



UM 1824 Update

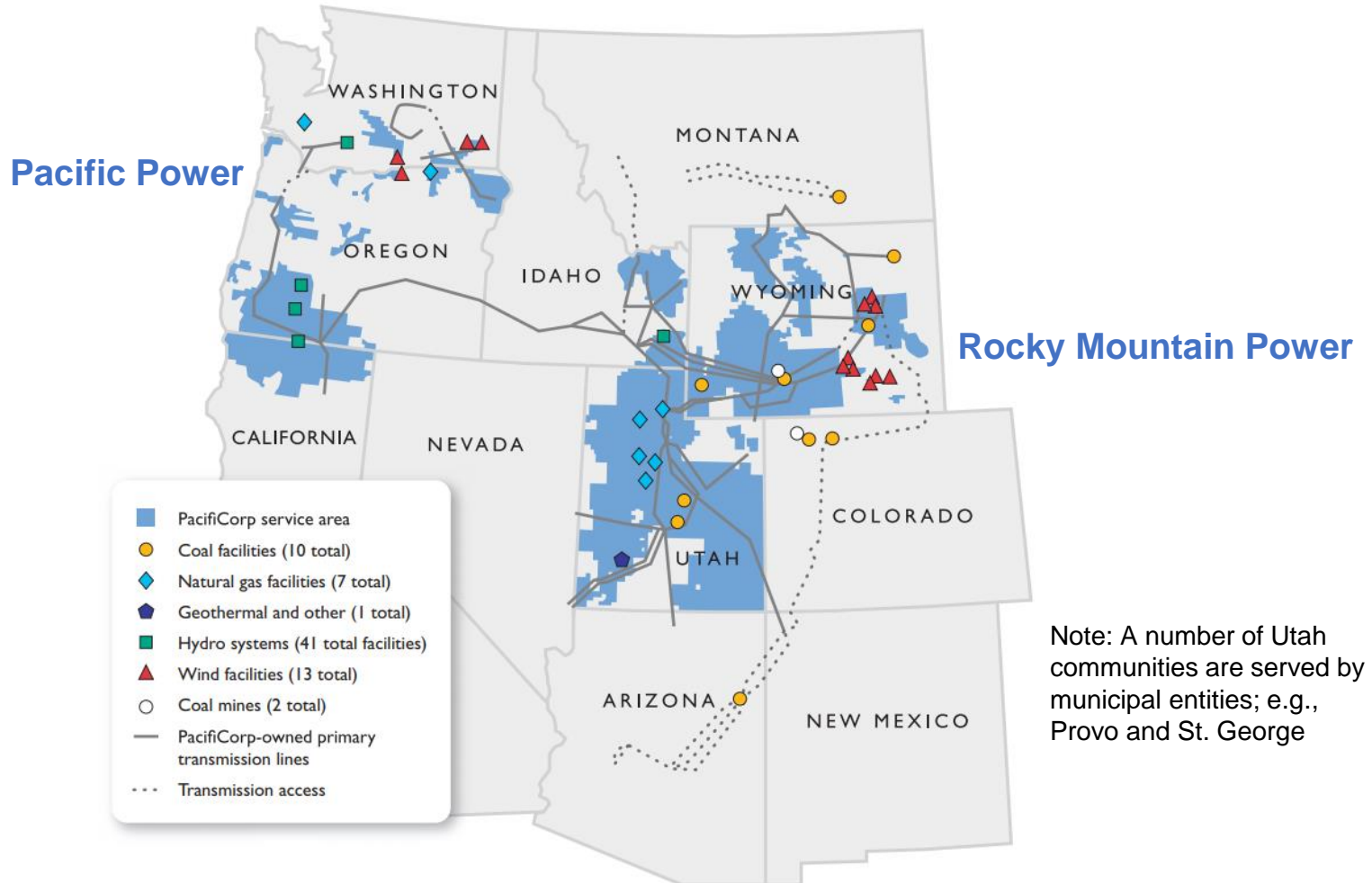
January 15, 2019



Summary

- The Commission's goal for UM 1824, stated in Order No. 17-124, is to explore alternative PacifiCorp cost allocation approaches that:
 - Are consistent with cost-causation principles
 - Are reasonable for Oregon customers
 - Culminate in a long-term Oregon resolution of key Oregon cost allocation issues, such as:
 - Considerations arising from the mandate in SB 1547
 - Whether and how a rolled-in method of inter-jurisdictional allocation is to be used
- Staff is exploring various cost allocation methods
 - Conceptual basis
 - Need information to perform a thorough quantitative evaluation within timeframe constraints
 - Methods differ in their merits (alignment with cost-causation, ease of RPS accommodation, etc.)

PacifiCorp Service Territory



Merger and Related History

Pre-1989, PacifiCorp's current service area served by two companies:

- Pacific Power & Light (PP&L)
- Utah Power & Light (UP&L)

2006 PacifiCorp reorganizes and consolidates WY loads in the East; system planning is on an integrated basis and includes two balancing authority areas: East and West.

Pacific Power serves	Rocky Mountain Power serves
Oregon	Idaho
Washington	Utah
California	Wyoming

- System costs are “rolled-in,” and then allocated to each state, generally in proportion to a state’s share of system load
- Current Rocky Mountain Power capacity deficiencies met with transfers from Pacific Power

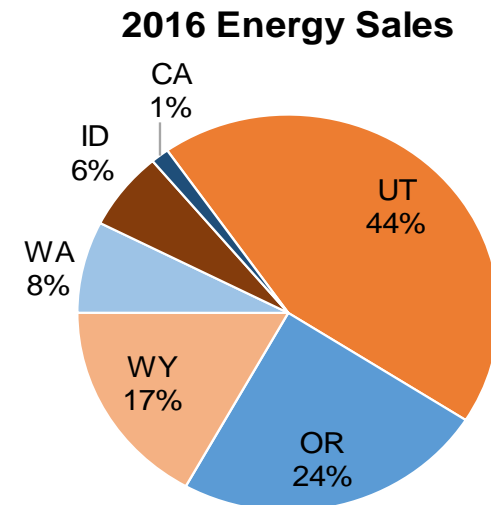
1989 PP&L acquires and merges with UP&L; operates as two divisions of PacifiCorp

Pacific Power serves	Utah Power serves
Part of Wyoming	Part of Wyoming
California	Idaho
Oregon	Utah
Washington	

- PP&L developed coal-fueled generation in WY following its 1954 acquisition of Mountain States Power
 - Federal prohibition on new gas plants from the late-1970s through the late-1980s
- Merger provided PacifiCorp with access to UP&L’s coal plants and a transmission link to Arizona

History of Multi-state Protocol (MSP) Agreements

- The Public Utility Commission of Oregon (OPUC) approved the PP&L and UP&L merger in Order No. 88-767, which included guidelines directing parties to develop an agreement regarding the allocation of joint costs and benefits.
 - Order included protection for Oregon ratepayers
- Since the merger, costs of electricity generation and transmission have generally been “rolled-in” and allocated to each state based on respective shares of system load.
 - “Rolled-in” refers to an cost allocation method where system-wide fixed and variable costs are aggregated (rolled-in) and shared among the states based on an agreed-upon factor.
- PacifiCorp's post-merger rates in Oregon have used the following cost allocation methodologies, all of which have rolled-in the costs of generation and transmission (“G&T”) resources other than hydro:
 - **Accord Method (Pre-1998)**
 - **Modified Accord (1998 to 2005)**
 - **Revised Protocol (2005 to 2011)**
 - Adopted in Order No. 05-021
 - **2010 Protocol (2011 to 2016)**
 - Adopted in Order No. 11-244
 - **2017 Protocol (2016 to present)**
 - Adopted in Order No. 16-319

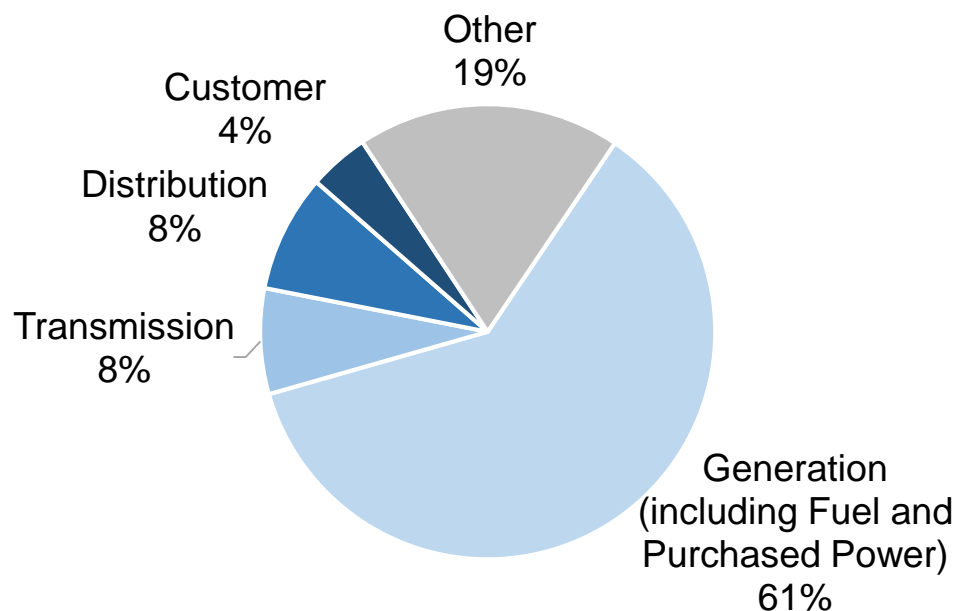


Source: PacifiCorp 2017 IRP

Focus on G&T Cost Allocations

- Generation and transmission costs represented the majority of PacifiCorp's total utility operating expenses in 2017.
- Allocation of distribution-related costs is based on *situs*.
 - *Situs* implies the asset is either located in that state or directed by the regulating authority or state policy in that state

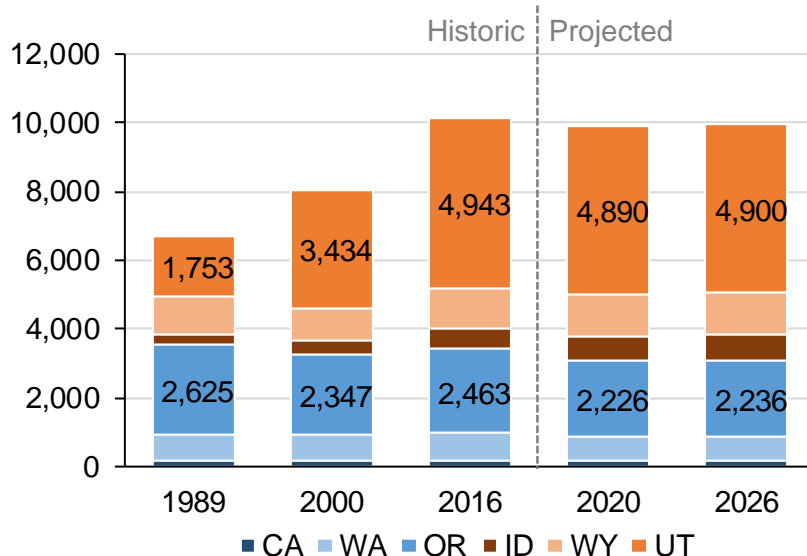
Composition of PacifiCorp's
2017 Total Utility Operating Expenses



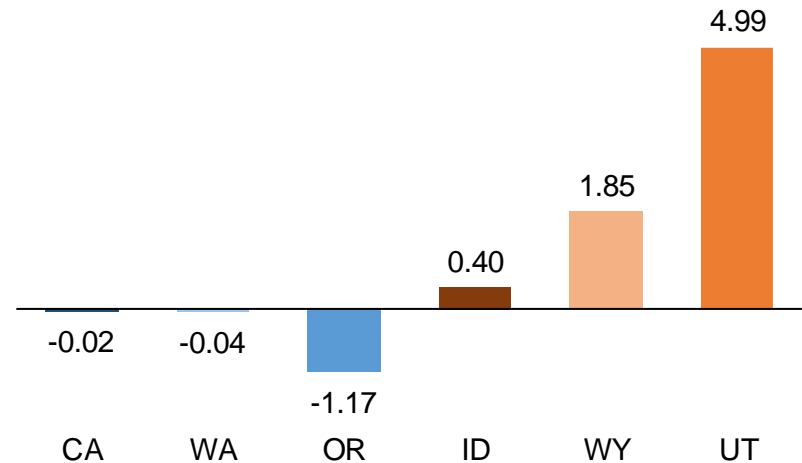
States' Dissimilar Load Growth...

- Load and capacity requirements in the West have remained relatively stable since the merger, but have grown significantly in the East.
 - Utah's 1989 (pre-merger) coincident peak was significantly less than Oregon's and was more than double Oregon's in 2016.
- Growth is projected for the West, although at a slower rate than for the East.

**Coincident Peak
MW**



**Change in Weather Normalized Retail Sales
2000-2016; TWh**



Sources: Coincident peak data is post-DSM, Historic data from PacifiCorp response to Staff DR 68 in UM 1824, Projected data from PacifiCorp response to Staff DR 90 in UM 1824. Retail sales from PacifiCorp's 2017 IRP.

...Contributed to a Pattern for Major Investments

- Most new gas capacity has been added in Utah, along with the bulk of transmission additions. The majority of new wind capacity added to the system in the last decade has been added in Wyoming.
- With minimal load growth in the West states, new plants there have supplied capacity transfers to the East states.
- Transmission accounts for significant historical costs, most of which have been for intra-Utah (or inter-UT/ID) lines, while the costs were spread across the six states.

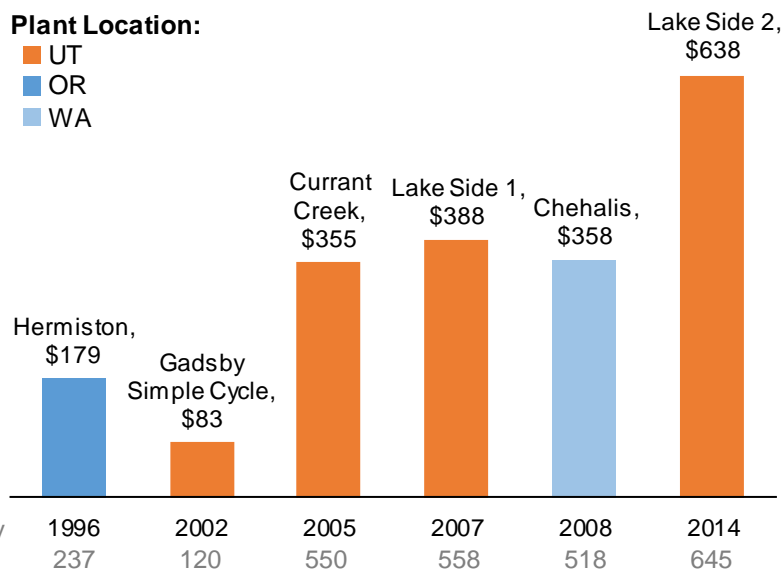
Cost of Added Natural Gas Plants

Millions of Dollars

(PacifiCorp Ownership Share; year online shown)

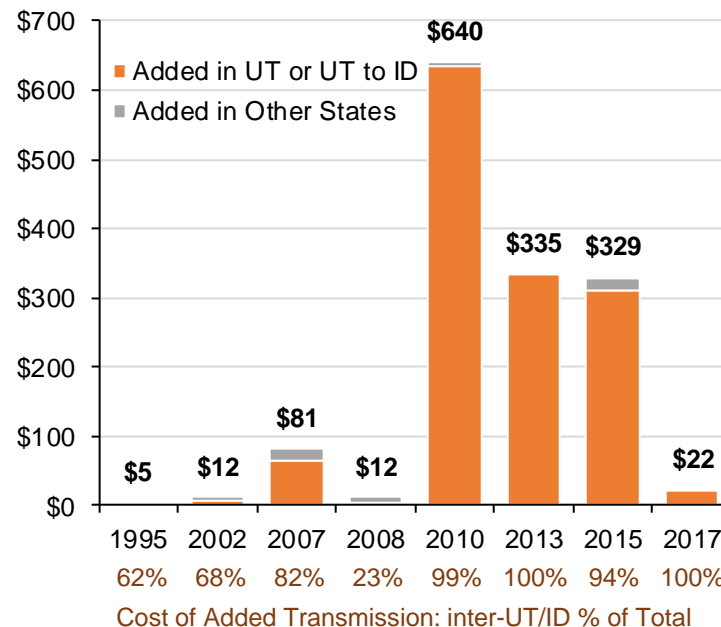
Plant Location:

- UT
- OR
- WA



Cost of Added Transmission

Millions of Dollars

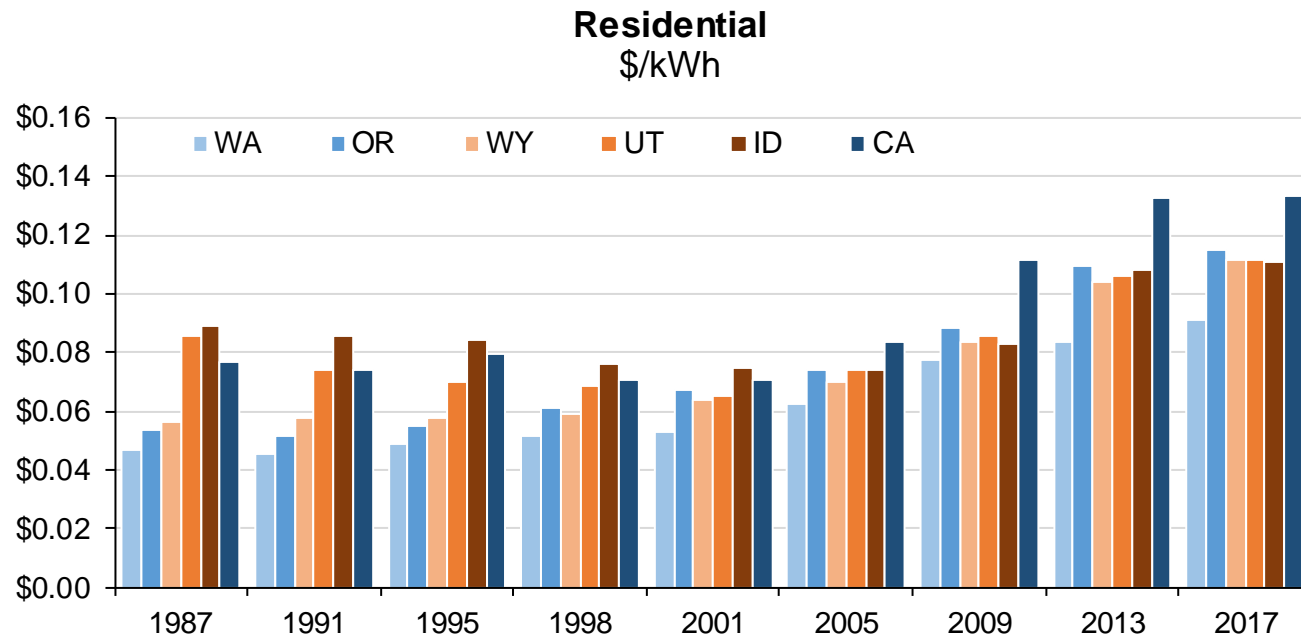


Note: x-axis is not continuous; select years shown

Sources: PacifiCorp FERC Form 1; PacifiCorp Natural Gas Generation Fact Sheet

PacifiCorp's Rate History by State

- Average residential rates have changed with different trajectories by state since the 1989 merger.
- Average residential rates are now higher in Oregon than in Utah, even though Oregon's load has not grown.



Note: x-axis is not continuous; select years shown

Cost Allocation Methods

Staff is assessing the system rolled-in cost method and three alternative methods:

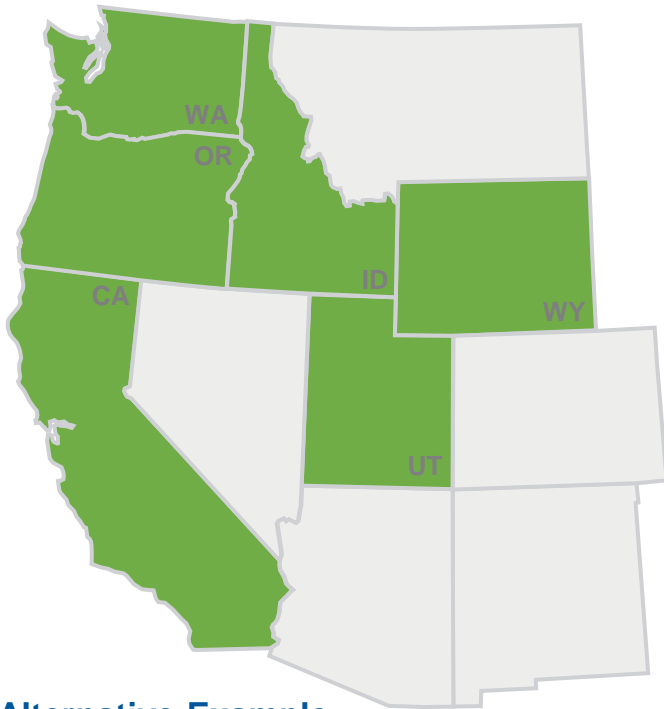
- Conceptual basis
- Principled approach to cost-causation
- Reasonable for Oregon customers
- Accommodate SB 1547
- Potentially represent a long-term Oregon solution

Cost allocation approaches to be presented:

- System Rolled-in
 - Variations have been used for decades
- Resource Assignment
- Rolled-in by Balancing Authority Area
- Rolled-in by Augmented West Balancing Authority Area

Concept: System Rolled-In

Example: 2017 Protocol



- Rolled-in G&T costs are allocated to each state by load share.
- Hydro adjustment benefits West states and WY.
 - Identified as the Embedded Cost Differential, or ECD
- Order authorizing UM 1824 included a return to the Revised Protocol if a new agreement is not reached prior to expiration of the 2017 Protocol.
- WA has used its Western Control Area method since 2006, i.e., is not currently using the system rolled-in method.

Alternative Example:

- Hybrid approach where OR fully depreciates coal by 2030 and other states reach agreement to subscribe to Oregon's share of the coal fleet.

Considerations: **System Rolled-In**

Cost and Impacts to Oregon Customers

- Does not follow cost causation by state for incremental G&T investments. Slower-growing states subsidize faster-growing states.
- May not recover all system costs as currently implemented.
- Higher Oregon costs under the 2017 Protocol than under the Revised Protocol.

Policy Accommodation

- One SB 1547 result is that the system rolled-in method will not fully recover costs post-2029.

Implications for Coal Fleet

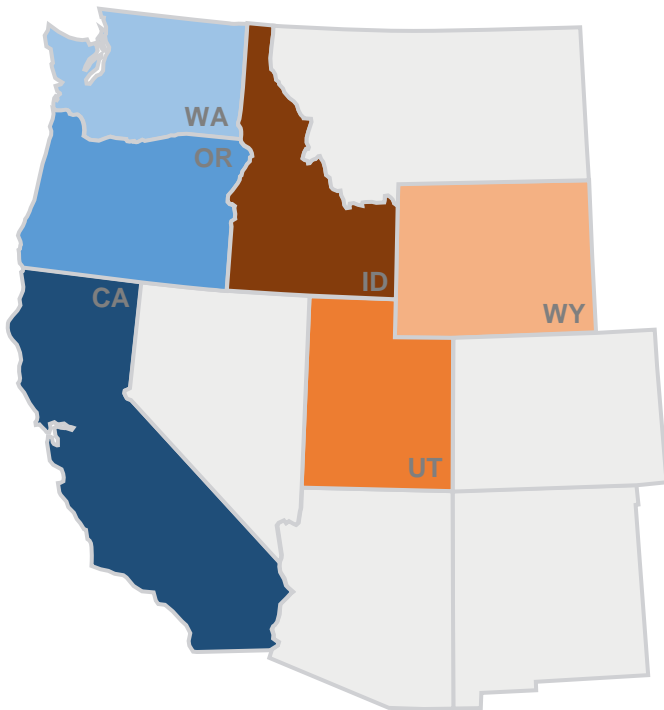
- No guarantee that Oregon fully depreciating a coal plant will result in a near-term closure.
- Alternatively, if a coal plant is not economic for the remaining states, it may close in advance of its currently scheduled end of life dates for those states.

Additional Considerations

- Fairly simple and one version or another has been used for the past two decades.
- Commission retains current system-wide breadth of economic control through 2029.

Concept: Resource Assignment

Example: PacifiCorp's CLEAR Proposal



- Assigns specific thermal generation units to a single state or group of states. Ratepayers pay for costs associated with units assigned to their state.
- Reassignment in the CLEAR proposal occurs in the early 2020s.
- Allocates costs of existing non-thermal generation resources using the system rolled-in method, with some exceptions such as QFs.
- States subscribe to incremental or replacement resources based on state-specific requirements.
- Includes a revenue requirement equalization adjustment to an agreed-upon baseline through 2029, in order to mitigate shifts in revenue requirement between states prior to 2030.
- Implements locational marginal pricing (LMP).
- Outcomes for a state can depend on the specific thermal plants assigned and on the baseline used for the equalization adjustment.

Alternative Example:

- Design assignments to reduce the dollar amount of an equalization adjustment.

Considerations: Resource Assignment

Cost and Impacts to Oregon Customers

- Assignment of existing thermal generation resources by state is unlikely to align with cost-causation.
- Subscription by state to new generation resources does align with cost-causation by state.
- Implicitly assumes agreed-upon baseline for equalization adjustment achieves equity between states.

Policy Accommodation

- Can be designed to both fully recover system costs and accommodate SB 1547.

Implications for Coal Fleet

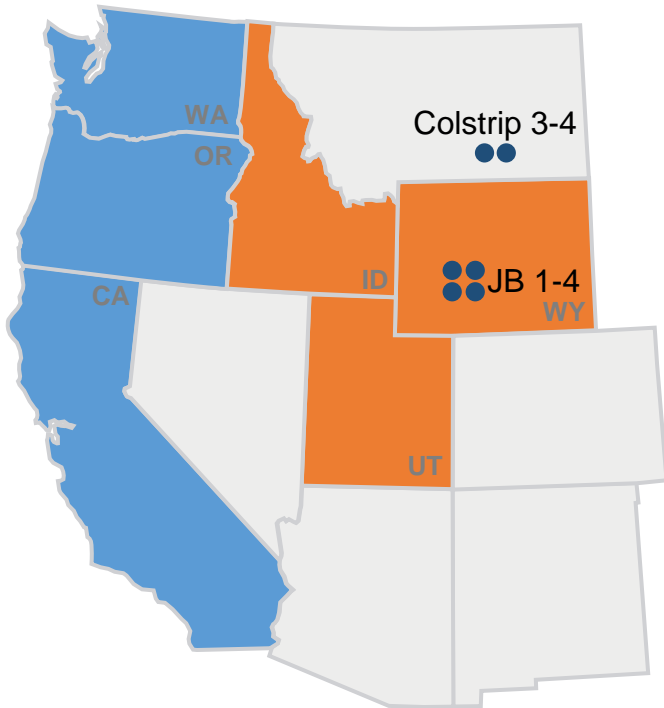
- Fully depreciated by one state does not necessarily result in plant closure. A state could potentially continue to operate an assigned coal plant unit beyond its scheduled end of life for that state.
- Alternatively, plant closures may occur in advance of scheduled end of life dates if continuing to operate is not cost-effective.

Additional Considerations

- More complex and includes mechanisms that are untested for Oregon regulatory purposes.
- Commission's current system-wide breadth of economic regulation of coal plant units is reduced to only those units assigned to OR.

Concept: Rolled-in by Balancing Authority Area (BAA)

Example: Washington's "Western Control Area"



- Assigns the cost of generation resources, based on physical or electrical location, to either PacifiCorp's East or West balancing authority area (BAA).
- Costs assigned to West and allocated to OR, WA, and CA include those associated with:
 - Resources physically located in OR, WA, or CA.
 - Jim Bridger 1-4 (WY) and Colstrip 3-4 (MT) coal plant units.
- Costs for all other coal plant units and for other thermal and renewable generation that is not located in West are assigned to East
- Subscription to future resources as warranted
- WA has used a variation of this method, known as the Western Control Area, for regulatory purposes since 2006.

Alternative Example:

- See "Rolled-in by Augmented West BAA" concept slides.

Considerations: Rolled-in by BAA

Cost and Impacts to Oregon Customers

- Can be designed to align with cost causation by state. OR loses most regulatory assets associated with its compressed depreciation of coal plants.
- Subscription by state to new generation resources aligns with cost-causation by state.
- Resolves issue of OR & CA subsidizing growth in East.
- Limits West's access to renewable generation located in East.
- West states and WY benefit from low-cost hydro resources in West.

Policy Accommodation

- Can be designed to both fully recover system costs and accommodate SB 1547.

Implications for Coal Fleet

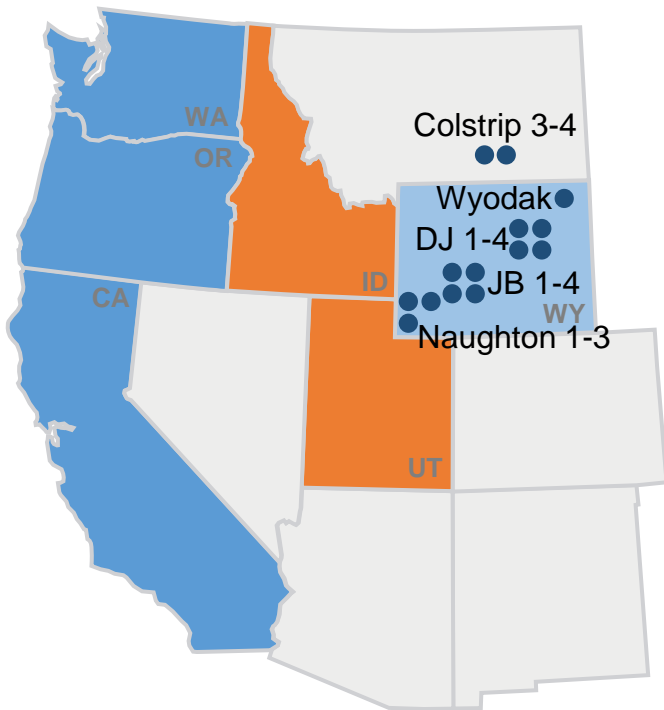
- No guarantee that Oregon fully depreciating a coal plant will result in its near-term closure.

Additional Considerations

- PacifiCorp's service territory has a natural East-West split: costs, public policies, transmission topology, growth, outlook.
- Commission's current system-wide breadth of economic regulation of coal plant units is reduced to units of Jim Bridger and Colstrip.

Concept: Rolled-in by Augmented West BAA

Example: Augment “Western Control Area” with WY loads & resources



- Same as BAA-based, but includes all WY loads and generation resources.
- G&T costs assigned to augmented BAA (WY, OR, WA, and CA) include those associated with:
 - Resources located in WY, OR, WA, or CA.
 - Colstrip 3-4 coal plant units in MT.
- Post-2029 WY is assigned costs associated with any remaining WY coal plant units.
- Subscription to future resources as warranted.
 - Costs of future renewables for East states will not be included in augmented West states' rates and *vice versa*.

Alternative Example:

- Augmented West exchanges WY coal and/or wind capacity for UT natural gas capacity.

Considerations: Rolled-in by Augmented BAA

Cost and Impacts to Oregon Customers

- Can be designed to align with cost causation by state. OR loses some regulatory assets associated with its compressed depreciation of coal plants that are not located in WY.
- Subscription by state to new generation resources aligns with cost-causation by state.
- Resolves issue of OR & CA subsidizing growth in ID and UT.
- West states have access to existing and future renewable generation located in WY.
- WY and West states benefit from low-cost hydro resources located in the West and West states benefit from lower cost coal resources.

Policy Accommodation

- Accommodates SB 1547; full cost recovery depends on ID/UT concurrence.

Coal Risk / Implications for Coal Fleet

- Commissions in augmented West states may have greater span of control (through authorization of cost recovery) over timing of WY coal plant units' closure.
- ID/UT may continue operating East's coal plants beyond currently scheduled end of life for those states, but removes all WY coal plants from this consideration

Additional Considerations

- May provide a better representation of historic and post-merger cost-causation by state.

Summary

- Staff presented three alternative concepts to system rolled-in, with a focus on
 - Cost-causation principles and alignment with public policy objectives
 - Equitable allocations
 - Reasonable solutions for Oregon customers
 - A long-term solution for Oregon
 - Accommodating SB 1547
- Next Steps
 - Perform thorough quantitative evaluation to determine the merits of these and other options
 - Seeking the most reasonable and durable options for Oregon