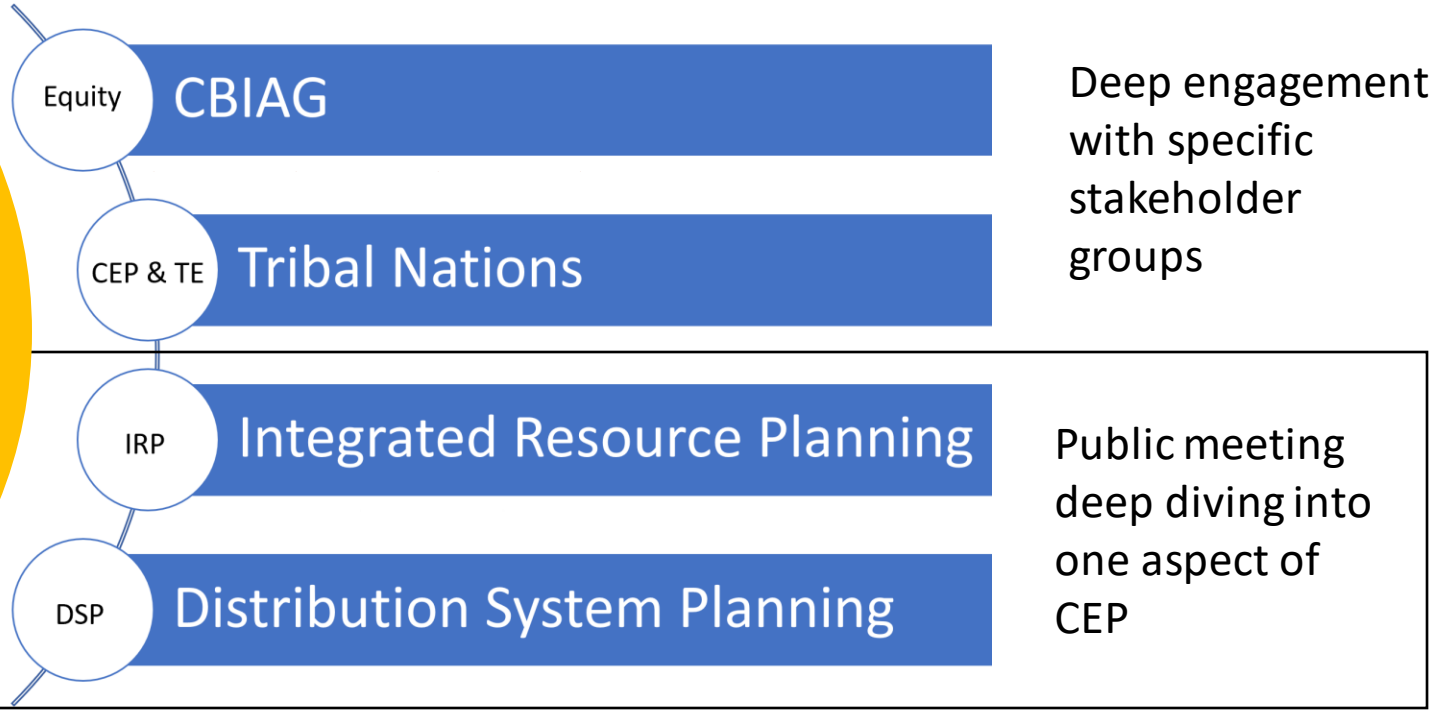
- 2023: Meetings every other month starting Feb
- Online and recorded for flexibility and accessibility
- Feedback will be tracked and shared online

External Engagement 2023

Transitioning to a clean energy future benefits from diverse stakeholder input

Clean Energy Plan (CEP) Engagement Series

- Open to the public
- Deep diving into all aspects of CEP



Deep engagement with specific stakeholder groups

Public meeting deep diving into one aspect of CEP

OREGON
COMMUNITY BENEFIT & IMPACT ADVISORY GROUP

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History of the Community Benefits and Impacts Advisory Group (CBIAG)

Oregon Clean Energy Plan and the Community Benefits and Impacts Advisory Group (CBIAG)

- Oregon passed HB 2021 in June 2021 requiring utilities to develop Clean Energy Plan to reduce emission levels
- Led to Company forming CBIAG
- DSP will engage the CBIAG for input related to equity issues (e.g., definition of Community Benefit Indicators, equity metrics for screening, suggested data sources, etc.)
- CBIAG replaced the Community Input Group (CIG) outlined in DSP Part 1

Community Benefit & Impact Advisory Group (CBIAG) Purpose:

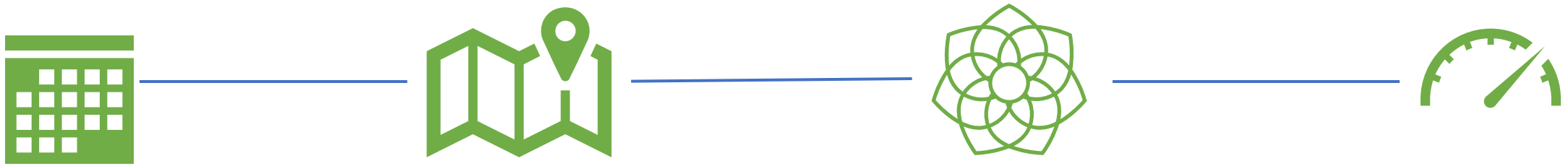
Focus on equity and a clean energy future in the state of Oregon in accordance with HB 2021.

PacifiCorp plans to continue seeking direct stakeholder feedback to build an inclusive and accessible process for consultation and collaboration. This includes:

- ✓ Increasing participation from communities that have not traditionally participated in utility planning processes.
- ✓ Providing the Company with a better understanding of community needs and perspectives.
- ✓ Identifying barriers to participation and input on how to address these barriers.
- ✓ Acting as a conduit to exchange information and ideas between the Company and stakeholder communities; and
- ✓ Assisting with community outreach.

Stakeholder Engagement is Just the Beginning

Pacific Power is taking the real and actionable learnings from other community engagement initiatives to set up this process for success



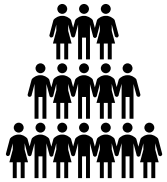
Stakeholder Meetings

Solidifying integrated stakeholder strategy and approach

Begin data work to develop equity lens across service area

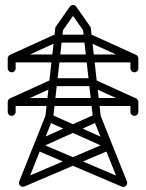
Develop an online information HUB

Elements of engagement



LOOKING AT CENSUS TRACT DATA FOR THE SERVICE AREA

COMMUNITY MAPPING: TRANSPORTATION ELECTRIFICATION



TARGETED SURVEY: DISTRIBUTION SYSTEM PLANNING

REGULAR SURVEYS: RESIDENTIAL

EQUITY GROUPS: OR Community Benefits & Impacts Advisory Group & WA Equity Advisory Group

Data & Resource

Stakeholder engagement filings

Customer and CBO Surveys

Transportation Electrification engagement

Regional Lens work

Community Benefit Indicators

CEP will be filed with PacifiCorp's 2023 Integrated Resource Plan in March of 2023

Will include one CBI for each of the following topic areas

Energy equity	Resiliency	Health and community well-being	Environmental impacts	Economic impacts

Each CBI will be characterized by one of these three categories:

Historic inequities are addressed	Informational CBI's	Community Based Renewable Energy (CBRE) focused CBI's

PacifiCorp is currently working to develop baseline metrics these CBIs

OREGON TRIBAL NATION ENGAGEMENT

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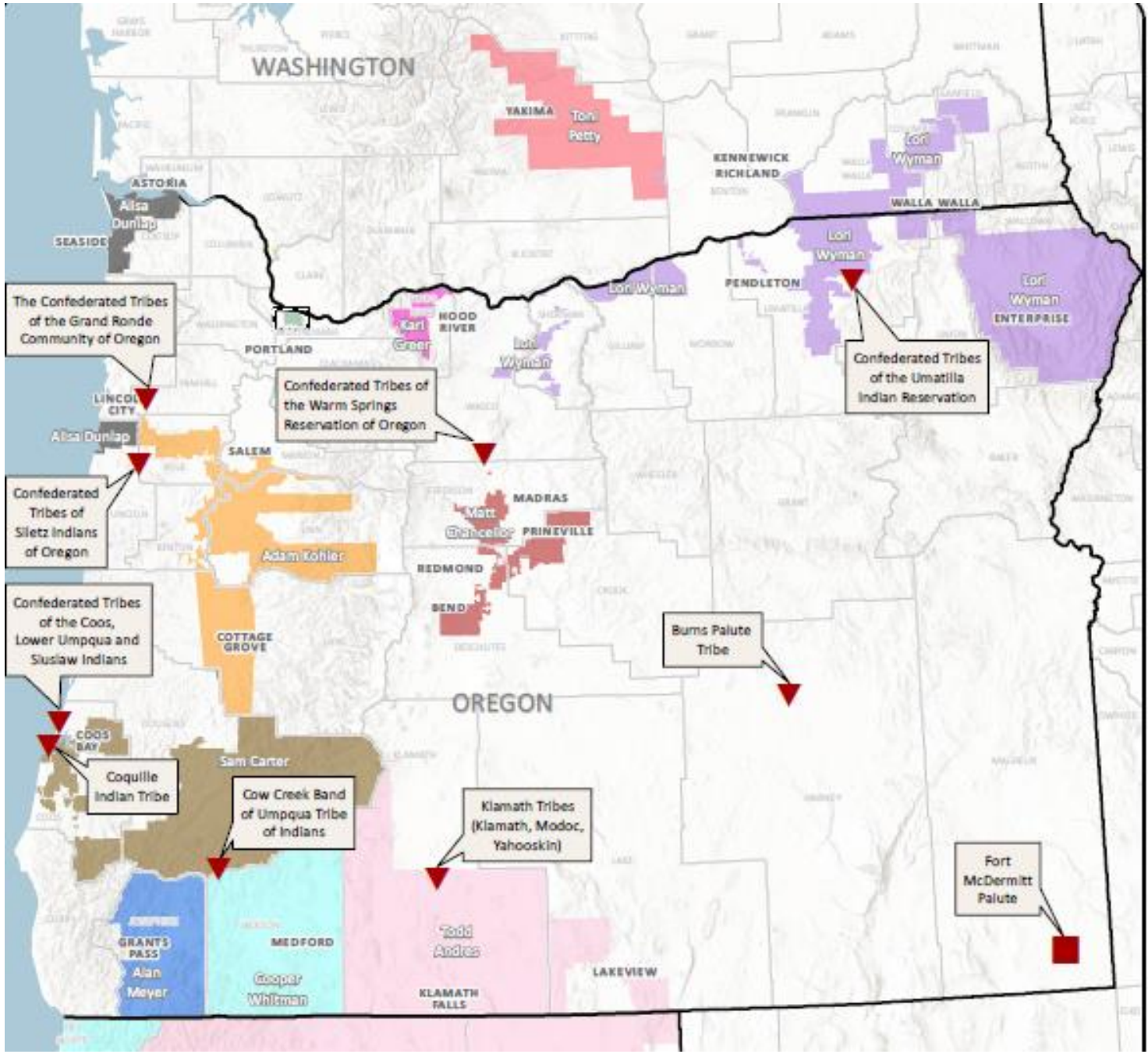
Existing Relationships

- Regional Business Managers
- Environmental (Consultations)
- Emergency Managers
- Regional Advisors
- Community-Based Organizations



JOIN US FOR THE NEXT MEETINGS

For more information:

Oregon Clean Energy Plan Updated Engagement Strategy

Engagement Strategy

Oregon Community Benefits and Impacts Advisory Group (pacificorp.com)

Email comments to:

ORCBIAG@pacificorp.com

Questions/Comments?

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In closing…

Next Steps:

- Finalize and communicate DSP study area selection
  - DSP mailing list communication next week
- Meeting recording and Spanish translation slide materials posted to DSP website next week
- 2023 study kick-off
  - Model validation and forecasting
- DSP local stakeholder meetings
- Targeting next statewide stakeholder meeting for Q3

Additional DSP Information

DSP Email / Distribution List Contact Information

- DSP@pacificorp.com

DSP Webpages

- Pacific Power Oregon DSP Website
- 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

Questions/Comments?

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Thank You!

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Appendix A: Circuit Analysis

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5L45 Selection Klamath Falls

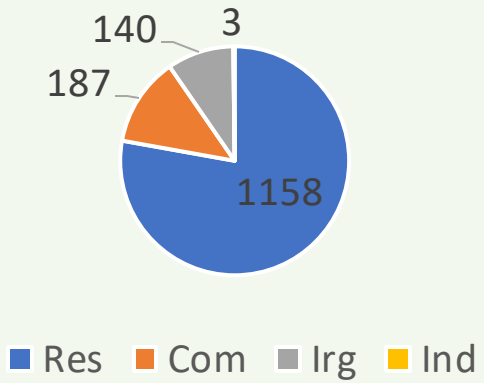
Criteria:

- High predicted amounts of DG
- Above average predicted EV growth
- High amount of Irrigation customers
- Moderately low reliability
- High data quality

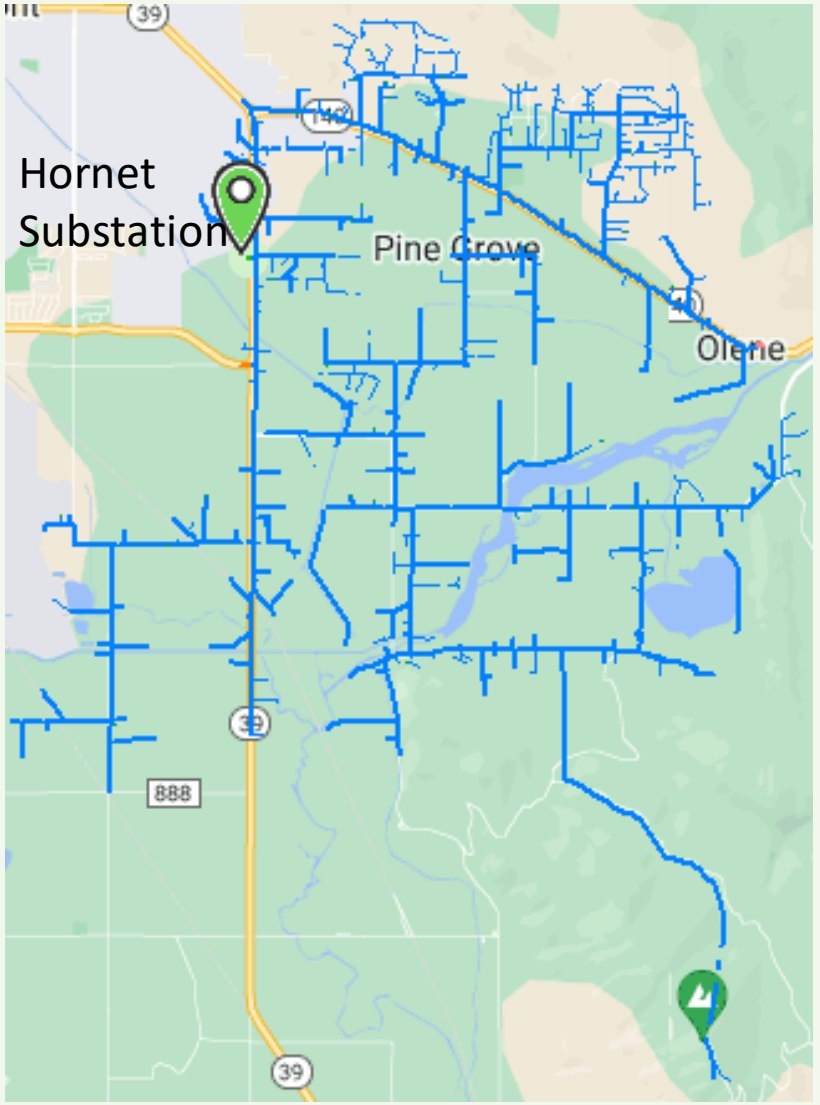
Additional Note:

- Follow up from previous pilot project stake holders

5L45 Customer count breakdown



Significant circuit changes: **No**



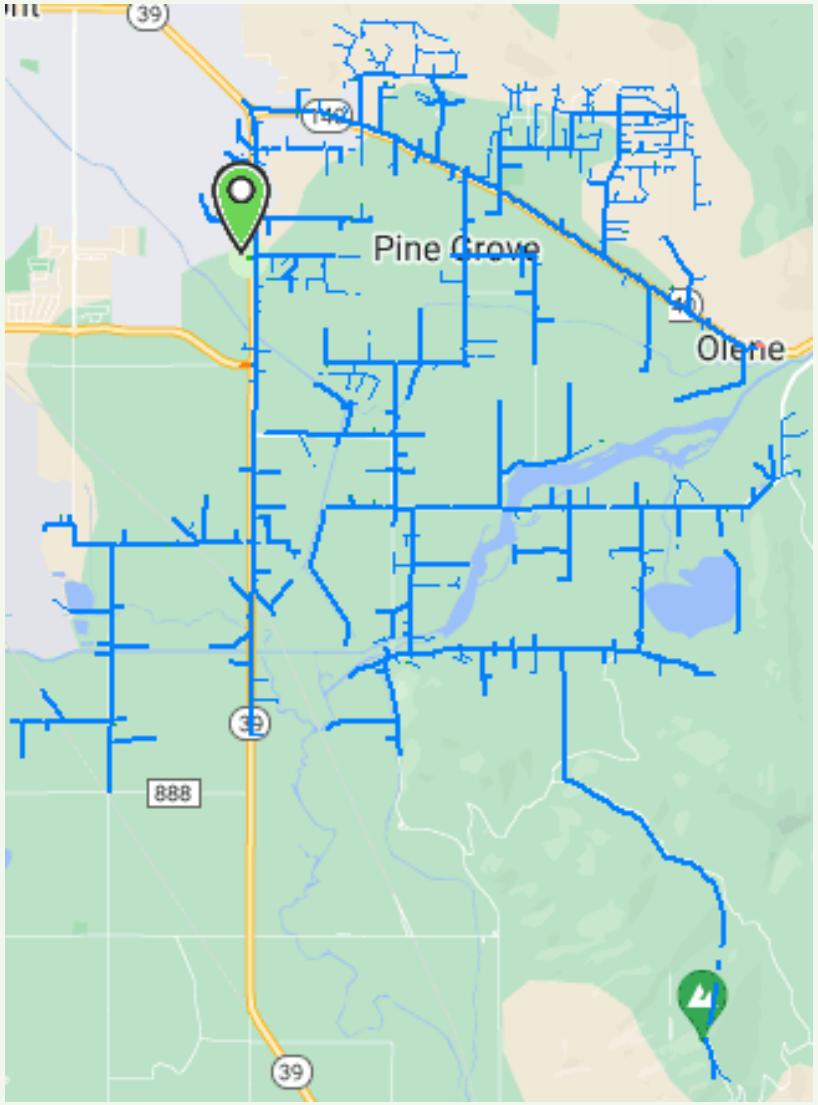
5L45 Analysis Results

	Summer	Winter
Growth Factor	2%	0%
Projected peak load	7.7 MVA	5.3 MVA
Substation Capacity	10.3 MVA	10.3MVA

Grid needs assessment:

- No needs identified

DSP study candidacy: Low



5L27 Selection – Klamath Falls Area

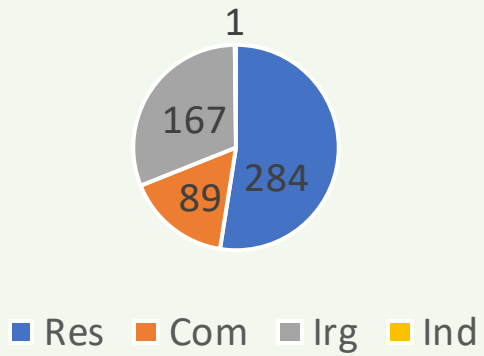
Criteria:

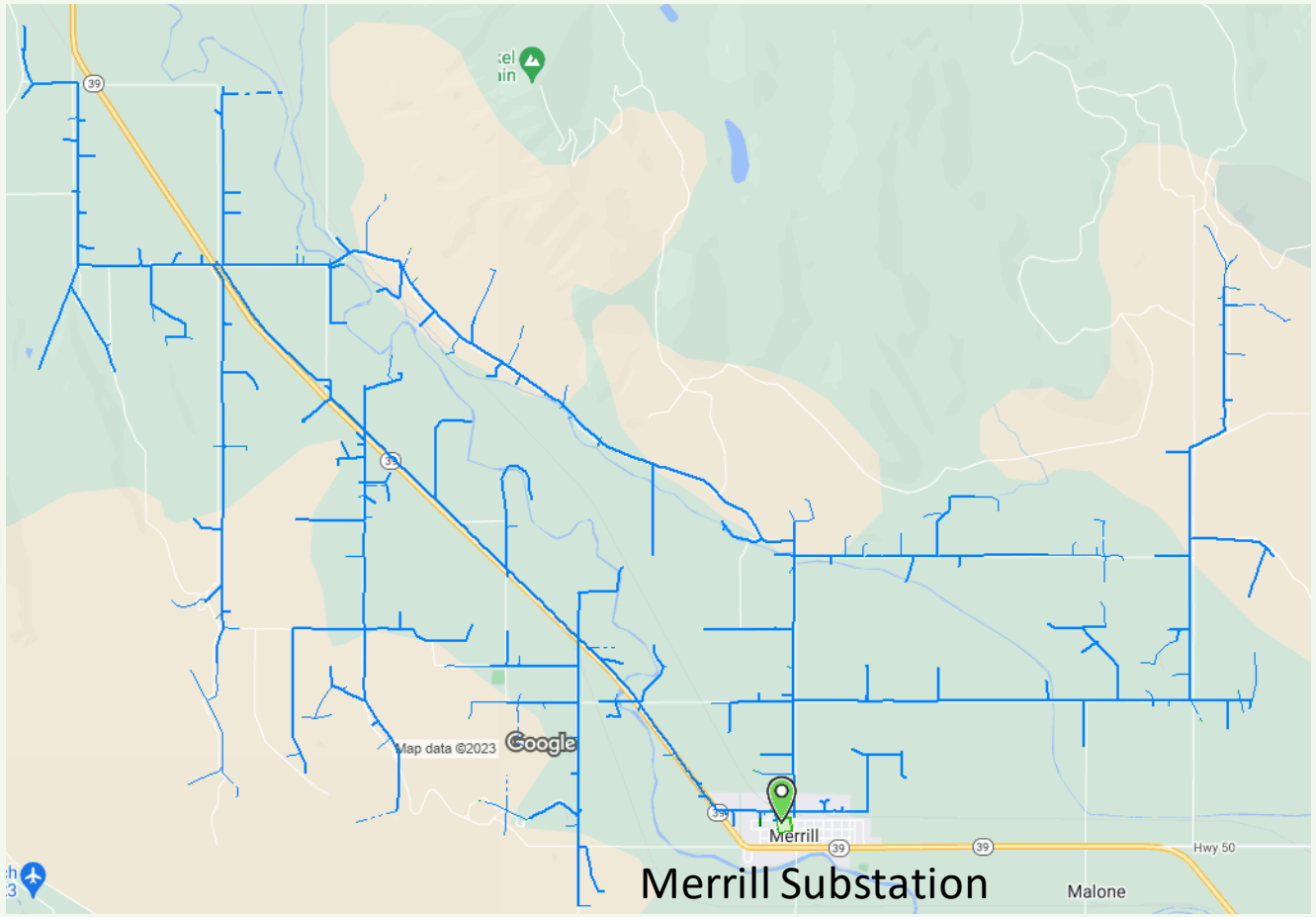
- Very large existing DG
- Moderately high predicted DG growth
- Very High amount of Irrigation customers
- Reverse power flow
- Very low median income (equity)

Additional Note:

- Follow up from previous pilot project stake holders

5L27 Customer count breakdown





Significant circuit changes: No

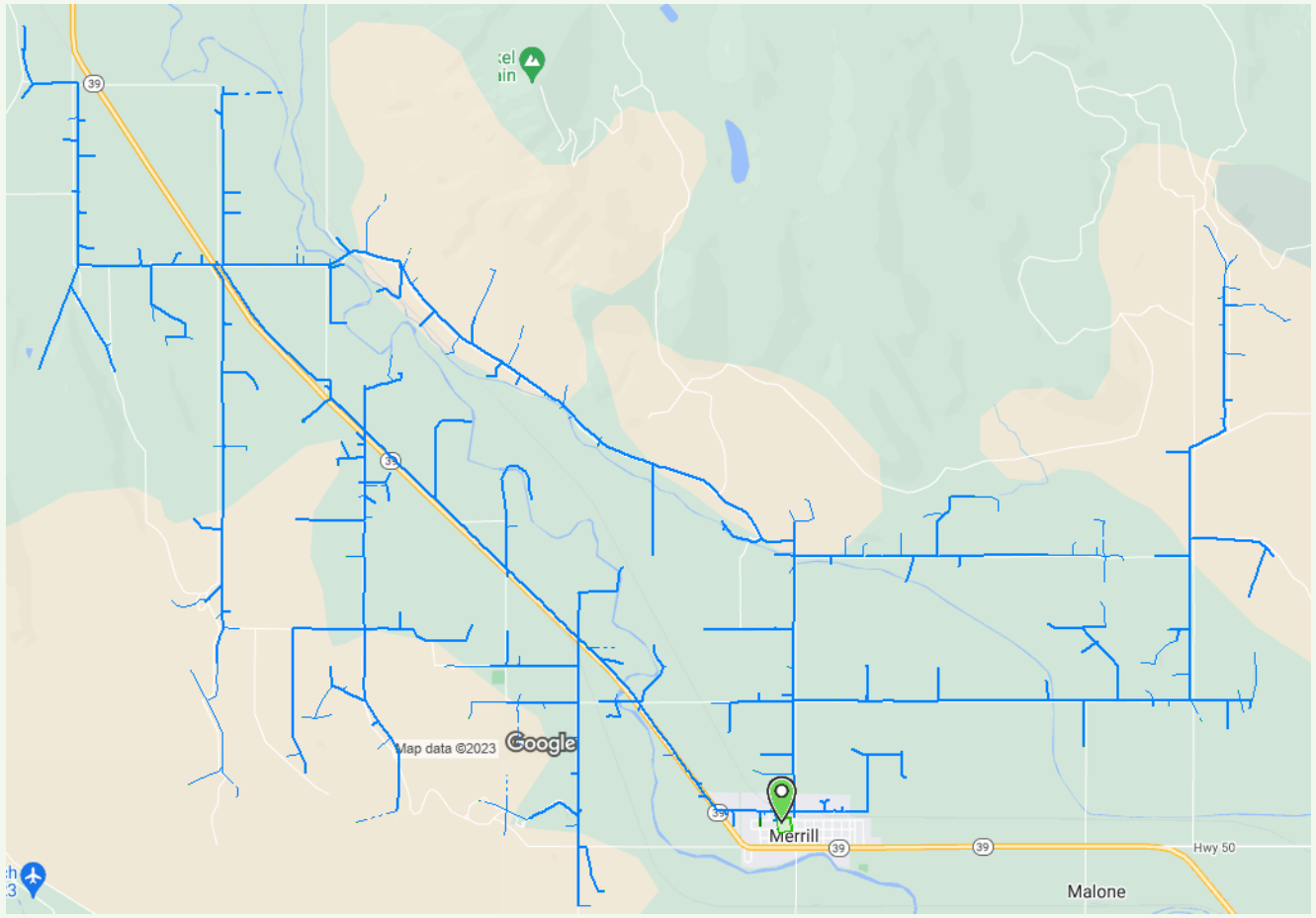
5L27 Analysis Results

	Summer	Winter
Growth Factor	1.8%	0%
Projected peak load	4.8 MVA	2.0 MVA
Substation Capacity	9.1 MVA	10.9 MVA

Grid needs assessment:

- No needs identified

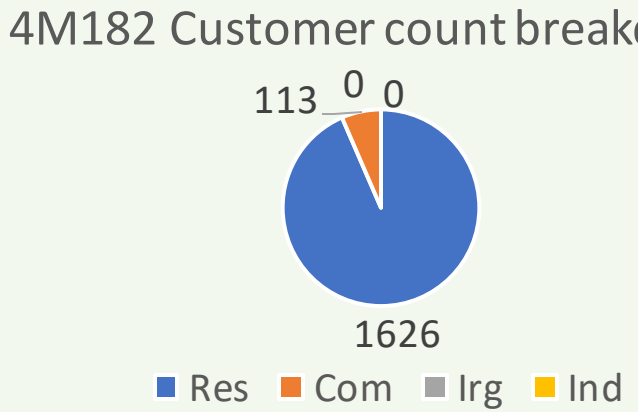
DSP study candidacy: Low

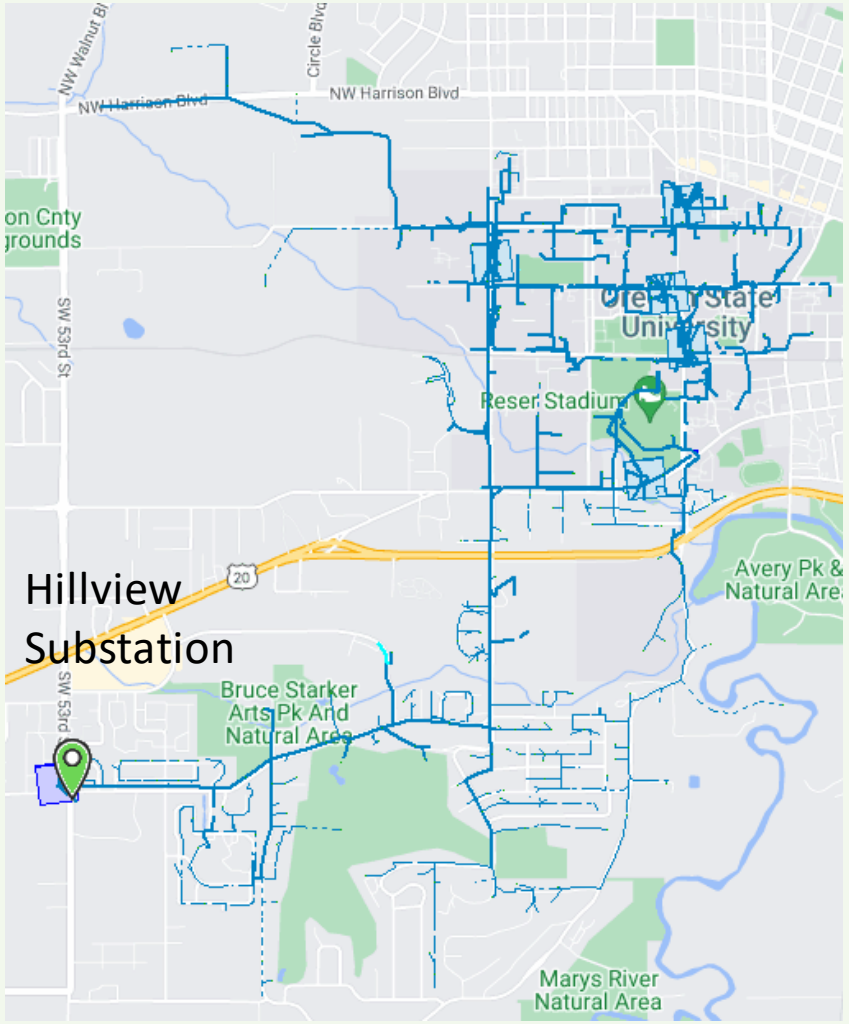


4M182 Selection - Corvallis

Criteria:

- High predicted EV growth
- Very large existing DG
- Moderately high predicted DG growth
- High percentage of home around federal poverty level (equity)





Significant circuit changes: Yes, New substation planned significantly affecting the circuit

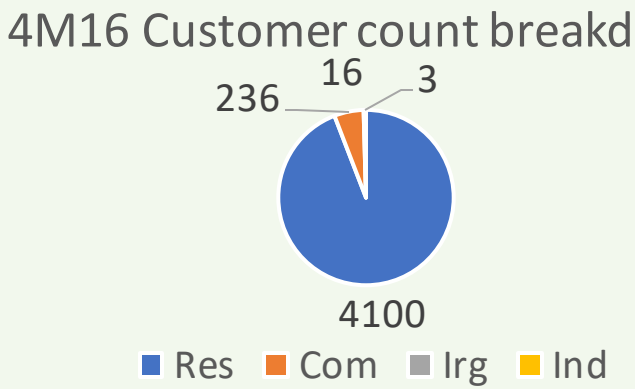
4M16 Selection - Albany

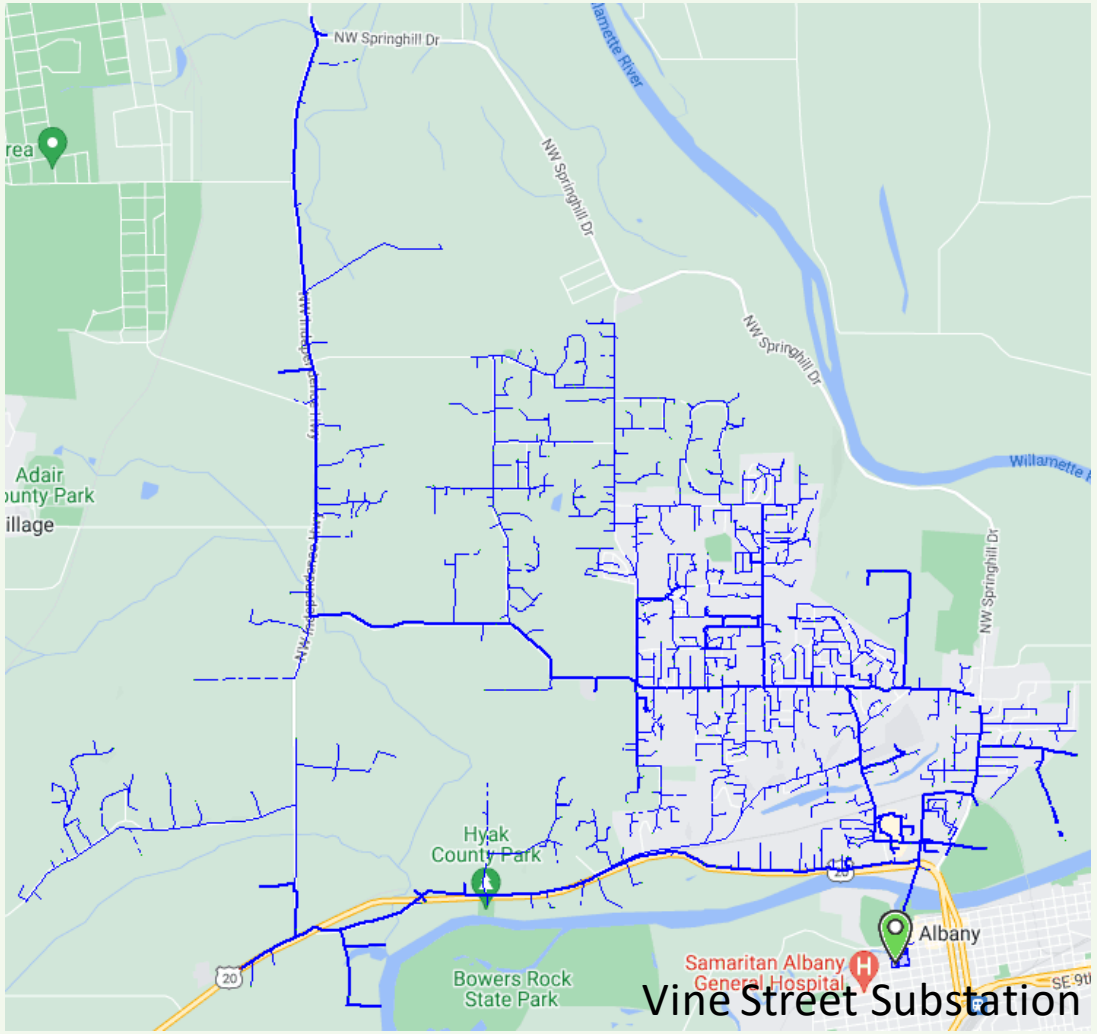
Criteria:

- Very high predicted DG growth
- High predicted EV growth
- No feeder SCADA
- Very high customer count

Additional Note:

- Highest coincident of predicted DG and EV growth





Significant circuit changes: Yes, New substation planned significantly affecting the circuit

4M15 Selection - Albany

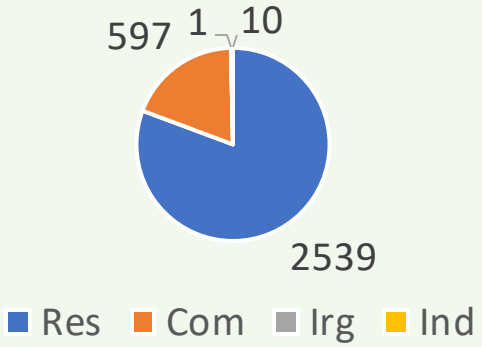
Criteria:

- High predicted EV growth
- Very low reliability
- No feeder SCADA
- Very low median income (equity)
- High customer count

Additional Note:

- Another potential circuit on the same substation

4M15 Customer count breakdown



Significant circuit changes: Yes, New substation planned significantly affecting the circuit

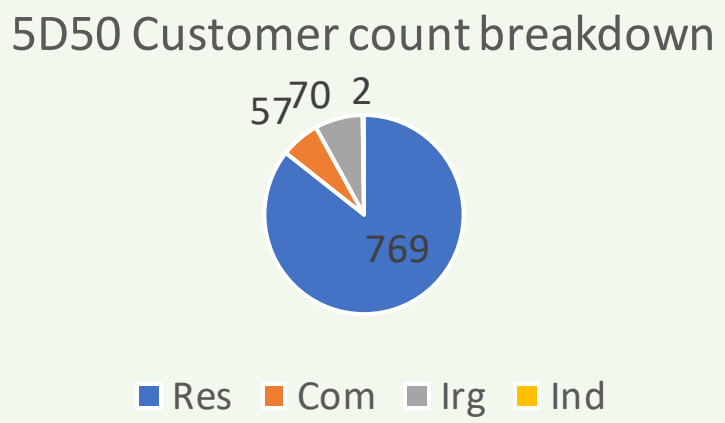
5D50 Selection

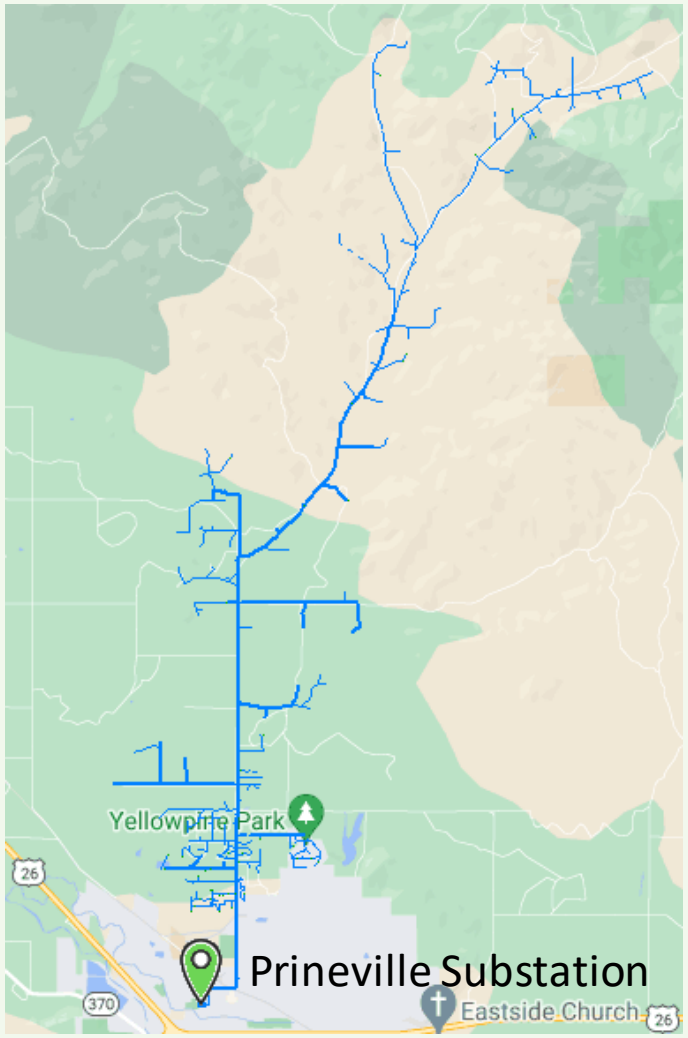
Criteria:

- Moderately high predicted DG growth
- High amount of Irrigation customers
- Very low reliability

Additional Note:

- Another potential circuit on the same substation

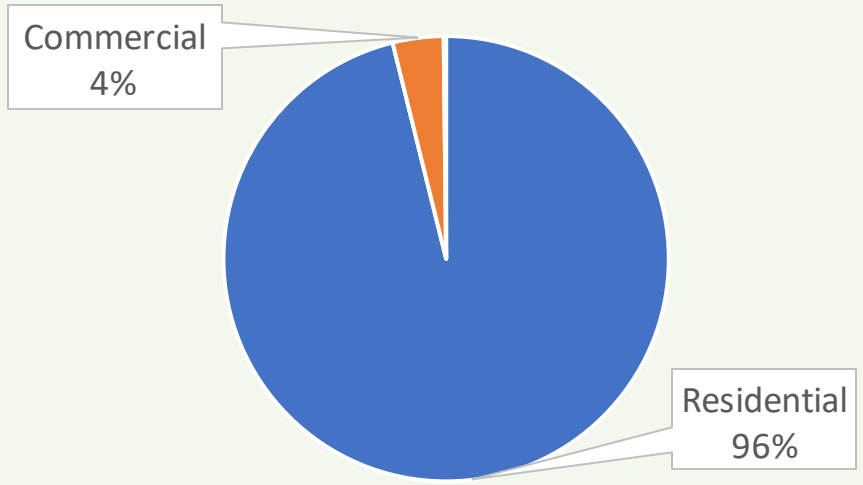




Significant circuit changes: Yes, large load transfers planned

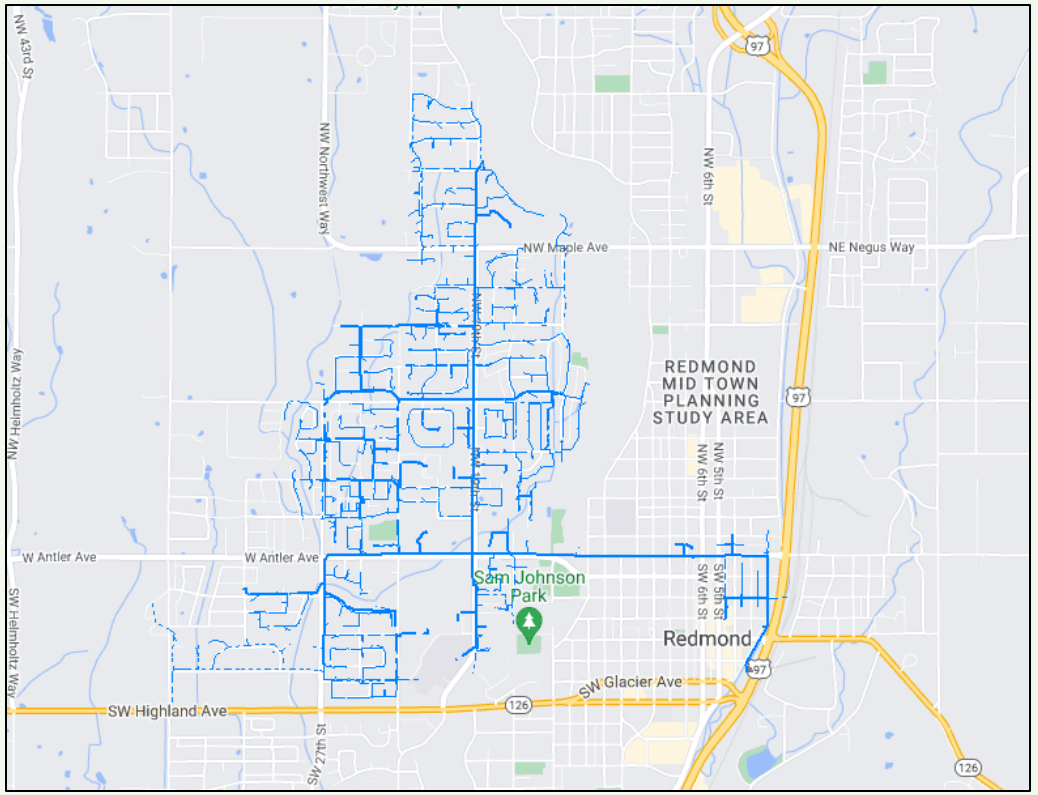
5D227 Summary – West Redmond

Customers	3,200
Median Income	$67,433
10-yr projected EV growth	858%
10-yr projected DG growth	7556%
Current Electric-source Heating	33.1%



Selection Criteria:

- High distributed generation growth predicted

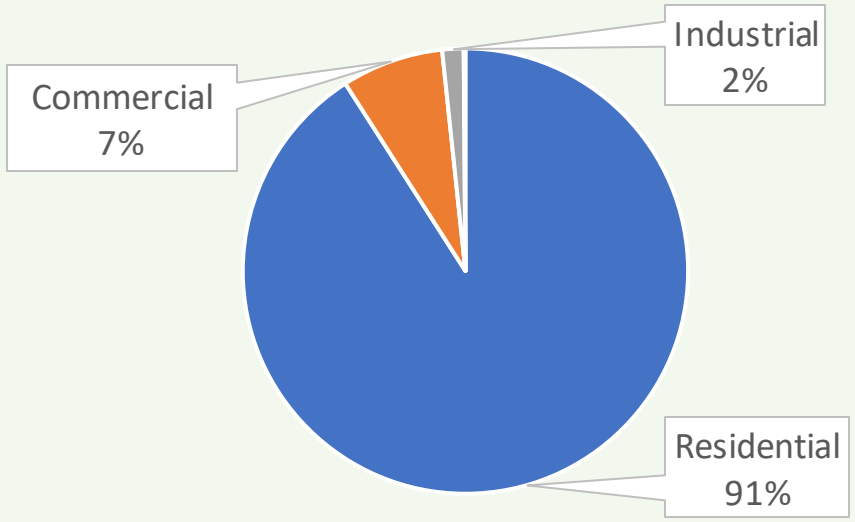


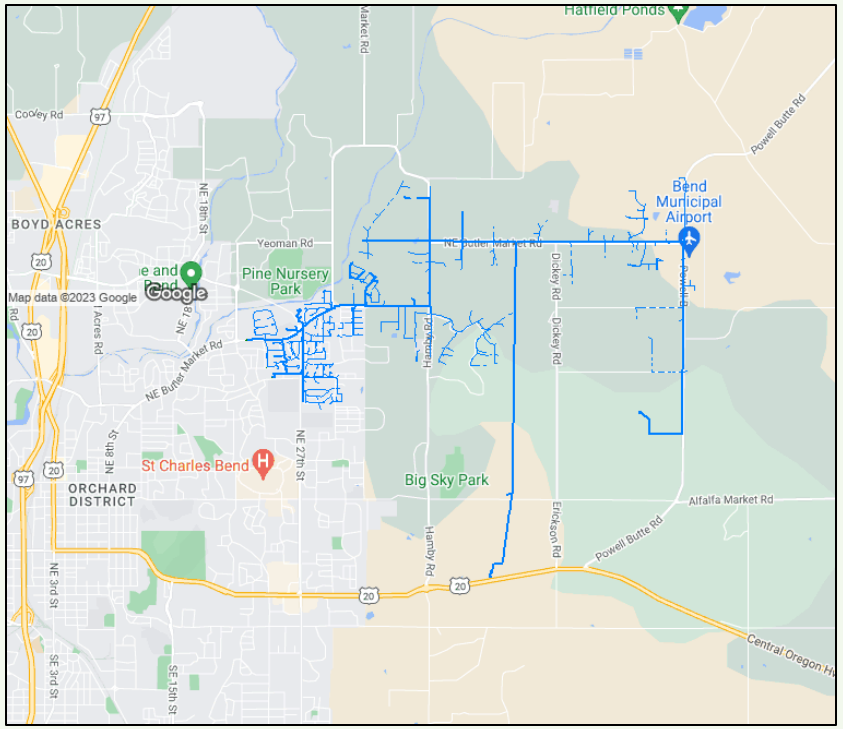
5D261 Summary – East Bend

Customers	1610
Median Income	$81,934
10-yr projected EV growth	858%
10-yr projected DG growth	130%

Selection Criteria:

- 10 MW Solar Farm creates reverse power flow during day
- High growth area





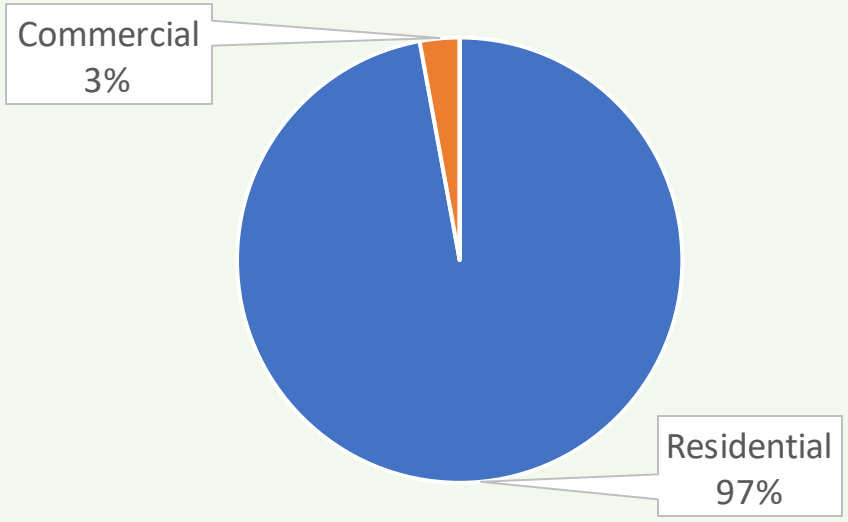
5D261 Analysis Results

	Summer	Winter
Projected Load Growth Rate	2.60%	1.50%
Current Peak Load (MW)	4.9	4.2
5 year projected peak load (MW)	5.8	4.6
10 year projected peak load (MW)	7.1	5.2
Operational Limit (MW)	13.4	11.5

- No grid needs identified

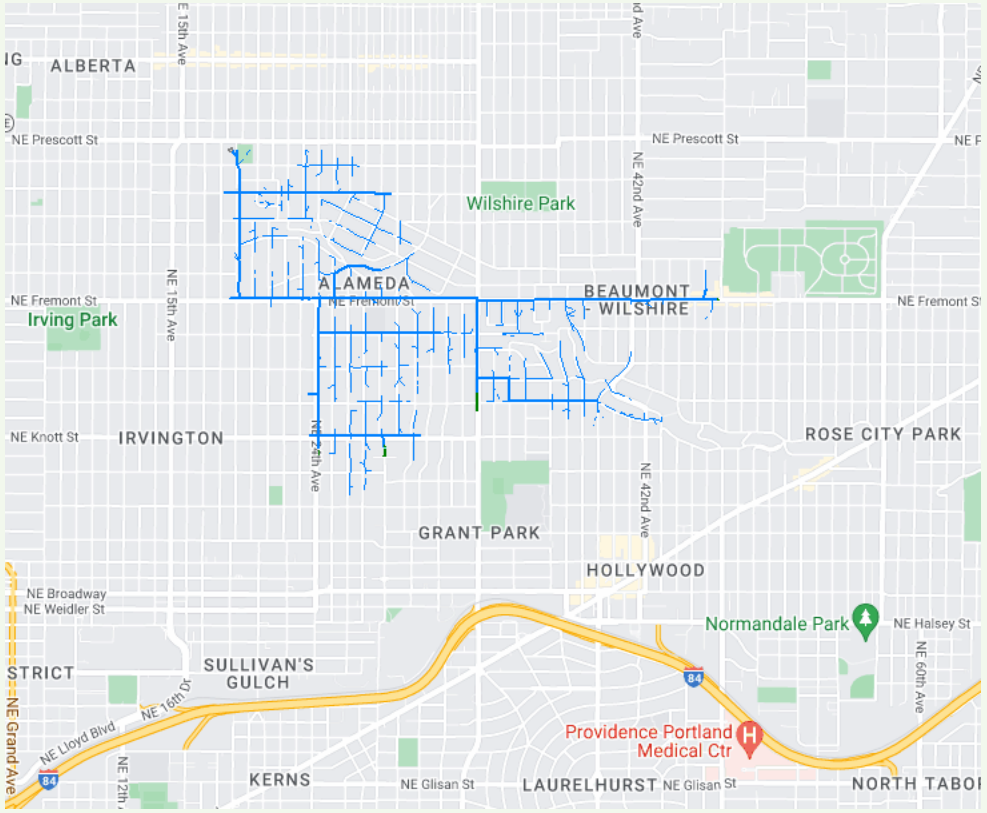
5P395 Summary - Portland

Customers	2256
Median Income	$137,675
10-yr projected EV growth	319%
10-yr projected DG growth	558%
Average Home Age	92 years



Selection Criteria:

- High EV growth predicted
- Older housing stock



5P395 Analysis Results

	Summer	Winter
Projected Load Growth Rate	1.6%	0%
Current Peak Load (MW)	8.9	6.2
5 year projected peak load (MW)	10	6.4
10 year projected peak load (MW)	11.8	6.8
Operational Limit (MW)	13	13

- No grid needs identified