Supplemental Response to the Utah Party Comments on PacifiCorp's 2011 Integrated Resource Plan

Docket 11-2035-01

1. INTRODUCTION

PacifiCorp filed its 2011 Integrated Resource Plan (IRP) with the Public Service Commission of Utah (Commission) on March 31, 2011, and an Addendum to the IRP filed on June 27, 2011. As part of the IRP acknowledgment schedule adopted by the Commission for this proceeding, parties filed comments and acknowledgment recommendations by September 7, 2011. The Company filed its reply comments on October 4, 2011, addressing comments from the following six parties: Division of Public Utilities (DPU), Office of Consumer Services (OCS), Utah Association of Energy Users (UAE), Utah Clean Energy (UCE), Western Resource Advocates (WRA), and Sierra Club.

The Company hereby submits for consideration its reply in response to comments submitted by Interwest Energy Alliance (IEA), as well as joint comments submitted by Healthy Environment Alliance of Utah, Utah Moms for Clean Air, and Physicians for a Healthy Environment, referred to collectively as "HEAL Utah et al."

2. INTERWEST ENERGY ALLIANCE

Scenario Planning

IEA advocates that the Commission adopt "scenario planning principles" for incorporation into the IRP process, and cites some examples of scenario planning studies and approaches. IEA states that the goal of scenario planning, as compared to traditional resource planning, involves "choosing a set of resources that provide a regret-free solution under widely different projections of the future."[1]

IEA's premise is that PacifiCorp's IRP process is not based on scenario planning. However, this has been a core feature of the process for many years. For resource portfolio development, PacifiCorp derives a range of futures with public input that captures regulatory, market, and load growth uncertainties. Derivation of PacifiCorp's preferred portfolio considers cost/risk portfolio performance and trade-offs under a range of scenarios rather than just the least-cost resource mix given a particular view of the future. The 2011 IRP also includes analysis of alternative resource acquisition paths driven by trigger events that cause sustained departures from expectations. (See pages 265-270 in IRP Chapter 9, *Action Plan*, for a description and results summary of this analysis.) PacifiCorp believes this scenario analysis approach is appropriate in light of the

[1] IEA Comments, p. 2.

various state IRP standards and guidelines in place that specify sources of risk and uncertainty to consider, and Company experience in developing scenarios with public stakeholder participation.

PacifiCorp is open to refinement of scenario development, and the Company and its stakeholders can discuss broadening the types of scenarios modeled for the next IRP. For example, the IRP action plan includes plug-in electric vehicles and smart grid technologies as scenarios to be discussed. Given the already strong focus on scenario and risk/uncertainty assessment, the Company sees no reason for the Commission to dictate a specific scenario planning process.

Timing of Renewable Energy Acquisition

IEA states the following: "The IRP modeling did not reflect the consistent benefits to Utah electricity customers from additional renewable energy acquisition in the early planning years."[2]

The Company points out that scenario analysis indicates wind resources cannot be economically acquired in Wyoming until the 2018 expected completion of the Windstar-Populus segment of the Energy Gateway plan due to transmission constraints. The Company also stresses that the preferred portfolio does not constitute a set of rigid resource acquisition commitments; it may acquire non-Wyoming wind prior to 2018 through mandatory PURPA Qualifying Facility (QF) contracting or other procurement opportunities if beneficial for customers. This resource planning flexibility is highlighted in the Action Plan chapter of the IRP, most notably on page 273 (renewable resource procurement strategy), page 252, and action item 1 in the IRP action plan (page 254).

Wind Capital Costs

IEA claims that PacifiCorp's assumed capital costs for wind are too high, and "exceed the low costs that result from increased competition and lower wind turbine prices."[3] IEA further claims that "the lower costs of wind facilities in the near term are a missed opportunity when wind facility investment is delayed".[4]

PacifiCorp provided an analysis of the IEA capital cost recommendations for east-side wind resources in the IRP Addendum filed June 27, 2011.[5] PacifiCorp responded to IEA's capital cost analysis in detail, and found no basis to conclude that the Company's wind capital costs were inappropriately high when planning for the long term. While IEA's current example of the Xcel Energy RFP experience is indicative of the recent volatility of wind turbine costs, it is not appropriate as a guide to determine long term wind cost trends for PacifiCorp's system. In PacifiCorp's detailed response (2011 IRP Addendum, page 26), among other things, the Company emphasized there are many factors that will impact future markets for wind resources. Key amongst these are new and prospective environmental regulatory requirements, state and/or

[2] IEA Comments, p. 2.
[3] IEA Comments, p. 3.
[4] Ibid.
[5] The IRP Addendum can be accessed using the following Web hyperlink: http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Integrated_Resource_Plan/2011IRP/2011IRP-Addendum_20110627.pdf

federal policies that continue to be debated, supply chain dynamics (including global demand, depth and liquidity) and the reasonable expectation that increasingly less desirable and/or more costly sites will be utilized as the industry moves higher up the cost-supply curve. All of these factors will combine in the long term and be reflected in the total bus bar cost as seen from the customer's perspective.

The Company also points out that a decrease in capital costs along the lines advocated by IEA, if implemented for the 2011 IRP, would not have a large impact on the quantity of wind resources selected. As noted elsewhere in IEA's comments, PacifiCorp performed a wind integration cost sensitivity analysis with a significantly lower cost value ($5.38/MWh as opposed to the original value of $9.70/MWh). The Company estimated that adopting IEA's recommended wind capital cost would increase wind resource additions in PacifiCorp's system by 150 MW or less.

Finally, it is questionable if IEA's comments focused on near term considerations are applicable for a resource plan intended to meet long term load service obligations. PacifiCorp's modeling demonstrates that the best long term cost-effective and cost-risk balanced portfolio is one that includes the full Energy Gateway transmission configuration. As noted in PacifiCorp's response on the early acquisition of wind resources, any material additions of wind-powered generation resources in Wyoming will require upgrades west of the Windstar substation. IEA's comments on capital costs fail to account for the fact that these upgrades cannot be completed in the near term.

PacifiCorp's Wind Integration Study

IEA claims that PacifiCorp's 2010 wind integration study is flawed to the extent that the Commission should disregard it and preclude the Company from incorporating it in its planning, ratemaking, and bid evaluation practices until claimed deficiencies are resolved.[6] IEA also states that "PacifiCorp is slow to include best practices in its wind integration operations, which placed undue cost burdens on consumers."[7] To support these claims, IEA cites Utah general rate case testimony from Randall Falkenberg that identifies alleged errors in the wind integration study.[8]

The Company does not agree with IEA that the wind integration study is significantly flawed and inappropriate for use, and points out some of the key conclusions stated in the National Renewable Energy Laboratory's recent report on variable generator integration costs ("Cost-Causation and Integration Cost Analysis for Variable Generation").[9]

> "There is no universal agreement on methods for calculating renewables' integration costs, and even when there is agreement on methods, they are not consistently applied or are applied with errors."

[6] IEA Comments, p. 6.
[7] IEA Comments, p 7.
[8] Mr. Falkenberg's "review and critique" of the 2010 wind integration study is included as Exhibit B in IEA's comments.
[9] IEA references this report in their comments on page 6. The NREL report is available for download using the following Web hyperlink:
http://www.nrel.gov/wind/systemsintegration/pdfs/2011/milligan_cost_causation_integration_cost_analysis.pdf

> "There is general agreement that wind has an impact on operations, but there is substantial disagreement about whether/how integration costs can be measured."

These NREL conclusions are in line with PacifiCorp's view that its decisions to not adopt some of the methodological recommendations by parties do not translate into technical flaws in the study. We also concur with NREL that wind integration analysis is an evolving activity, and thus dispute IEA's contentions that there is a well-established set of "best practices" for wind integration analysis, and that "PacifiCorp is slow to include best practices in its wind integration operations."

PacifiCorp points out that it developed a fundamentally new methodology more closely tied to its operational experience, and which addresses comments received from stakeholders on the wind integration study conducted for the 2008 IRP and in subsequent general rates cases. The Company believes that it achieved its study objectives and produced a wind integration cost reflecting important methodological improvements over previous study efforts. Regarding specific study flaws pointed out by Mr. Falkenberg in his testimony, the Company provided detailed responses and refutations in its rebuttal testimony for both the Wyoming and Utah general rate cases.[10]

While the Company will continue to investigate methodological concerns on the study raised by IEA and other parties for the next wind integration study, the Company sees no basis for judging that the study results are invalid and not suitable for use in various regulatory proceedings.

Solar Program Implementation in Utah

IEA remarks that PacifiCorp should have done a more thorough job of evaluating solar power's economic benefits for Utah customers, including acquiring more resource cost and photovoltaic (PV) technology information in light of recent market developments and PacifiCorp's own bid prices for its Oregon solar Request for Proposals (RFP). IEA recommends that the Commission "require additional concrete action items including further analysis of the peak shaving potential of photovoltaic resources in Utah as part of the IRP Update."[11]

PacifiCorp believes that it conducted a thorough and balanced assessment of solar technologies and costs for IRP portfolio modeling, including using a knowledgeable third-party (The Cadmus Group) to develop distributed solar resource characterizations with consideration of public input and the Company's solar program experience. PacifiCorp acknowledges that market dynamics continue to put downward pressure on solar equipment, and that regular monitoring of the solar market—as PacifiCorp continues to do—is important for seeking solar resource opportunities. At the same time, solar resource economics continues to be heavily dependent on subsidy programs,

[10] See the following:
"Redacted Rebuttal Testimony of Gregory N. Duvall", May 2011, Wyoming Docket No. 20000-384-ER-10.
"Redacted Rebuttal Testimony of Gregory N. Duvall, Net Power Costs", June 2011, Utah Docket No. 10-035-124 (Available from the Utah Public Service Commission's Web site, at http://www.psc.utah.gov/utilities/electric/elecindx/2010/10035124indx.html.)

[11] IEA Comments, pp. 14-15.

while successful program expansion in Utah requires careful consideration of program design and implementation issues to ensure cost-effective realization of benefits. To this end, the Commission opened investigative docket No. 11-035-104 on July 7, 2011, which establishes a workgroup to be formed and led by the Utah Division of Public Utilities for the purpose of investigating the cost-effective extension and expansion of PacifiCorp's Utah solar incentive program. With this docket in place, and opportunities to apply workgroup findings to the next IRP process, the Company does not believe that additional action items pertaining to Utah solar resources are warranted.

Regarding the sufficiency of resource costs for utility-scale solar resources, based on discussions with developers of PV projects, the Company decided to use a typical recent pro-forma cost to represent the PV cost since PV panel development costs have decreased in recent years. The cost used is generic and does not reflect either specifically thin film or crystalline silicate since both panel designs are being offered depending on the solar resource and developer. Costs in this range were quoted repeatedly by developers in meetings and informal contacts. The cost used is considered representative of a multiple megawatt PV development.

Energy Gateway Transmission Investment Costs

IEA infers that PacifiCorp may have inappropriately assigned costs of Energy Gateway transmission expansion to wind resources rather distributing costs to all resources via the use of wind-only bubbles and assignment of transmission costs to those bubbles as evidence of inappropriate cost assignment.[12]

IEA's conclusion that Energy Gateway transmission costs are assigned to wind resources is incorrect. The Company only assigned the incremental transmission costs needed to interconnect the wind with the grid, not the Energy Gateway segment costs. The IRP mentions that this cost assignment was accomplished with the use of "wind-generation-only" transmission bubbles in certain cases. For Energy Gateway scenario 1, which only includes the Energy Gateway Central segments, a large investment in west-side transmission would be needed to support at least 500 MW of additional wind in Washington and Oregon. As discussed on page 128 of the IRP, PacifiCorp did not use a wind-generation-only bubble to assign costs for this transmission scenario; rather, a cost adjustment was applied to the total portfolio PVRR after the model determined the portfolio solution. As a result, neither the Energy Gateway transmission costs nor the west-side incremental transmission cost adjustment applied for Energy Gateway scenario 1 had any effect on the quantity of wind selected by the model.

Investments in Existing Coal Plants

IEA states that retiring coal plants to avoid environmental retrofit investments will save consumers money, and that the IRP modeling did not sufficiently analyze system-wide cost savings that could be realized from acquiring alternative energy sources.[13]

[12] IEA Comments, p. 16.
[13] IEA Comments, p. 18.

The Company responded to other Utah party comments on coal plant investment analysis in its Utah reply comments filed with the Commission on October 5, 2011. Included with the Company's reply comments was a supplemental Coal Replacement Study prepared for the Wyoming application for a Certificate of Public Convenience and Necessity (CPCN) for Naughton 3 pollution control investments. The Coal Replacement Study used the System Optimizer capacity expansion model to (1) test the economic merit of continued use with environmental retrofits against retirement and optimized portfolio replacement, (2) evaluate the risk of retirement under different cost scenarios, and (3) allow feasible replacements as of the earliest substantive environmental compliance deadline. This supplemental analysis reaffirms the findings of the coal utilization sensitivities performed for the IRP, and shows that the Company's coal resources, with planned incremental investments, will continue to provide reliable and least-cost electric service to customers in alignment with the IRP preferred portfolio and action plan.

3. HEALTHY ENVIRONMENT ALLIANCE OF UTAH, UTAH MOMS FOR CLEAN AIR, AND UTAH PHYSICIANS FOR A HEALTHY ENVIRONMENT

HEAL Utah et al. state that the IRP is "deficient in its consideration of the negative health effects inherent in an electricity generation portfolio that heavily relies on fossil fuels."[14] They state that the Company does not provide analysis of externality costs of fossil fuel extraction and combustion, and is thus "both legally and technically inadequate". HEAL Utah et. al. then cite three studies on the health effects and costs of fossil fuel emissions, including the Synapse Energy Economics study titled "Utah Co-Benefits of Energy Efficiency and Renewable Energy in Utah."[15]

PacifiCorp believes that incorporating costs associated with projects to maintain compliance with environmental regulations established by the U.S. Environmental Protection Agency (EPA) and other governing agencies prudently and appropriately addresses the potential effects of coal generation emissions on human health. Adding further externality cost adjustments, as suggested by HEAL Utah et al. is not appropriate in IRP modeling analyses. The Company notes that the EPA and other governing agencies are specifically tasked with addressing such costs and health impacts as part of their regulatory oversight obligation to establish appropriate emissions control requirements for the power generation industry. For example, the EPA maintains National Ambient Air Quality Standards that are designed to be protective of human health and the environment. The Company maintains compliance with such regulations and has incorporated the appropriate compliance costs into its IRP modeling effort. In addition, the Company's carbon dioxide tax assumptions, in the absence of carbon regulations, incorporate externality costs of thermal plant emissions not currently addressed by regulatory agencies.

[14] HEAL Utah el al. Comments, p. 1

[15] HEAL Utah et al. fail to mention the Utah state agency disclaimer that the Synapse co-benefit study was only intended to inform the state agencies on energy efficiency and renewable energy deployment in the state. The state agencies that supported the study further cautioned against using it and its findings for other purposes.

The Company is committed to maintaining compliance with all environmental requirements assigned to its operating facilities, including those that are established to protect human health and has incorporated compliance costs into the IRP.