



DEEP DIVE

# As PacifiCorp and other analyses point to more coal shutdowns, replacement questions rise

A recent PacifiCorp analysis points to a growing trend among utilities, and analysts are watching to see how modeling and reliability issues can best be addressed as retirements continue.

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**T**he economics of coal took another hard hit in Oregon on Dec. 3.

A report to the Oregon Public Utilities Commission (OPUC) from PacifiCorp confirmed that the bulk of its coal units cost more to run than to close and replace. The analysis joins a host of other analyses finding, among other things, that despite White House efforts to support coal, consumption is decreasing and the fuel is no longer a cost-effective option.

But while closing coal plants early could save money, it would result in capacity shortfalls. PacifiCorp sees addressing that challenge as a next step in the process and industry analysts have a number of ideas on how to do so, such as securitization.

PacifiCorp's analysis marks the first time the utility "has publicly revealed its data showing early coal plant retirements could bring hundreds of millions of dollars in net benefits to

customers," Stanford University Precourt Energy Institute Research Scholar and Rocky Mountain Institute Principal Uday Varadarajan told Utility Dive.

**"This more complete analysis can now be made public, with the caveat that reliability challenges, especially for the impacts of closing multiple units, still need to be explored."**

Rick Link

*Vice President, PacifiCorp*

The utility conducted the review of its coal fleet based on direction from the Oregon Public Utilities Commission at the end of last year, and in September, a Washington Superior Court judge allowed the utility to retain privacy of that data.

"Our earlier data could have been taken out of context or misunderstood, and incomplete information could have affected markets," PacifiCorp Vice President Rick Link told Utility Dive.

"This more complete analysis can now be made public, with the caveat that reliability challenges, especially for the impacts of closing multiple units, still need to be explored."

PacifiCorp's analysis not only provides critical economic justification for the growing transition away from coal, but also addresses legitimate questions of reliability costs and modeling that more utilities may be able to take example from as coal retirements continue.

## **Coal across the country**

Over 133 GW of U.S. coal capacity has been shuttered or is

scheduled to be shuttered since 2010. More retirement announcements expected in 2019 and 2020 will leave an estimated 150 GW of operating coal generation, according to the Sierra Club.


Between 14 and 16 GW of coal-fired generation are predicted to retire in 2018, more than doubling last year's 7 GW, according to reports from Bloomberg New Energy Finance, S&P Global and the Institute for Energy Economics and Financial Analysis.

Utilities like PacifiCorp are leading this transition and the key driver is economics, according to Energy Innovation Director of Electric Policy Mike O'Boyle. "Closing coal and investing in alternatives is about finding ways for the utility to turn unproductive capital into something productive."

The template is Xcel Energy's "Steel for Fuel" strategy, he said. "The utility owns and ratebases the wind or solar project just as it would a coal or natural gas unit, but without the fuel price volatility risk."

Examples of, and variations on, the strategy are appearing across the country, Energy Innovation Policy and Technology Analyst Megan Mahajan added.

Ohio's American Electric Power initiated development of 900 MW of ratebased wind and solar in September and then announced the closure of 1,590 MW of coal. Northern Indiana Public Service Company plans to retire 1,800 MW of coal in favor of renewables within ten years.



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## **mix to balance reliability, affordability and carbon reduction goals."**

Dave Robertson

*Vice President of Public Policy, Portland General Electric*

Unregulated utilities are also seizing the opportunity. Texas' Vistra Energy shuttered 4.2 GW of coal in favor of renewables and natural gas investments in February and a July study found electric cooperative Tri-State Generation and Transmission could save customers \$600 million through 2030 with new renewables, even if it continues running its coal plants.

Other Northwest utilities are moving to diversify their portfolios as well, coming to similar conclusions as PacifiCorp. And the economic pressure to transition may increase as Oregon's legislature is expected to pass cap and trade legislation in 2019 that would put a price on emissions. "If a utility's coal puts it above its emissions allowance, it will have to pay or not run its coal plant," Portland General Electric Vice President of Public Policy Dave Robertson said.

Coal plant owners "have different economics and different needs," he added. "But the [integrated resource planning (IRP) proceedings] of utilities in the Northwest are increasingly considering the falling costs of renewables in looking for the right resource mix to balance reliability, affordability and carbon reduction goals."

### **The PacifiCorp report**

The new analysis modeled over 40 resource portfolios. Its 130 assessments did not identify the final "least cost, least risk mix of resources," but it "will inform the utility's decisions," PacifiCorp's Link said.

Eight "stacked-retirement cases," assessed closure and replacement of grouped units in 2022, the year which shows the greatest potential benefits of early retirement.

Six of those cases showed net benefits. The three biggest benefits were a \$301 million ratepayer benefit that could come from shuttering a 711 MW, three coal unit group, a \$307 million benefit from retiring a 755 MW, four-unit group and a \$317 million benefit from closing an 834 MW, six-unit group.

But in all cases, "a preliminary reliability assessment shows that portfolios in early coal-retirement cases can stress system reliability," the report notes. The utility "continues to evaluate reliability issues," which is why the numbers "may not include all of the costs required to meet reliability targets."

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Rick Link  
*Vice President, PacifiCorp*

The most significant example of a reliability shortfall is the report's reliability assessment for the 711 MW, three-unit case. For 1.7% of 2023's hours, that stack of closures could result in a spinning reserves, non-spinning reserves and regulation reserves shortfall of up to 318 MW, PacifiCorp reported.

"There could be economic savings to early closures, but many will result in hours when there is not enough capacity on the system to maintain reliable operation," Link said. "Our next steps will be identifying solutions to eliminate those reliability

challenges, and they are likely to come at incremental costs not in this analysis."

It is too soon to identify those solutions, but adding them will narrow the overall benefits "because you can't add capacity for free," he said. "We don't know what that cost is because we don't know what will remedy the shortfalls."

**"PacifiCorp should now explore meeting their reliability needs with non-wires clean energy alternatives, instead of new natural gas generation."**

Nicole Hughes

*Executive Director, Renewable Northwest*

PacifiCorp's findings and next actions are especially important, because they will likely put pressure on other utilities to reconsider their resource mixes, Renewable Northwest Executive Director Nicole Hughes told Utility Dive.

But the reliability issue is "frustrating" because utilities often use it to limit stakeholder input on how it should be sourced, Hughes said. "PacifiCorp should now explore meeting their reliability needs with non-wires clean energy alternatives, instead of new natural gas generation."

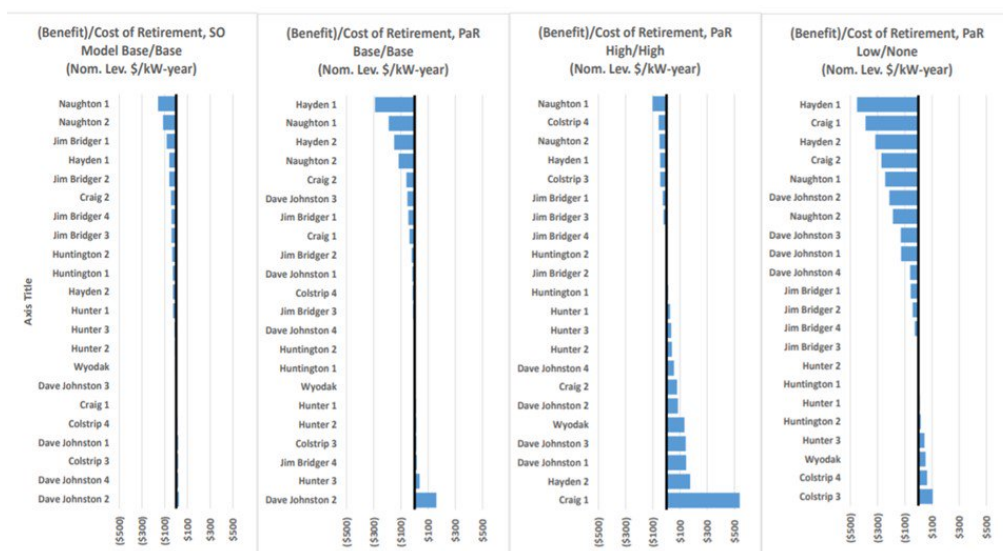
Much work remains before this analysis becomes a course of action, Sierra Club Senior Strategy and Technical Advisor Jeremy Fisher told Utility Dive. Fisher has worked on PacifiCorp coal unit economics since the 2011 Oregon IRP.

"The storyline has been the same, and the units we thought were uneconomic then have now been shown to be," he said. "In some cases, this model did not solve for reliability perfectly and added

several hundred million dollars of emergency capacity, but PacifiCorp is reworking the model to resolve that."

The modeling problem raises the question of how much small changes influence net present values, Fisher said. "But there is still time to take a closer look and PacifiCorp would likely agree. In some cases, there are probably significant further savings possible."

## Unit-by-Unit Rankings (Without Intra-Hour Flexible Resource Credit)



*PacifiCorp's coal costs Credit: From the PacifiCorp IRP report*

### Making up the difference

The capacity shortfalls represent a reliability challenge, but their magnitude is not too great to be addressed simply by optimizing the portfolio or adding reasonably-priced capacity, Stanford's Varadarajan said.

PacifiCorp's concern with the capital costs for coal units' early retirement can also be addressed through the financial

mechanism of securitization, he added.

Securitization has been used by utilities like Consumers Energy in Michigan and Pacific Gas and Electric in California to address stranded costs without increasing customer rates, Varadarajan said.

**"The utility's decision to invest in coal may have been imprudent, considering the directions of renewables costs and public policy. Disallowing recovery of stranded costs for imprudent investments is a legitimate regulatory and legal option."**

Mike O'Boyle

*Director of Electric Policy, Energy Innovation*

PacifiCorp can make low cost debt financing available to cover the costs of non-depreciated coal assets, he said. In many states, legislation is needed to make it available, but the legislation can allocate part of the savings to funds for transitioning communities."

O'Boyle, Varadarajan, Hughes and Fisher all agree that PacifiCorp needs to do more modeling to identify the right reliability resources.

"We have seen bids in response to Xcel Energy's technology neutral solicitation come in way below estimates for wind, solar, wind plus storage and solar plus storage," O'Boyle said.

"PacifiCorp can do the same kind of solicitation for reliability services."

On financing strategies like securitization, "the first question is



whether customers should pay," he said. "The utility's decision to invest in coal may have been imprudent, considering the directions of renewables costs and public policy. Disallowing recovery of stranded costs for imprudent investments is a legitimate regulatory and legal option."

**"The PacifiCorp analysis is not surprising, and shows it needs to focus on what comes next for reliability and for equitably transitioning the communities around its coal plants."**

Megan Mahajan

*Technology Analyst, Energy Innovation*

If policymakers decide customers should pay, there are better approaches than leaving the costs in the rate base until the depreciation schedule is met, while the utility continues to earn a return, O'Boyle said. "That 10% or more return is a high cost of capital for an unproductive asset."

One option is accelerated depreciation, which raises costs in the short term, but reduces long-term costs. Another is financing mechanisms like securitization that "can reduce interest rates to 3% or 4%, with low risk, if they are structured right," he added.

"The PacifiCorp analysis is not surprising, and shows it needs to focus on what comes next for reliability and for equitably transitioning the communities around its coal plants," Energy Innovation's Mahajan added. "It also shows the economics are shifting, and any forward-thinking utility will want to minimize coal."

Correction: An earlier version of this article misidentified Dave Robertson. He is the vice president of public policy at Portland General Electric.

