July 22, 2020

To: Irena Netik – PSE Director of Energy Supply Planning and Analytics

Cc: Brad Cebulko – UTC Staff
Steve Johnson – UTC Staff
Deborah Reynolds – UTC Staff
Kyle Frankiewich – UTC Staff
Kathi Scanlan – UTC Staff

Subject: 2021 IRP Electric Demand Forecast

Dear Ms. Netik and IRP Team,

Members of the IRP stakeholders are looking forward to PSE's 2021 load forecast, to be covered in an IRP webinar scheduled for September 1.

As you know, PSE's gas and electric demand forecasts are important elements of its Integrated Resource Plan. In addition to justifying resource acquisitions, the demand forecasts also become the basis of other consequential calculations. For example, the expected rate of demand growth is a primary input to calculate the cost-effectiveness of Demand Side Resources.

For the past ten years, PSE's forecast of electric demand has been consistently higher than observed demand. According to a 2016 study by Lawrence Livermore National Laboratories,[1] the discrepancy between observed load growth and PSE's base forecast was the highest among utilities serving Washington and Idaho in the study (Avista, Seattle City Light, PacifiCorp, Idaho Power).[2] We are heartened that PSE's base forecast of peak demand, although high, was more accurate than most of the utilities in the study, except PacifiCorp.[3]

PSE has not adequately explained why previous forecasts were too aggressive. Correcting these problems is critical to improve accuracy of future forecasts. We surmise that the company failed to properly account for warmer winters in the Puget Sound area, conservation and efficiency pursued by customers beyond PSE's conservation measures, and perhaps some lingering cost-consciousness among consumers after the Great Recession. Members of PSE's 2019 Technical Advisory Group also mentioned potential bias of PSE's weather normalization methodology using data from 30 years ago, before technology and climate change made significant impacts on demand.

Although the 2019 IRP was never completed, there were some encouraging developments. For the first time, PSE showed historical demand trends using actual data points in addition to the weather normalized data. The timeframe of the historical trend, about ten years, was reasonable. However, weather normalization continued to use at least three decades of past data. Seven years ago, the Journal of Applied Meteorology and Climate recommended using 15 years of temperature data for normalization, a standard that was adopted by New York's utility commission:[4]

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[1] https://emp.lbl.gov/sites/default/files/lbnl-1006395.pdf
[2] *Ibid,* Table 19
[3] *Ibid,* Table 20
[4] https://www.scottmadden.com/insight/traditional-weather-normalization-practices-used-utilities-ratemaking-process-appropriate-given-increased-climate-variability/

According to a 2013 paper published in the Journal of Applied Meteorology and Climate, the use of 30-year surface temperature averages as estimates of future temperatures will, in many instances, result in a 'cold bias'—predicting temperatures will be colder than those actually experienced; using the most recent 15-year average is the best method for developing weather normalization curves.

Another concern is PSE's use of demand peaks in December as an approximation for maximum annual peak. During the past 15 years, two-thirds of the maximum yearly peaks occurred in months other than December. It is normal practice for Washington utilities to report the maximum annual peak rather than restricting the analysis to the month of December.

To provide an accurate and transparent load forecast, we ask PSE to address the following issues in the September meeting:

1. Please explain the source of inaccuracies in past forecasts, and how those errors have been corrected for the 2021 load forecast.
2. Explain any significant differences between the 2021 forecast and past growth trends.
3. Show approximately ten years of actual winter and summer peak demand data to illustrate past trends.
4. In collaboration with University of Washington and/or Pacific Northwest National Laboratory, use the best recent climate models to anticipate regional climate trends during coming decades.
5. If weather normalization remains relevant with updated climate models, use 10 to 15 years of past data to avoid "cold bias." Show all the data used for normalization.
6. Show past winter peak trends using the maximum peak values observed during all cold months (November-March) rather than just December.
7. Show past summer peak trends using the maximum peak values observed during all warm months (June-September).
8. Explain how the effects of CETA may significantly impact demand growth during the coming decade.
9. Explain how COVID might alter demand in coming years. Although the long-term economic impacts may be difficult to foresee, it would be helpful for PSE to share low, medium, and high forecasts with an explanation of the assumptions used in each.
10. Explain how rapid technological advances in solar panels, batteries, demand response, electrical efficiency, electric vehicles, and the desire to switch from fossil fuels to electricity are likely to alter demand growth in the coming decade.
11. Explain any significant differences between PSE's demand forecast and those of nearby utilities such as Seattle City Light, Snohomish PUD, Tacoma Power, PacifiCorp, Avista, and Portland General Electric. What regional factors may cause PSE's forecast to diverge from other utilities?

Transparent and thorough coverage of these points will help stakeholders understand the forecast and feel comfortable with PSE's analysis.

Sincerely,

Don Marsh, principal stakeholder
Fran Korten, Climate Action, Bainbridge
Warren Halverson, CENSE
Rob Briggs, Vashon Climate Action Group
Kevin Jones, Vashon Climate Action Group
David Perk, 350 Seattle
Norm Hansen, Bridle Trails Neighborhood
Michael Laurie, Sustainability Consultant, Watershed LLC
Kate Maracas, Managing Director, Sound Energy Group
Willard Westre, Union of Concerned Scientists