

Executive Summary

Kicking Idaho's Coal Habit: Charting a Cleaner Energy Future

Idahoans pride themselves on being “energy smart” but also in their belief that they have about the cleanest electricity in the nation, with much of the state energized by the hydropower projects that have converted the Snake River and other waterways into power plants. The most recent public policy survey that questioned Idahoans on where Idaho electricity comes from showed Idahoans believe 41.7 percent of their electricity comes from hydropower; 19 percent natural gas; 11.1 percent coal, 8.6 percent wind, and other resources. The one resource Idahoans grossly underestimated was coal, which actually provides more than 40 percent of the state’s electricity. Survey respondents also said they would prefer that coal account for 3.3 percent of Idaho’s energy.

Idaho utility customers are surprised at the amount of their electricity that comes from coal-fired power plants, particularly given there are no utility-scale coal plants in the state. Once they have a better understanding of the sources of their electricity, they tend to respond by showing greater preferences for non-coal energy resources ranging from natural gas to renewable energy and energy efficiency. As the “energy IQ” of Idaho consumers rises, so does their appetite for energy that is not generated from fossil fuels.

The Snake River Alliance issued its first analysis of the extent to which the state’s three large regulated electric utilities (Idaho Power, Avista Utilities, and PacifiCorp, known in Idaho as Rocky Mountain Power) in September 2011. That report, “Idaho’s Dangerous Dalliance with King Coal,” exposed Idahoans for the first time to a plant-by-plant list of the coal-fired generators these utilities own or partly own and that generate power for Idaho consumption. It also introduced Idahoans to the trend in the Pacific Northwest and outside of the region in which coal plants are being retired early in the face of existing and anticipated state and federal environmental regulations, the possibility of future carbon penalties such as a carbon tax or a trading mechanism, and reduced natural gas prices that can make gas turbines the preferred resource over coal.

This report carries the initial report to its conclusion. It presents in more detail the extent of utility use of out-of-state coal generation as well as the health and environmental impacts associated with coal combustion. The focus of the report, however, deals with the economic and related risks to which utilities subject their customers and shareholders so long as they keep large amounts of coal in their generation portfolios. Finally, it establishes to the extent possible the amount of coal-fired power generation that must eventually be replaced and provides one of many plausible ways to do so.

While this report does not dwell on the issue of climate change because it is an issue that doesn't resonate as much with policy-makers here as it does elsewhere, it should be noted that public opinion on the issue in Idaho is clear. According to the 2007 Idaho Energy Policy Survey by the Energy Policy Institute and the Center for Advanced Energy Studies through the Boise State University Social Science Research Center, when asked whether human activities are contributing to global warming, 70 percent of respondents said yes and 24 percent said no. Those who answered in the affirmative were then asked how Idaho should respond. Fifty-four percent said the state should reduce greenhouse gas emissions. Asked what the state's highest priority should be to meet electricity demand, 50 percent said the state should develop "green" or renewable sources of energy and 26 percent said it should emphasize energy efficiency and conservation programs.

Added to that is the misunderstanding among many Idahoans that, because the state has such abundant hydropower resources and very little fossil fuel generation, and because of the way the U.S. Department of Energy's Energy Information Administration calculates such things, Idaho leads the states as having the lowest carbon "footprint" per capita. That is accurate insofar as the calculation is limited to generation resources located in each state; it is far from true when considering all generation feeding electric demand in a particular state. In other words, a state such as Wyoming, where much of the coal generation that feeds Idaho energy needs is located, is "credited" with the emissions from those coal plants that should more fairly be assigned to Idaho, which has created some of the demand for the plants.

The Problem

Because of its abundant hydropower resources, the Pacific Northwest has the "greenest" of energy generation portfolios of any region, at least as measured in carbon emissions. There are only two coal-fired coal plants in the Pacific Northwest, and both are now scheduled for early retirement. They are the Boardman plant on the Columbia River in Oregon, which will be retired in or near 2020 rather than undergo massive retrofits to keep it operating to 2030 and beyond. Majority owner Portland General Electric concluded decommissioning was most cost-effective; Idaho Power has a 10 percent stake in Boardman, but was not part of the decision to shutter it early. And TransAlta's Centralia merchant plant in Washington state will also see its two units decommissioned early – around the 2020-2025 time frame - rather than have them retrofitted to continue operating for two more decades or longer.

The problem, then, is the amount of coal generation that is imported into the region from outside plants, and that's where Idaho's three investor-owned utilities (IOUs) come into play. Spokane-based Avista in north Idaho relies on the huge Colstrip plant (Puget Sound Electric is the majority owner) for 10-15 percent of its generation. Idaho Power relies not only on Boardman, but also on the Jim Bridger complex in Wyoming, in which it is a one-third partner with majority

owner PacifiCorp), as well as the North Valmy plants in Nevada, in which it is a one-half partner with NV Energy. PacifiCorp, which serves pockets of southeast Idaho as Rocky Mountain Power, taps its 26 units at plant sites around the West for its generation and is the longest on coal of the Idaho utilities. Besides Avista's use of coal for 15 percent of its generation portfolio, Idaho Power uses coal for 40-50 percent of its generation, and PacifiCorp uses coal for more than 60 percent of its generation. These figures can change due to a variety of circumstances, such as Idaho Power's shifting more to hydropower during years with abundant stream flows, or fluctuations in natural gas prices, which can impact dispatch order of supply-side assets by making gas plants more attractive.

Against the backdrop of utilities in the region and many large utilities elsewhere announcing plans to retire some of their coal assets ahead of schedule, the Idaho utilities continue to defer action until such time they are compelled to take it. The Alliance report cites statements made by the utilities to regulators, shareholders, and others that they continue to see value in their coal plants, and that they will go slow until they see stronger signals from Washington, D.C., that puts more clarity on the future of coal generation.

Given the immense anti-pollution investments already committed to some of the coal plants serving Idaho and the expectation that more investments will soon be needed, advocates are pressing utilities like never before to explain why it's a better investment of customer dollars to extend the life of the plants rather than spend the money on such things as enhanced energy efficiency, additional renewable energy, and distributed generation investments.

Toxic Investments?

Wall Street and other institutional investors are asking the same questions of utilities that continue to go long in coal. If Wall Street hates anything, it's uncertainty and the risk associated with it. And that's what confronts utilities that aren't planning adequately for the disposition of their coal assets. Ceres, the nonprofit sustainable investment giant whose advice is closely followed throughout the investment community, has been outspoken in warning that it's becoming bad business to commit to coal in an era of cleaner and more affordable options:

“Risk comes in different forms, and there are times when business as usual becomes a risk in itself. America's electric utilities are approaching just such a moment. Across the country, a generation of power plant and transmission systems is aging and needs to be replaced. At the same time, rules on pollution and greenhouse gas emissions are tightening. Clean energy technologies are getting cheaper and gaining market share. These shifts coincide with record spending: Utilities are expected to make \$2 trillion in capital investments over the next 20 years – about double their recent spending rate.”

San Francisco-based As You Sow, which helped engineer the nation's first successful shareholder vote directing an electric utility to plan to reduce its carbon emissions, agreed:

“Pension, institutional and endowment fund sponsors, trustees, board members and managers needs to consider the individual and cumulative impact of these risks and evaluate options to mitigate adverse impacts on portfolio value. We believe that the analysis presented in this white paper requires investors, but particularly responsible investors concerned with environmental, social, and governance issues, to engage the management of utility companies to find alternatives to coal-based power generation in order to protect shareholder value. Increasingly, coal’s competitive advantage is being eroded by the individual and cumulative impact of regulatory and market forces. Depending on how investors view the material risks to the profit and loss of coal and coal-reliant industries, there are a range of actions they can take. Better understanding of coal exposure risks should prompt greater diligence by investors, their portfolio managers, and advisors. Investors should engage with management of utility companies and ask the utilities to disclose their coal exposure and address the risks with specific programs of action. Investors should also examine available options to shift their utility holdings toward companies that are reducing coal exposure risk and to avoid companies with insufficient programs to address coal’s financial liabilities.”

The utility that As You Sow challenged and defeated on the shareholder resolution asking for a carbon reduction plan was IDACORP, parent of Idaho Power.

Replacing Idaho’s Coal Plants

Following the establishment of the case on the environmental and ethical imperatives to begin to curtail and then discontinue the use of coal by Idaho utilities, the question turns to how much generation is realistically in play – and then how to replace it. In discussing replacing traditional coal-fired generation in Idaho, replacing average energy is important, but so is keeping pace with peak demand requirements. Much of Idaho has a serious summer peaking challenge but few problems in terms of meeting average energy demand. So demand response programs that are designed to shift some demand from times to peak demand to times of less demand will come into play when it comes to making up for some of the lost generation.

We identify, to the extent possible, each utility’s coal assets and then attempting to determine how much of that would serve Idaho load (as opposed to load elsewhere in a utility’s control area). All told, we identify about 1,500MW of coal-fired generation that would be phased out and that needs to be replaced. New generation, such as Idaho Power’s Langley Gulch combined cycle natural gas plant (300MW), as well as new wind and other renewables need to be considered for their share in making up for the lost generation, as does new transmission, which while not yet built will provide significant new flexibility among utility balancing authorities in

meeting their respective loads. Similarly, projected annual load growth must be included in the calculation, although in these cases we project most of the new load growth will be met through energy efficiency. The Northwest Power and Conservation Council, which is made up of two gubernatorial appointees each from the four Northwest states, was created in 1980 to plan on how the region's power needs will be met. The Council's regional Power Plan, written every five years, projects that 85 percent of the region's new load growth can be met through conservation, with the bulk of the rest coming from renewables and if necessary some natural gas.

If it is assumed that Idaho would need to replace 1,500MW of nameplate coal generation, then it is appropriate to apply to that nameplate amount a reasonable capacity factor (or how much the plants actually deliver on average after considering down time, transmission, and other losses). Coal plants are typically assigned a capacity factor of 85 percent of their nameplate generation, so applying it to the 1,500MW or so of coal power needing to be replaced, that brings the number down to 1,275MW.

While 1,275MW is less intimidating than 1,500MW in terms of replacing the power, the number becomes even more achievable when considering that many of the coal assets included in the 1,275MW (or the original 1,500MW) are being dispatched with less frequency due to water conditions, favorable gas prices, and other considerations. In the case of Idaho Power, the North Valmy generation facilities in Nevada have been used very sparingly – through July 2012 it was the least-used supply-side resource in the utility's entire generation portfolio so far. So factoring in the reduced amount of time the coal plants are being dispatched, the actual number for the power that needs to be replaced is closer to 700MW. That's an amount that is not only achievable, but it also makes sound business sense to do so.

Where the Power Will Come From

As mentioned above, energy efficiency will carry much of the load in replacing Idaho's coal generation, just as it is elsewhere in the region. It has been argued that demand-side resources such as refrigerator replacement or lighting incentives are wholly inadequate for the job, but studies by the NW Power and Conservation Council, the U.S. Department of Energy, the American Council for an Energy-Efficient Economy (ACEEE) and others indicate otherwise.

The Alliance report concedes that, during the time of transition away from coal and until such time as the full suite of efficiency and renewables are deployed, natural gas will continue to play a role in meeting demand for electricity. The report does not advocate decommissioning natural gas plants, which for utilities such as Avista comprise a considerable portion of their generation portfolio. Rather, it recognizes that gas, particularly during times like the present when prices are so low, will realistically be among almost any utility's mix.

While gas will remain in the picture, the emphasis will be on efficiency and renewables. Besides the potential for efficiency described above, Idaho has abundant renewable energy resources that have been identified but not developed.

The U.S. Department of Energy's National Renewable Energy Laboratory (NREL) issued a report in July 2012, "U.S. Renewable Energy Technical Potentials: A GIS-Based Analysis," that examines the potential of six renewable energy technologies in each of the states. NREL uses conservative estimates to arrive at the potential from the technologies, excluding from consideration lands protected by environmental or other land-use constraints (not building in wilderness areas or National Park Service units, for example) and also taking into account topographic limitations and the performance of the technologies in various locations. The idea was to avoid a too-rosy picture of the capability of these solar, wind, geothermal, and other technologies but rather a realistic snapshot of what can be accomplished.

The findings for Idaho are impressive. For reference purposes, according to the U.S. Energy Information Administration, Idaho's electric retail sales in 2010 were 22,798 gigawatt-hours (GWh).

NREL's study estimates the "technical potential" for urban, utility-scale photovoltaics development in Idaho is 23,195GWh. That's slightly more than the 2010 electric retail sales in 2010. The total estimated technical potential for rural utility-scale photovoltaics development in Idaho is 3.9 million gigawatt-hours. The total estimate technical potential for rooftop photovoltaics, or the smaller solar panels people install on the homes, is 4,051GWh. The total estimated technical potential for concentrating solar power, the big utility-sized solar farms, is 3.5 million GWh. Just as promising, Idaho's utility-scale photovoltaic "capacity factor," or the percentage of time it can be counted on to produce electricity, is 22 percent, in the top 10 of all states.

Idaho's potential for land-based wind is estimated at 44,320GWh. For geothermal, it's 17,205GWh and for "enhanced" geothermal, where water is injected into hot rock formations, it's estimated at 993,257GWh, among the highest in the United States. Using data from the Idaho National Laboratory, NREL estimates Idaho's technical potential for new hydropower to be 18,758GWh.

One challenge facing renewable energy development by Idaho utilities is strictly an economic one: Utilities prefer the model where they build, operate, and depreciate their own generation resources, and that usually means the generation resources with which they are most familiar: dams, coal plants, and gas plants. That's only the biggest reason Idaho does not see renewable energy resources owned by Idaho utilities. There are others.

Conclusion: Summary and Recommendations

Addressing today's outdated utility energy resource ownership model is just one fix that will be needed for Idaho to create an environment in which energy efficiency and renewable energy resources can flourish in a way that will enable them to produce what will be needed to replace power production lost due to coal plant retirements.

The heart of this report is that the coal plants serving Idaho's electric load should be considered for early retirement not only because they are a public health menace and because they are among the leading contributors to global climate change. They should also be scrutinized because they pose financial risks to utility customers as well as to the utilities themselves and their shareholders.

While we believe the decommissioning of these plants is inevitable for regulatory and economic reasons, the report emphasizes that the task of purging coal from Idaho utility portfolios is one that must be approached with the utmost care on the part of the utilities, their regulators, state and regional energy policy makers, and stakeholders throughout Idaho as well as the communities in which the plants are located.

The state and the utilities must begin by conducting an honest assessment of the extent of utility reliance on their out-of-state coal assets. The utilities must then conduct a thorough and defensible analysis of each coal plant serving Idaho utilities, including future environmental compliance costs and how those costs weigh against the costs of decommissioning the plants and replacing their power.

At the same time, utilities and government and non-government stakeholders should conduct a thorough inventory of the potential – economic as well as achievable – of Idaho's energy efficiency in conjunction with similar studies being undertaken by other state and regional entities to determine the true potential of conservation for each of Idaho's utilities; as well as the economic and developmental potential of Idaho's renewable energy resources. This analysis should include affected utilities but also diverse stakeholders such as the Idaho Office of Energy Resources, the Idaho National Laboratory, and stakeholders that include clean energy advocates.