PSE 2013 IRP UPDATE (December 31, 2013)

Summary

PSE's strategy of relying on over 1600 MWs of short-term capacity markets delivered to load over firm transmission is reasonable because the region is currently surplus firm generation capacity. Moreover, as long as the region remains surplus capacity, relying on that capacity is a low-cost strategy to meet the energy needs of PSE's customers. However, two large coal plants in the region are scheduled to retire by 2021 that would, in the absence of sufficient replacement resources being built, result in the region being deficit 2000 MWs. Currently 1300 MWs of new generation is under construction in the region. Additionally, sufficient new generation resources are planned and permitted so that the remaining generation short-fall could probably be built with a three-year lead time. This leads to a conclusion that PSE's current resource strategy will not be riskier in the near future—from a cost or physical reliability perspective. Therefore, the Company is not making a change to this resource strategy with respect to reliance on short-term capacity markets at this time, but will continue to monitor and evaluate this strategy to ensure it maintains a reliable, low cost resource mix.

Introduction

PSE relies on short-term markets for capacity, using long-term firm transmission capacity from the Bonneville Power Administration ("BPA") to bring energy from the Mid-Columbia market to PSE's load. PSE's reliance on short-term markets is currently over 1600 MW out of a 6000 MW planning peak. Reliance on the short-term markets is a low-cost, prudent strategy as long as the regional energy market has sufficient capacity to meet the region's needs. Under such market conditions, it is less expensive for our customers to rely on the regional surplus, delivered over firm transmission, than to build new generation.

However, reliance on short-term capacity markets is a reasonable, low-cost strategy only if there is sufficient generation in the region to support market needs. Under these market conditions, it is currently less costly to rely on the regional surplus (with firm transmission to ensure the power gets to PSE's system) than to build new capacity. This highlights the importance of the region's load/resource balance to PSE's resource strategy to provide reasonable reliability at reasonable cost.

Determining whether the region has adequate resources is a complex endeavor. The primary source of this information is the Resource Adequacy Advisory Committee, which is a group jointly chaired by the Northwest Power and Conservation Council ("Council") and BPA, with participation from utilities, regulators, and other stakeholders in the region[1]. The Council's 2012 adequacy report concluded that the region has an

[1] Until recently this organization was called the Northwest Resource Adequacy Forum. The group was reorganized in mid-2013 and the name was changed.

increased likelihood of a power supply shortfall as compared to the previous study[2] and this concern is only exacerbated with the scheduled retirement of two large coal plants in the region by 2021[3]. The Northwest Power Planning Council's most recent analysis from January, 2013 concluded the region needs 2000 MW of firm resources to maintain acceptable reliability standards after retirement of these coal plants.[4]

PSE would not want to be caught short if the region becomes capacity constrained. Such conditions would drive up costs and/or result in an unreasonable level of reliability for our customers. Thus, whether the potential 2000 MW regional shortfall actually gets addressed by the construction of new, firm resources is an important issue for PSE and our customers. Whether new, firm generation would be built, owned, and operated by PSE, another utility, or independent power producers ("IPPs") are investment/acquisition-level decisions to be worked out in the market place. As long as the generation comes online, PSE's strategy would remain viable.

Reducing PSE's dependence on short-term capacity markets would come at a significant cost to customers. In its recent power cost only rate case, WUTC Docket No. UE-130617, PSE presented an analysis of the decision to renew a set of long-term transmission contracts. That analysis demonstrated renewing 115 MW of transmission (plus short-term market purchases) saved customers between $44 million and $56 million in total portfolio benefits relative to replacing it with combustion turbines. These are significant savings. However, the savings are available only because the region has sufficient resources. Thus, the regional load/resource balance is key to PSE's strategy of relying on short-term market delivered to load over firm transmission.

Regional Outlook

Appendix I to PSE's 2013 IRP includes the Council's January 2013 memorandum explaining the region would be short 2000 MW of firm generation by 2021. Firm generation includes CCCT, CT, hydro, geothermal, and biomass. That memorandum also described that regional utilities are planning to build sufficient generation to cover that short-fall. That conclusion, however, was based on a review of the Pacific Northwest Utilities Conference Committee's Northwest Regional Forecast, which is essentially a review of utility IRP resource additions. IRPs are very early-stage planning documents and thus are better indicators of what will be acquired by utilities rather than actual new resource construction. Therefore, PSE examined two additional categories of information about planned generation in the region: generation under construction and generation resources under development. Both categories are still "planning" but represent different levels of preparedness to execute. Figure 1, below, provides a timeline for the process to build a power plant in Washington State, illustrating the permitting and construction phases. Additionally, PSE thoroughly reviewed the

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[2] Northwest Power & Conservation Council, *Final Report, Pacific Northwest Power Supply Adequacy Assessment for 2017, Council Document 2012-12* (Nov. 21, 2012), *available at*, PSE's 2013 IRP – Appendix I: Regional Resource Adequacy.

[3] The Boardman plant is approximately 600 MW and Centralia Unit 1 is approximately 730 MW.

[4] *See* PSE's 2013 IRP – Appendix I: Regional Resource Adequacy.

resource database in the Council's loss of load probability model, to ensure all recently completed plants were reflected. The following summarizes results of PSE's research:

- Review of Resource Additions in Regional IRPs: Utility IRPs show regional utilities are "planning" to build or acquire approximately 2400 MWs of generation resources—sufficient to cover the 2000 MW shortfall. However, IRPs are high-level planning documents. IRPs focus mostly on resource needs and how those might be filled in a long-term framework, so may not be the best information source for understanding whether specific resources will be developed.
- Review of Resource Recently Constructed: Several smaller-scale projects have been completed recently, but were not reflected in the Council's analysis. While amounting to only approximately 70 MWs, it does help to reduce the 2000 MW regional shortfall. These completed resources are detailed in Figure 2, below.
- Resources Under Construction: There is currently approximately 1300 MWs of firm generation under construction in the Northwest that is planned to be on-line before 2021 as detailed below in Figure 3. These are resources that will be dedicated to PacifiCorp and Portland General Electric. Adding resources under construction to the 70 MWs identified above indicates 1370 MWs of the 2000 MW regional shortfall will be covered, leaving the region short by approximately 630 MWs.
- Resources in Advanced Development: There is a significant amount of generation in the advanced development phase, based on a review of the SNL energy database. For this analysis, a resource is considered to be in "advanced development" when two of following five criteria has been met: financing in place; power purchase agreement signed; turbines secured; required permits approved; or contractor signed on to the project. Figure 4, below, illustrates that there are approximately 1400 MWs of generation that meet the criteria for advanced development—more than twice the amount needed to fill the remaining 630 MW short-fall. This amount is roughly split evenly between utilities and IPPs. Beyond resources shown in Figure 4, IPPs in the region have several other projects that did not meet the "advanced development" definition for SNL, but could also be completed before 2021. Activity by the IPPs, back-stopped by utility development activity bodes well for the region's continued resource capacity surplus. Future utility acquisitions processes will drive which specific plants are ultimately constructed, but this information demonstrates the region is well positioned to cover the remaining capacity short-fall by 2021.

Figure 1—Combustion Turbine Development and Construction Schedule

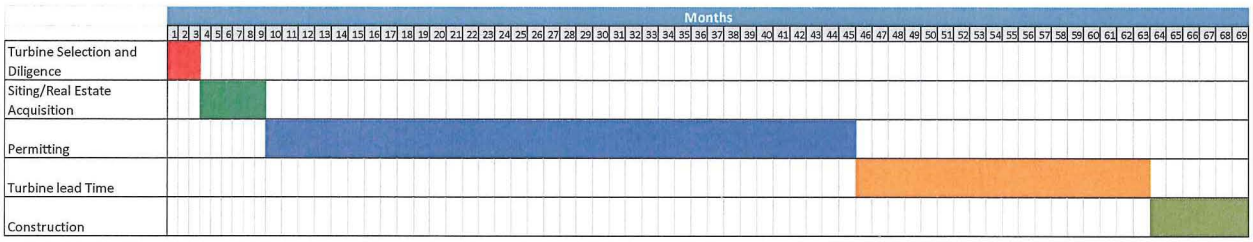

Figure 2--Resources recently constructed

Utility	Plant	MW	Type	Location	Date
Puget Sound Energy	Snoqualmie Falls Upgrade	10	Hydro	W. WA	2013
Puget Sound Energy	Lower Baker 4	30	Hydro	W. WA	2013
Idaho Power	Neal Hot Springs	25	Geothermal	ID	2012
Tacoma Power	Cushman North Fork Upgrade	4	Hydro	W. WA	2013
Total		**69**			
Regional Short		**(2000)**			
Remaining Balance		**(1931)**			

Figure 3—Firm Generation Currently Under Construction

Utility	Plant	MW	Type	Location	Date
PacifiCorp	Lake Side 2	645	CCCT	Utah	2014
Portland General Electric	Carty Generating Station	440	CCCT	E. OR	2016
Portland General Electric	Port Westward 2	220	Recip	W. OR	2015
Total		**1305**			
Regional Short		**(1931)**			
Remaining Balance		**(626)**			

Figure 4—Resources in Advanced Development

Utility	Plant	MW	Type	Location	Date
Puget Sound Energy	Fredonia 5	221	CT	W. WA	?
Avista	Little Falls Upgrade	3.2	Hydro		2017
Idaho Power	Shoshone Falls	49	Hydro		2019
Portland General Electric	Carty Generating Station 2	460	CCCT	E. OR	2021
Utility Total		**733**			
Iberdrola	Klamath CC	544	CCCT	S. OR	2014
AltaRock Energy Inc.	Newberry	120	Geothermal		2015
Ormat	Crump Geyser	20	Geothermal		2014
IPP Total		**684**			

Conclusions

It appears the region is well positioned to fill the remaining 630 MW of capacity shortfall, after consideration of resources currently under construction. Some combination of utility and/or independent power producers may end up being the least-cost generation sources, once utilities follow their acquisition procedures. With enough resources permitted in both sectors to cover the shortfall, it is reasonable to conclude the region will not fall below acceptable levels of resource adequacy. The analysis presented above illustrates PSE's current resource strategy of relying on short-term capacity markets delivered to our system over firm transmission and the Company's development of new generation continues to be reasonable. Accordingly, there is no need to revise PSE's strategy at this time.