



2025 Integrated Resource Plan Public-Input Meeting January 25, 2024



Purpose Statement



- The primary focus is the customer
 - Maximum transparency
 - Agnostic to technology
 - Cost driver
 - Reliability driver
 - The first pass, is the least cost, least risk limited by system constraints
 - The second pass, is the least cost, least risk limited by state constraints
 - No cost shifting for state compliance
- Multi-state Approach
 - Specific timing for milestones in six states
 - Stakeholder feedback is critical to improving the quality of the work product
 - Milestones will be delivered based on the most restrictive state timing
 - Meetings are scheduled at Lloyd Center Tower but locations may be revised as technology becomes available at other locations



2025 IRP Public Meeting Kickoff



Agenda



- Introductions
- Purpose Statement
- 2025 IRP Public Meeting Kick-off
- 2023 IRP Filing Update
- 2025 IRP Overview
- 2023 IRP Status and Update
- 2025 IRP
 - Conservation Potential Assessment Planning
 - Supply-Side Resource development
- Wrap-Up / Next Steps



2023 IRP Filing Update



2023 IRP Filing Update



Idaho Case No. PAC-E-23-10

- Stakeholder comments received on September 14, 2023.
- PacifiCorp reply comments submitted October 5, 2023

Oregon Docket LC 82

- CEP Update on October 18, 2023
- Round 1 stakeholder comments submitted October 25, 2023
- Round 1 Stakeholder reply comments submitted by PacifiCorp December 1, 2023
- Round 2 staff comments/recommendations due January 24, 2024
- Round 2 all parties comments on staff recommendations due February 21, 2024
- Acknowledgment Meeting April 18, 2024

Utah Docket 23-035-10

- Technical Conference October 24, 2023
- Stakeholder comments due December 12, 2023
- PacifiCorp reply comments due January 31, 2024
- Acknowledgement Order anticipated in May 2024

Washington Docket UE-230812: 2025 IRP and UE-210829: CEIP

- 2025 IRP Work Plan submitted December 29, 2023
- Approved and Adopted CEIP Settlement Agreement
- Filed CEIP Biennial Update on November 1, 2023

Wyoming Docket 20000-639-EA-23

- Stakeholder comments received September 1, 2023
- PacifiCorp reply comments submitted November 17, 2023

2023 IRP Stakeholder Comment Themes



- Impacts of the Suspension of the 2022 All-Source RFP
 - Action Plan
 - Reliability
- Modeling Assumptions
 - Reliability and Granularity Adjustments
 - CO₂ Price-policy
 - Coal-Fueled Generation Units and Gas Conversions
 - Federal and State Incentives
- Resource Selections
 - Nuclear Resources
 - Non-Emitting Peaking Resources
 - Collocated Resources
 - Geothermal
 - Transmission and Surplus Interconnection
- Regional Market Participation and Planning
- Timeliness and Stakeholder Engagement

2023 IRP Stakeholder Highlights



PacifiCorp has been engaged in the review of 2023 IRP Stakeholder Comments since filing with each respective regulatory Commission on May 31st, 2023



The Company has filed 2023 IRP stakeholder comment responses to following jurisdictions:

Idaho (Submitted 10/5/23)

Wyoming (Submitted 11/17/23)

Oregon (Submitted 12/1/23)

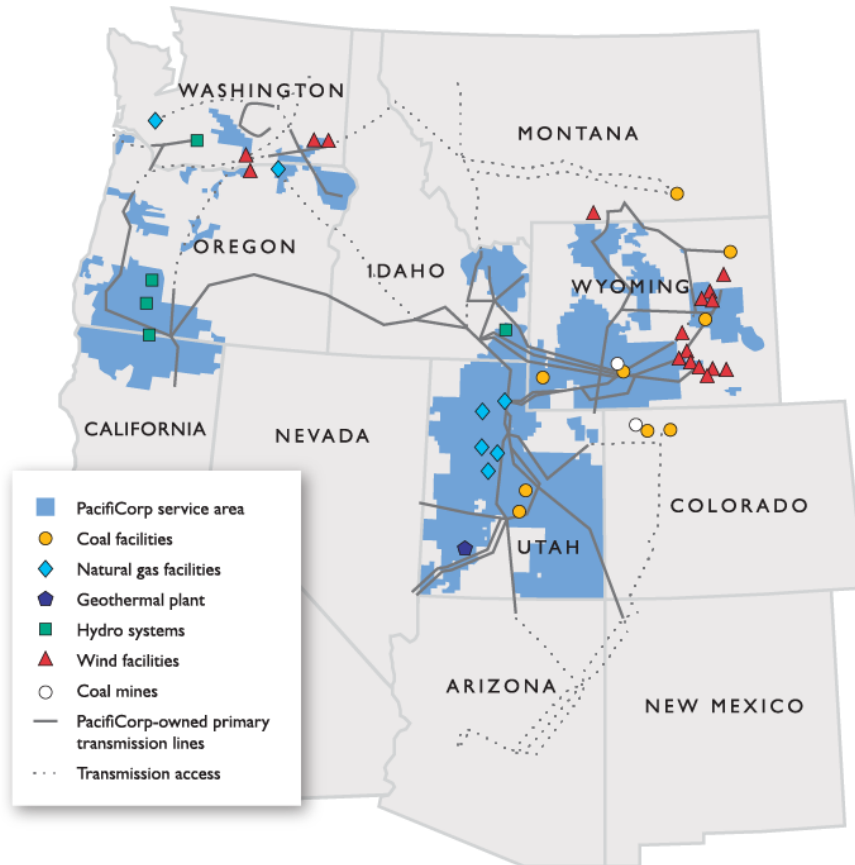
Utah (Due 1/31/24)



2025 IRP Overview



PacifiCorp Overview

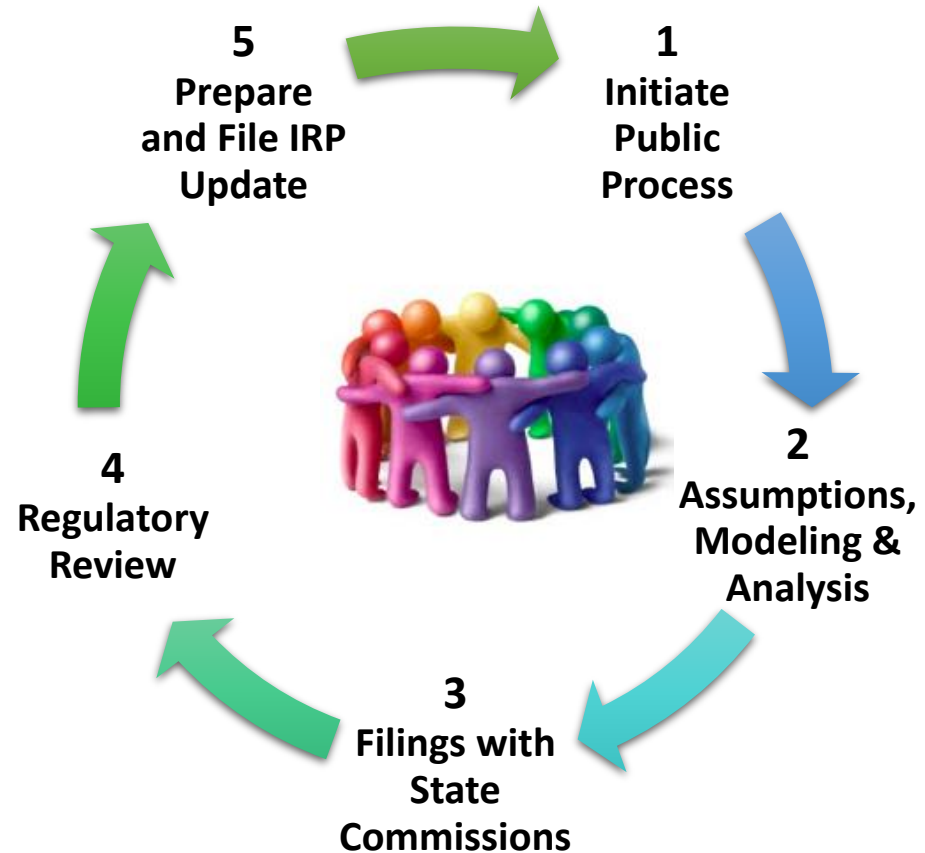


- PacifiCorp serves nearly 2 million customers across six states
- Rocky Mountain Power serves Utah, Idaho and Wyoming customers
- Pacific Power serves Oregon, Washington and California customers
- Extensive generation, transmission and distribution infrastructure across the west
- Large decarbonization efforts underway
- Extensive energy efficiency portfolio
- Long-term resource planning occurs in PacifiCorp's Integrated Resource Plan

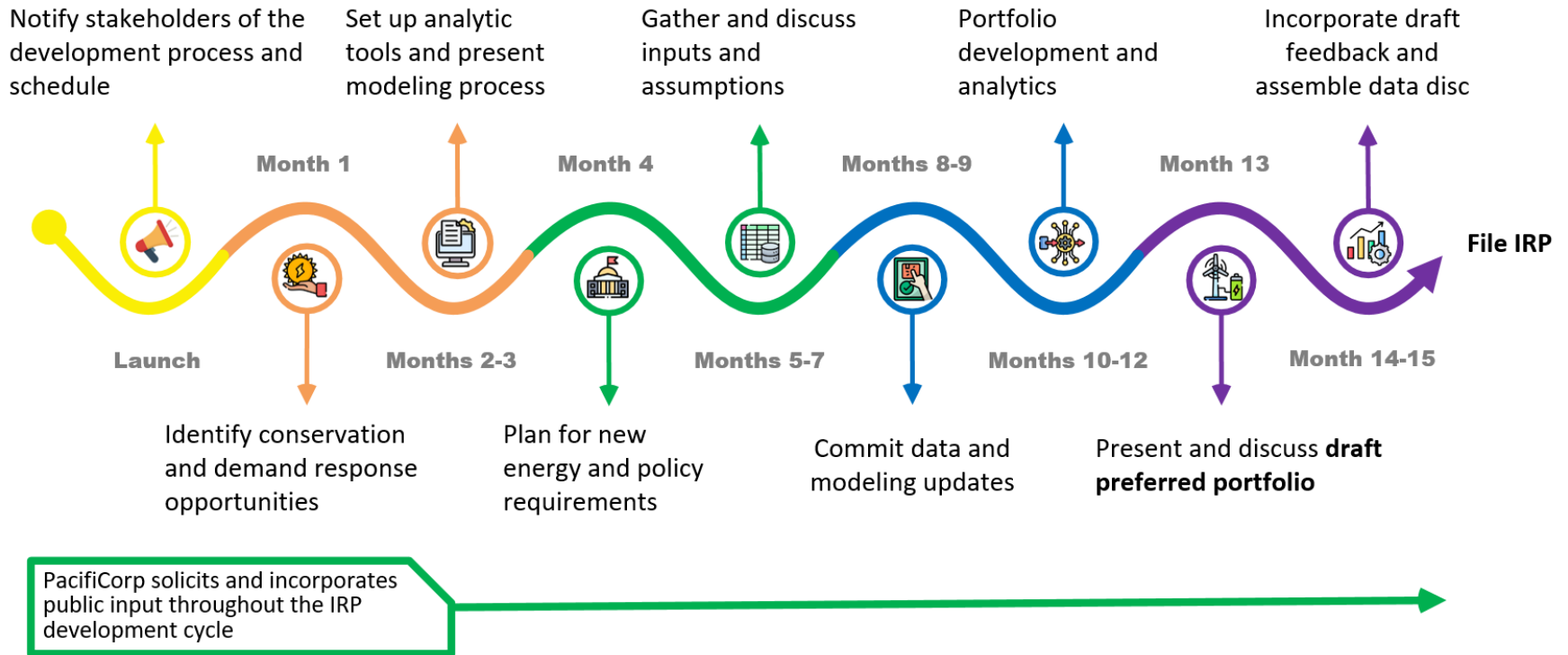


Regulatory Cycle

- PacifiCorp has been producing resource plans for over two decades (what, when, where, and how much)
- Costs and risks from our customers' perspective (six states with retail load)
- PacifiCorp operates its two balancing authority areas as a single system—planning aligns with this paradigm (one plan for all states)
- 20-year planning horizon
- Two-year cycle with updates in off years to highlight how changes in the planning environment affect the plan (limited scope)
- Developed with extensive stakeholder input and outreach
- Intensive data modeling and portfolio analysis



2025 IRP Cycle





2025 IRP Public Input Meeting Schedule

<i>2025 IRP Upcoming Public Input Meeting Date(s)-Calendar Year 2024^{1,2}</i>
Thursday, January 25, 2024 – General Public Input Meeting 1
Thursday, March 14, 2024 – General Public Input Meeting 2
Thursday, May 2, 2024 – General Public Input Meeting 3
Wed-Thurs June 26-27, 2024 – General Public Input Meeting 4
Wed-Thurs August 14-15, 2024 – General Public Input Meeting 5
Wed-Thurs September 25-26, 2024 – General Public Input Meeting 6
Wed-Thurs November 6-7, 2024 – General Public Input Meeting 7
Wed-Thurs December 18-19, 2024 – General Public Input Meeting 8
<u><i>Calendar Year 2025</i></u>
➤ January 1, 2025 - Distribution of the 2025 Draft IRP
Wed-Thurs January 22-23, 2025 – General Public Input Meeting 9
Wed-Thurs February 26-27, 2025 – General Public Input Meeting 10
➤ March 31, 2025 – Filing of the 2025 IRP

1. *Washington law accelerates the IRP draft and final filing by 3 months. Alignment for Washington has been achieved through approved parts of a waiver request. The CEIP schedule remains out-of-sync.*
2. *The Public Input Meeting schedule has been vetted by all state managers to avoid conflicts with State Commission schedules and known events affecting stakeholders.*



2023 IRP Status and Update

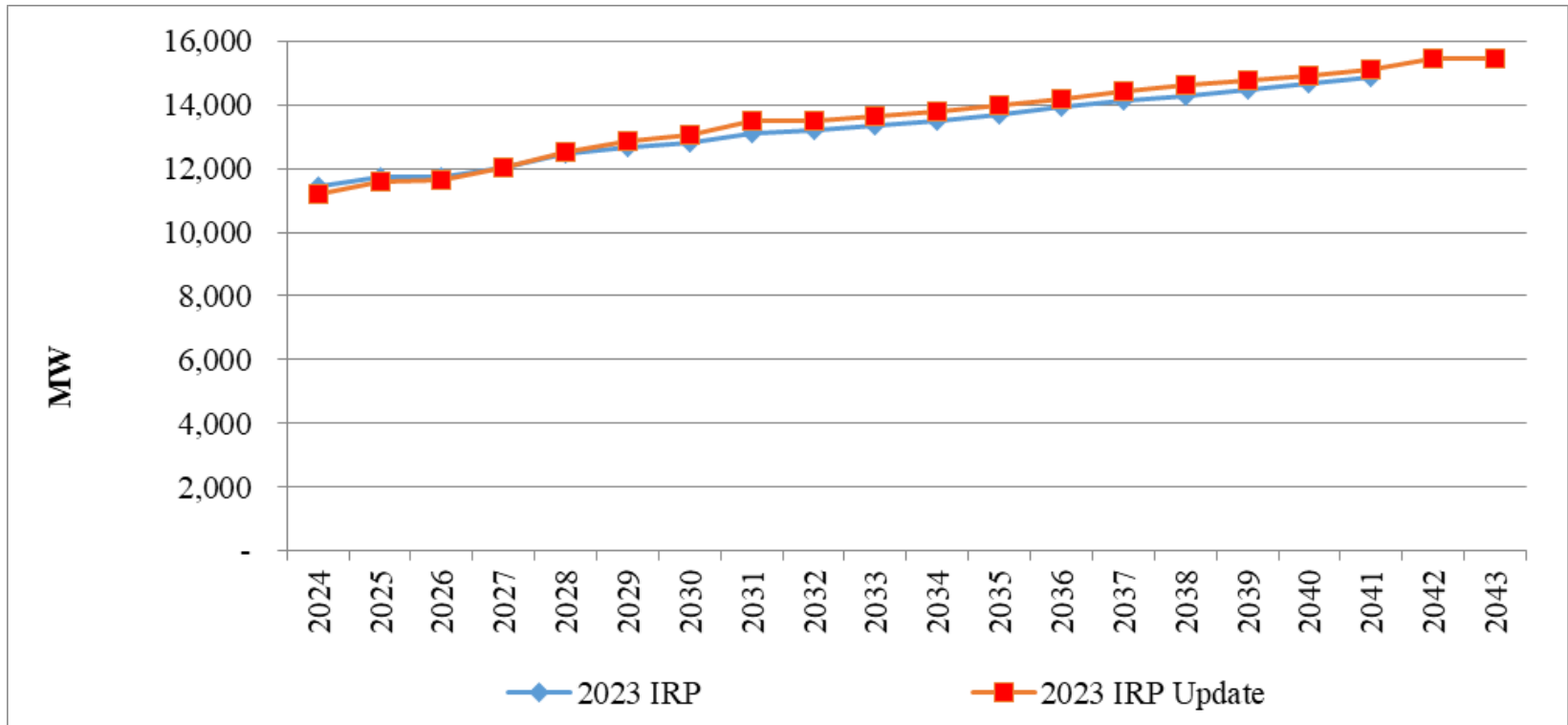


2023 IRP Update Timeline



- April 1, 2024 – The 2023 IRP Update published online and provided to all states, although only formally filed in certain states.
- January 31, 2024 – External draft published online and provided to all states. There is no requirement for an external draft, however PacifiCorp wants to provide ample opportunities for review and stakeholder feedback regarding assumptions in advance of filing.
- Current status – Assumptions have been in development since November-December; data development has been ongoing since the 2023 IRP filing. Preliminary PLEXOS model runs are being completed and tested.

2023 IRP Update Peak Forecast



- 2023 IRP Update forecast is on average 176 MW (1.2%) higher than the 2023 IRP across the planning horizon primarily due to large customer expectations

Resource Options and Considerations



- Through 2028, resource options are limited to known cluster study items
- Geothermal plants have been updated per stakeholder requests, and modeled in Central Oregon and Utah South
- Battery resources are allowed to be selected in any location without limit
 - This means battery items can be selected at existing thermal sites, or co-located with any new, proxy resource
 - Combined generation output at each location has known restrictions, applicable to batteries and generating resources, considered in modeling
- Thermal Plants are eligible to be retired any year after 2026



Conservation Potential Assessment Planning

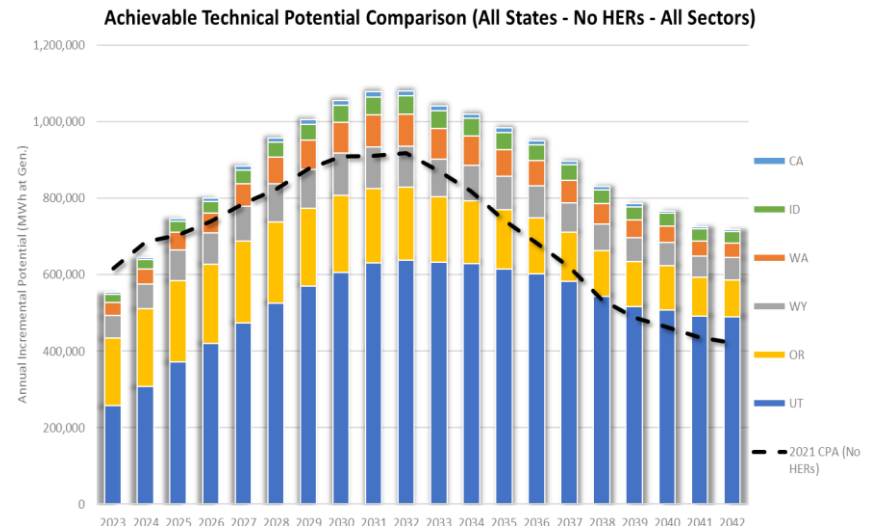


Conservation Potential Assessment



What is a Conservation Potential Assessment?

A conservation potential assessment (CPA) helps to determine resource potential on the demand side of the utility system. The study assesses costs and impacts of different energy efficiency measures, demand response programs, rate designs, and behavioral programs.



Why do we need to conduct a study?

The study informs the IRP of conservation resource potential at varying costs so that we can determine the optimal level of acquisition over time. The study also helps provide market intelligence to inform program design and planning for our programs.

New technology, codes and standards, market data, and policies warrant a refresh every two years in conjunction with the IRP.

2025 Conservation Potential Assessment



Contracting with Applied Energy Group (AEG) to conduct the 2025 CPA. Energy efficiency potential in Oregon is assessed by Energy Trust of Oregon for PacifiCorp.

Core 2025 Potential Study

- Task 1: Develop Potential Study Work Plan
- Task 2: Conduct Research to Develop Study Plan Inputs
- Task 3: Perform Analysis of Demand-Side Resource Potential
- Task 4: EE & DR Scenario and Sensitivity Analysis
- Task 5: Segmentation and Data Presentation
- Task 6: Stakeholder Support
- **Task 7: Load Shape Development**
 - *New for 2025 CPA*

General Draft Timeline – 2025 CPA



Description	2023		2024										2025				
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	
Task 1: Develop Final Work Plan																	
Kickoff Meetings	M	M															
Finalize Work Plan			D	F													
Tasks 2 and 3: Conduct Research and Estimate Potential																	
Develop Data Source Hierarchy			D	F													
PacifiCorp Data Request			F														
Market Segmentation and Characterization					D	F											
Develop Lists of Resources for All Classes			D	F													
Characterize Resources for All Classes																	
Estimate Potential for All Classes											D	F					
Incorporate Updated Load Forecast																	
Treatment of Resource Interactions																	
Task 4: Scenario and Sensitivity Analysis																	
EE Scenarios													D	F			
DR Scenarios													D	F			
Task 5: Segmentation and Data Presentation																	
IRP Supply Curves & Load Forecast Adjustments											D	F					
Measure Summary Database (Class 2)												D	F				
Draft and Final Report, Additional Documentation													D	F			
Task 6: Stakeholder Support																	
Update Meetings/Training Sessions				M				M					M				M
Task 7: Load Shape Development																	
Shape Development/Modeling					D	F											

AEG/PacifiCorp Work (M = Meeting)
Draft Deliverable (D)
Final Deliverable (F)

Task 2: Conduct Research – 2025 CPA



Establish a comprehensive and validated data foundation for PacifiCorp's six state service area.

PacifiCorp Data:

- Customer surveys, historical customers and sales, billing data, forecasted customers and sales, economic assumptions, DSM program costs (incentive and non-incentive)

Measure Data using State-Specific Source Hierarchy:

- PacifiCorp data, regional sources like RBSA/CBSA, RTF data, LED cost and efficacy projections, emerging technologies, demand response options, non-energy impacts
- Special treatment of Emerging Technologies (also soliciting stakeholder input)

Federal and State Codes and Standards

- Includes state codes and standards WSEC 2021

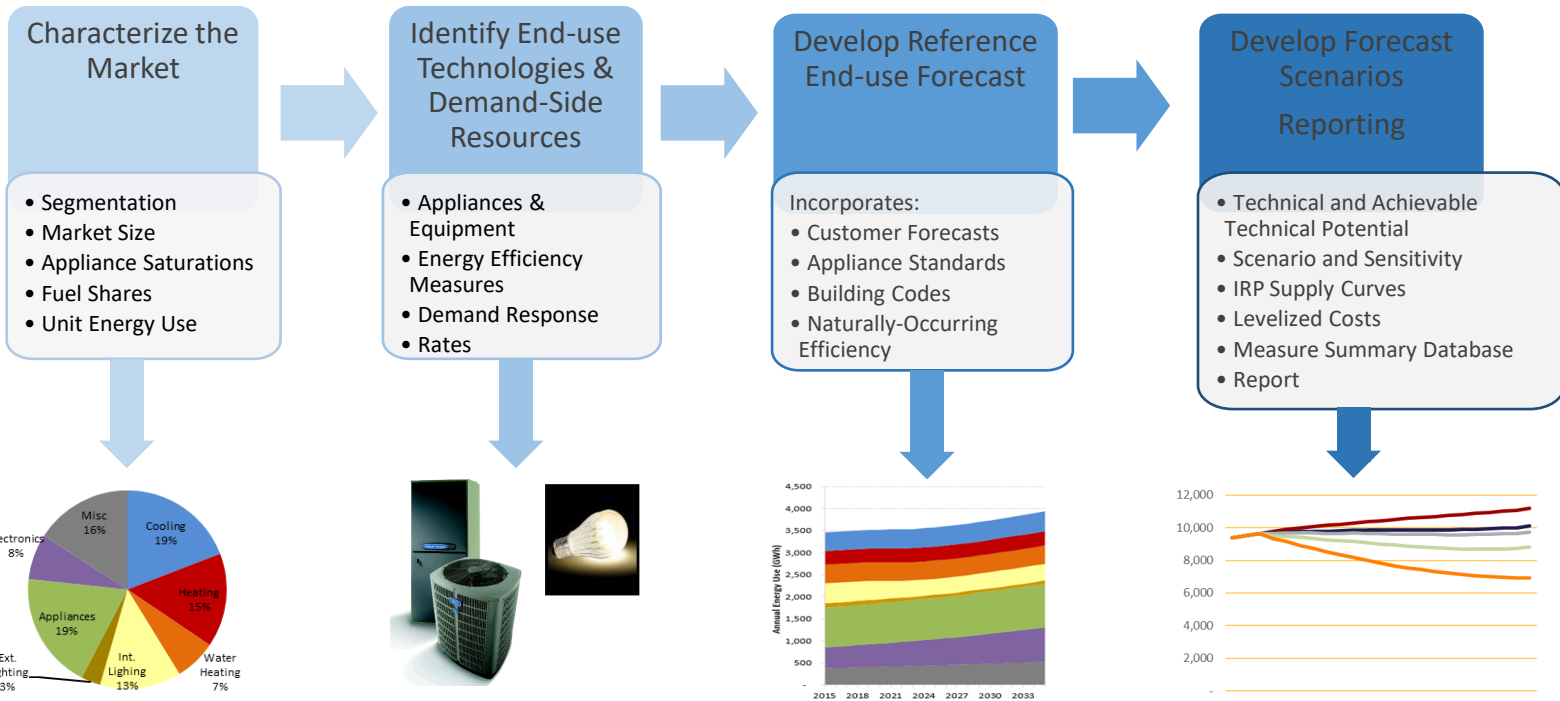
Energy Efficiency Considerations:

- Administrative Costs & Incentive Assumptions
- Impacts of IRA and other federal funds
- Emerging Technologies
- Baseline Energy Consumption and Savings for Simulated Measures
- Non-Energy Impacts

Demand Response Considerations:

- Incorporating new PacifiCorp Data
- Non-Energy Impacts

Task 3: Potential Estimation Methodology – 2025 CPA



Task 4: EE and DR Scenario and Sensitivity Analysis



Ability to develop appropriate scenarios

- AEG's model allows for insight into EE potential **and** customized scenario analysis around inputs
- Budget to develop up to two (2) distinct energy efficiency DSM potential scenarios; may reflect changes in:
 - Load Forecasts
 - Weather
 - EE market adoption rates
 - Measure or program costs
 - Other factors that may affect resource potential/cost
- Develop up to two (2) distinct demand response potential scenarios
 - Develop assumptions for program costs, participation, and impacts

Task 5/6: Reporting/Stakeholder Support



Energy Efficiency DSM Database

- Contains all key measure inputs and outputs from potential modeling
- Public-facing version will be made available in stakeholder process

Summary Report

- Draft report in November/December 2024; final report in late January 2025

Load Shape Development

- Overview of created shapes by state, sector, market segment, and major end use.

Stakeholder Engagement

- Multiple IPR Public Input meetings to gather feedback and present on scope, workplan, key assumptions, and results.
- Posting of reports and supporting materials for review.

Task 7: Load Shape Development

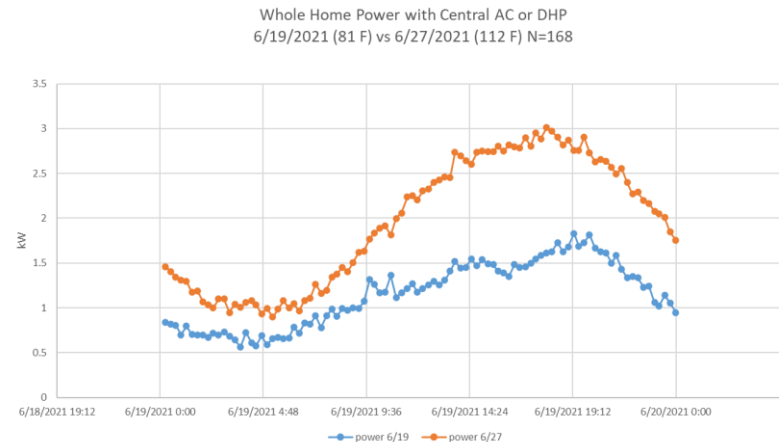


PacifiCorp has requested an update of its load shape library to reflect new studies and data sources.

- National Renewable Energy Laboratory ResStock and ComStock
- Northwest End-Use Load Research Study
- Regional Technical Forum
- PacifiCorp Load Research
- AEG's Building Energy Simulation Tool – *front-end DOE 2.2 building simulation engine*

Load shapes to be developed for each state, sector, market segment, and major end use considered in the study

- Where possible, load shapes will be differentiated for each state served using representative locations or weather stations near the largest concentration of PacifiCorp customers by state





Supply-Side Resource Development



Supply-Side Resource Development

Publicly available reference examples

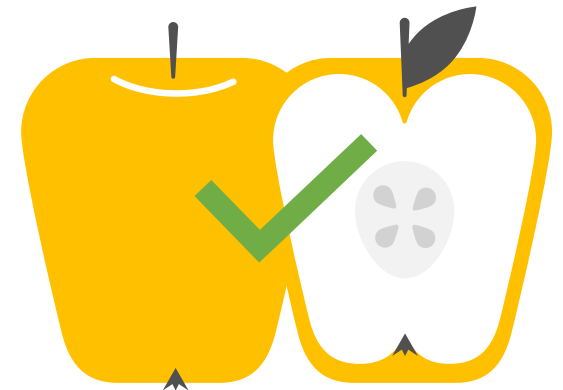
- NREL Annual Technology Baseline (ATB)
- Lazard
- IEA

Consultant Studies

- Energy storage other than lithium ion
- Hydrogen powered generators
- Coal conversion to natural gas
- Advanced Nuclear
- Geothermal?

Developers / OEM's

- Geothermal and/or CAES?



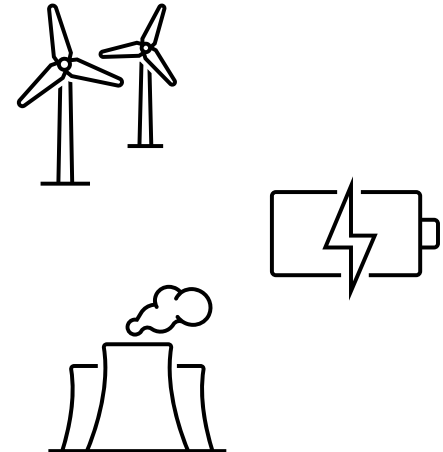
Supply-Side Resource Development

Technologies being considered for inclusion

- Wind: on-shore and off-shore
- Solar
- Energy Storage: lithium ion, iron-air, CAES, gravity
- Geothermal
- Hydrogen powered generators
- Carbon capture for coal and gas
- Nuclear

Proxy assumptions for all resources

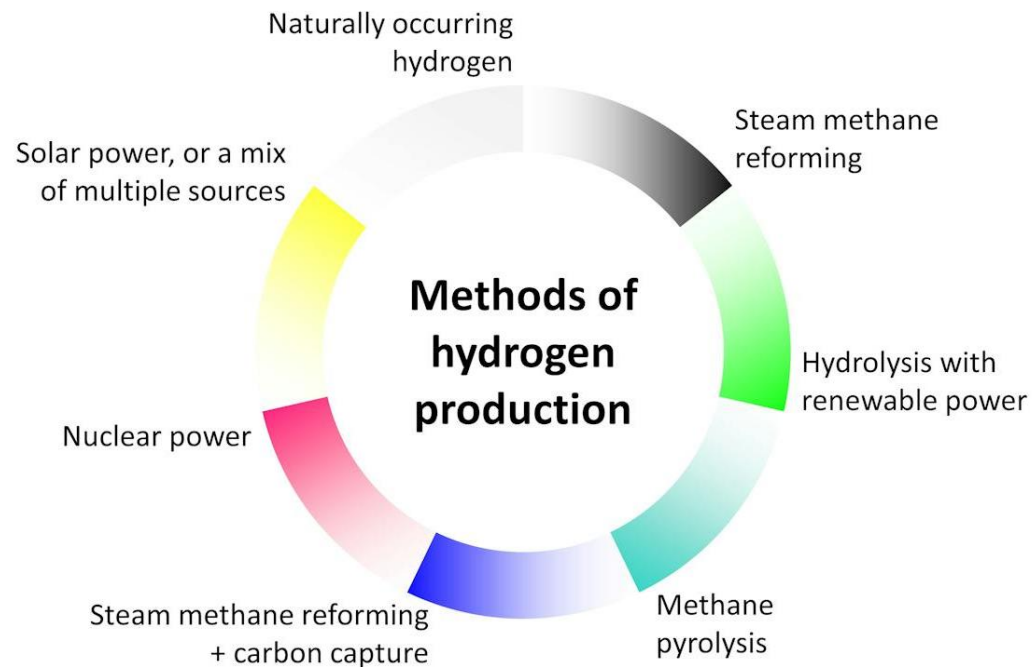
- Locations may be limited appropriately



Supply-Side Resource Development

Hydrogen powered generators

- Technology: gas turbines, fuel cells, reciprocating engines?
- 100% Hydrogen Capable
- Renewable Hydrogen Supply
 - Pipeline, market forecast cost
 - Electrolysis with liquid storage, or compressed gas storage
 - Hydrogen storage capacity: 4 hours? 100 hours?



Explainer: the many shades of hydrogen, [Liang Lei](https://www.eco-business.com/news/explainer-the-many-shades-of-hydrogen/)
<https://www.eco-business.com/news/explainer-the-many-shades-of-hydrogen/>

Stakeholder Feedback Form Update



- 1 stakeholder feedback form submitted to date
- Stakeholder feedback forms and responses can be located at:
pacificorp.com/energy/integrated-resource-plan/comments
- Depending on the type and complexity of the stakeholder feedback, responses may be provided in a variety of ways including, but not limited to, a written response, a follow-up conversation, or incorporation into subsequent public-input meeting material
 - Generally, written responses are provided with the form and posted online at the link mentioned above



Wrap-Up/Additional Information



Additional Information



- 2025 IRP Upcoming Public Input Meetings:
 - March 14, 2024 (Thursday)
 - May 2, 2024 (Thursday)
- Public Input Meeting and Workshop Presentation and Materials:
 - pacificorp.com/energy/integrated-resource-plan/public-input-process
- 2025 IRP Stakeholder Feedback Forms:
 - pacificorp.com/energy/integrated-resource-plan/comments
- IRP Email / Distribution List Contact Information:
 - IRP@PacifiCorp.com
- IRP Support and Studies:
 - pacificorp.com/energy/integrated-resource-plan/support

Appendix A - 2025 IRP Public Input Meeting Anticipated Topics



Milestone	Date	Proposed Topics
Public Input Meeting 1	January 25, 2024	<ul style="list-style-type: none"> • 2025 IRP Public Meeting Kick-off • 2023 IRP Update / 2025 IRP Overview • Conservation Potential Assessment Planning • Supply-Side Resource development
Public Input Meeting 2	March 14, 2024	<ul style="list-style-type: none"> • Conservation Potential Assessment • Planning Environment Update • Modeling Overview • 2023 IRP Update filed
Public Input Meeting 3	May 2, 2024	<ul style="list-style-type: none"> • Conservation Potential Assessment • Climate • Transmission modeling strategy • RFP Update(s) • March price update
Public Input Meeting 4	June 26-27, 2024	<ul style="list-style-type: none"> • Greenhouse Gas and Renewable Portfolio Standards • State Policy Update • Load Development • Interconnection Options <ul style="list-style-type: none"> ◦ Contract expirations ◦ Queue resources ◦ Cluster study • SSR Alternative Fuels • 2023 IRP Status Update
Public Input Meeting 5	August 14-15, 2024	<ul style="list-style-type: none"> • Introductions • Draft Load Forecast Update • Draft Private Generation Study • Draft Distribution System Planning • Renewable Portfolio Standards • Supply Side Resource Table Offshore Wind

Public Input Meeting 6	September 25-26, 2024	<ul style="list-style-type: none"> • Existing Thermal Resource Options • Qualifying Facility Renewal • Transmission Modeling • Market and CO2 Price Forecasting • Hydro Forecast • Customer Preference • Conservation Potential Assessment Draft Results • Generation Transition, Equity and Justice • Market Reliance Assessment • State Updates
Public Input Meeting 7	November 6-7, 2024	<ul style="list-style-type: none"> • Coal and gas modeling options • Regional Haze Update • Load Forecast (Final) • Transmission Option Modeling • Modeling: <ul style="list-style-type: none"> ◦ Reliability assessment ◦ Stochastics ◦ Portfolio Development • Sensitivities and Variants
Public Input Meeting 8	December 18-19, 2024	<ul style="list-style-type: none"> • Conservation Potential Assessment (Final) • MSP Status, State Allocation • DSM Bundling Portfolio Methodology (Final) • Transmission Options • Renewable Resource Shapes Update • Distributed Resource Planning Update • State Policy Update
Draft IRP Filed	January 1, 2025	• Draft IRP document filing date
Public Input Meeting 9	January 22-23, 2025	Stakeholder Topics
Public Input Meeting 10	February 26-27, 2025	<ul style="list-style-type: none"> • Portfolio Development • Stochastics Update • Granularity Adjustment Results • Multi-State/Process/Nodal/Pricing • Model/Extended/Day-Ahead Market Update
IRP Filed	March 31, 2025	• IRP document filing date