PSE IRP Feedback Report
Webinar 7: CETA Assumptions, Demand Forecast, Resource Adequacy, Resource Need
September 1, 2020

9/15/2020

The following stakeholder input was gathered through the online Feedback Form, from August 25 through September 8, 2020. PSE's response to the feedback can be found in the far-right column. To understand how PSE incorporated this feedback into the 2021 IRP, read the Consultation Update, which will be released on September 22, 2020.

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<tr><th>Feedback Form Date</th><th>Stakeholder</th><th>Comment</th><th>PSE Response</th></tr>
<tr><td>8/27/20</td><td>Mike Hopkins, Fortis BC</td><td>I was wondering if the peak electric load forecast on slide 28 includes any programs/initiatives/rates, such as time-of-use or EV charging rates, that would reduce the impacts of EV home charging on peak loads by shifting charging to off-peak times? If yes, how much is the peak load reduced vs. without these things? if no, are you planning to include them or include a qualitative discussion of what they might be able to do in terms of shifting peak charging?</td><td>The peak loads associated with EVs do not include assumptions for specific future programs, initiatives, or rates. In this IRP, PSE is modeling several demand response programs including commercial and industrial (C&I) critical peak pricing (CPP) and EV charging:

<table><tr><th>Product</th><th>Group</th><th>Number of Events</th><th>Notification Type</th></tr><tr><td>C&I CPP-No Enablement</td><td>Commercial Critical Peak Pricing</td><td>Up to ten 4-hour events</td><td>Day-ahead (non-dispatchable)</td></tr><tr><td>C&I CPP-With Enablement</td><td>Commercial Critical Peak Pricing</td><td>Up to ten 4-hour events</td><td>Day-ahead</td></tr><tr><td>Res Electric Vehicle DLC</td><td>Residential Electric Vehicles</td><td>Up to ten 4-hour events</td><td>Day-ahead</td></tr></table>
The IRP modeling process will determine how much peak load may be reduced by these types of demand response programs.

Additionally, going forward in future IRPs, assumptions about EV demand response program design and peak load reduction will be based on experience gained through the Up & Go Pilot Program, which PSE is currently running.</td></tr>
<tr><td>[sent by email 08/22/20]</td><td>Don Marsh, CENSE</td><td>Don provided a two-page letter directed to Irena Netik and IRP staff with questions for the September 1 webinar.</td><td>Thank you for providing questions prior to the meeting. Your questions informed the meeting content. Questions 1 through 10 were addressed during the webinar. Question 11 is addressed below. The letter, dated July 22, 2020, is uploaded as part of the Feedback Report.</td></tr>
<tr><td>[sent by email 08/22/20]</td><td>Don Marsh, CENSE</td><td>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?</td><td>PSE expects load forecasts to differ among regional utilities due to various reasons, including:

1. Differences in type of service area. Utilities with primarily urban service areas have different opportunities for growth than do utilities with service areas that include suburban and/or rural areas. Additionally, whether customers have access to natural gas service affects trends in electric consumption.
2. Difference in composition of customer class mix. Trends in growth and usage differ among the residential, commercial, and industrial classes.
3. Climate. A utility that is primarily peaking due to heating load will have different consumption trends than a utility that serves both heating and cooling load equally.</td></tr>
<tr><td>8/28/20</td><td>Don Marsh, CENSE</td><td>Attached is a two-page letter with feedback on the electric demand forecast. This will also be sent to UTC staff by email. This letter contains several requests for corrections and more transparent data.</td><td>The letter, dated July 22, 2020 and received on August 28, 2020, is uploaded as part of the Feedback Report and the material content provided below.</td></tr>
<tr><td>8/28/20</td><td>Don Marsh, CENSE</td><td>After reviewing the presentation for the upcoming (Sept. 1) IRP webinar to review PSE's latest load forecast, I would like to thank the team for some positive steps in this forecast:

1. The declining post-DSR electric forecast is more inline with forecasts for other nearby utilities (Seattle City Light, Tacoma</td><td>Thank you for this positive comment concerning improvements to PSE's IRP process.</td></tr>
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		Power, Snohomish PUD). For example, PSE's forecast shows a -0.4% AAGR for 2021-2031. For comparison, Seattle City Light's 2018 IRP shows an AAGR of -0.6% for the same period. We are pleased to see the post-DSR estimate on the same graph as forecast growth pre-DSR. 2. PSE includes summer and winter peak demand data for 2008-2019 (slides 48 and 49), and a reference to the data source from the FERC library. This data clarifies historical trends. 3. In response to our queries about weather records and the basis of weather normalization, PSE published a table on slide 29 showing different durations for calculating normal weather. It is obvious that heating declines with shorter history periods (probably due to local climate change), and cooling increases. PSE's chosen standard is for a 30-year period, which appears to overstate heating and understate cooling.	
8/28/20	Don Marsh, CENSE	[Opportunity for improvement 1] The AAGR shown in the post-DSR electric forecast appears misleading without further context. The expected demand declines until 2031, and then starts to increase, leading to an overall AAGR of 0.2%. But the increases and the AAGR may be illusory because PSE is not accounting for any new conservation programs after 2031. The graph says, "No new conservation after committed 2-year targets," but this does not clarify that the increasing demand after 2031 is an accounting artifact, not a realistic possibility. If anything, more aggressive conservation will be necessary after 2031 to reach 100% clean energy by 2045 in accordance with CETA goals. This graph is specifically extended to 2046 to account for CETA, but the load forecast itself doesn't appear to account for the effects of CETA.	Positive customer growth, steady use per customer, and electric vehicles yield demand growth before demand side resources (DSR) are included. Applying DSR will result in an "after DSR" forecast with lower growth than "before DSR." The final amount of DSR will be determined by the portfolio model. The portfolio model results are forthcoming in the current IRP process and are yet to be determined. The "after DSR" results presented during the webinar are for illustrative purposes only and is based on DSR amounts determined by the 2019 IRP process. The final "after DSR" demand forecast will be available once the economic DSR amount is determined. The Clean Energy Transformation Act (CETA) affects the amount of demand-side resources. Demand-side resources are included as a resource option in the IRP portfolio model and are not included in the "before DSR" base demand forecast. The demand forecast from 2022 through 2045 is used as an input into the portfolio modeling, which is the purpose of showing the forecast through 2045 even though the forecast "before DSR" does not account for CETA.
8/28/20	Don Marsh, CENSE	[Opportunity for improvement 2] Although PSE included a table showing historical summer peak demand, the presentation includes no forecast for summer peaks. It doesn't even include a graph of historical summer peak demand, so I created the graph from PSE's data [see Don's letter OR Michele to insert picture]:	The IRP analysis optimizes generation resources to meet the maximum capacity need. For PSE the customer load has historically peaked in the winter. However, PSE will consider providing stakeholders the historical and forecasted electric summer peak information.

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		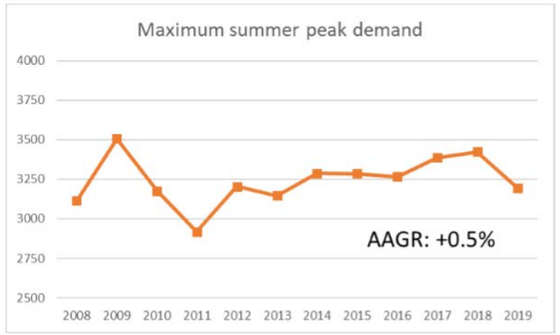 The graph shows a very gradual rise in summer peak demand, averaging about 0.5% per year. The peak in 2018 was almost as high as the highest peak in 2009, although the peak temperature in 2018 was eight degrees cooler, so it appears that peaks are gradually increasing.	
8/28/20	Don Marsh, CENSE	[Opportunity for improvement 3] We are puzzled why PSE is issuing RFPs for winter demand response, but no corresponding RFP for summer demand response. Summer peaks are increasing, and winter peaks are not. Obviously, the summer peaks are about 25% lower than winter peaks, but we understand that PSE is concerned about summer reliability. Does PSE believe that summer demand response is not needed or not as feasible as winter demand response?	The RFP is targeting specific areas that have a winter morning peak capacity need. Future RFPs will have different objectives.
8/28/20	Don Marsh, CENSE	[Opportunity for improvement 4] Using 30 years of weather records to normalize weather calculations is at the upper limit of what we consider reasonable, given recent changes in climate. As we observed in earlier letters, New York's utility commission is using 15 years of weather records for normalization.	The effects of warming temperature trends on the demand forecast will be analyzed as a sensitivity and has been added to list of portfolio sensitivities.
8/28/20	Don Marsh, CENSE	[Opportunity for improvement 5] On slide 63, PSE appears to be using "88 temperature years" as an input to the Resource Adequacy Model. This may distort the results and introduce "cold bias" in the model that could be potentially costly for ratepayers. We ask that no record before 1990 be used to better account for recent climate changes.	The effects of warming temperature trends on the demand forecast will be analyzed as a sensitivity and has been added to list of portfolio sensitivities.
8/28/20	Don Marsh, CENSE	[Closing suggestion] Declining winter peaks and gradually increasing summer peaks provide PSE and ratepayers some room to concentrate on CETA goals and smart energy management. However, clear data is needed to understand the challenges and opportunities before us. We encourage PSE to provide this data and strong leadership to achieve successful outcomes.	Thank you for your comment.

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9/2/20	James Adcock	I am concerned that Elizabeth Hossner keeps saying that the EPA somehow is responsible for "RECs" -- vetting them, defining them, etc. I have diligently searched the EPA website and find nowhere any indication that these statements are true. On the contrary, RECs seem to be defined, tracked, and retired by various regional authorities, and the process of "vetting" RECs appears to be done by independent third parties. I ask that Puget and Elizabeth Hossner please double-check and update their understanding of RECs and how they work -- and why they are not "available" on a nationwide-basis, but only within a region. And please communicate this corrected understanding to IRP participants once you have done so, because I am afraid your comments are confusing participants. See for example, the REC registration organization for the Western region: https://www.wecc.org/WREGIS/Pages/Default.aspx	RECs are a nation-wide program and can be sold nation-wide. There is a national REC market for voluntary REC purchases (for corporations/entities wanting to voluntarily buy RECs). For compliance purposes, there are many regional markets across the nation and PSE participates in the WECC region. Eligible RECs for the WA Renewable Portfolio Standard (RPS) have to meet certain requirements outlined in RCW 19.285 and 194-37 WAC, one of which states that the generation source be located in the Pacific Northwest. Therefore there is a WA RPS Compliant regional market. The Washington Clean Energy Transformation Act (CETA) does not have a geographic restriction. WREGIS is the tracking system for purposes of verification of RECs under RCW 19.285. WREGIS certifies RECs for the WECC region for the Energy Independence Act (EIA), RCW 19.285. This information is available to all stakeholders. All feedback forms and consultation updates are available on pse.com/irp.
9/2/20	James Adcock	I ask that Puget and Elizabeth Hossner please double-check and update their understanding of RECs and how they work -- and why they are not available on a nationwide-basis, but only within a region. And please communicate this corrected understanding to IRP participants once you have done so, because I am afraid your comments are confusing participants.	The response is provided above.
9/2/20	Don Marsh, CENSE	After participating in yesterday's Demand Forecast webinar for PSE's 2021 IRP, a number of stakeholders were dismayed that PSE refused our requests to include a forecast of peak summer demand. The attached letter shows that Avista is supplying this information in its 2021 IRP. The convergence of winter and summer forecasts in Avista's service area may justify concern by PSE's customers as well. If summer demand is actually growing in PSE's service area, perhaps greater investment in solar panels and energy storage would be a cost-effective solution. Without good data about these trends, it is difficult to tell.	The letter, dated September 2, 2020, is uploaded as part of the Feedback Report. Your questions and PSE's responses are provided below. The IRP analysis optimizes generation resources to meet the maximum capacity need. For PSE the customer load has historically peaked in the winter. However, PSE is evaluating your request and will respond in the Consultation Update.
9/2/20	Don Marsh, CENSE	Please share PSE's summer peak demand forecast with normal weather based on 15-20 years of historic data.	The IRP analysis optimizes generation resources to meet the maximum capacity need. For PSE the customer load has historically peaked in the winter. However, PSE is evaluating your request and will respond in the Consultation Update. The normal weather assumption for PSE's demand forecast is based on the most recent 30 years of weather data. PSE has added a temperature sensitivity to the list of portfolio sensitivities.
9/8/20	Joni Bosh, NW Energy Coalition	See attached comments	The comments have been uploaded as part of the Feedback Report and the material content provided below for PSE's response.

Feedback Form Date	Stakeholder	Comment	PSE Response
9/8/20	Joni Bosh, NW Energy Coalition	In response to the question posed on prioritizing options for the 20% alternative compliance actions that might be addressed in the 2021 IRP, NWEC would urge PSE to model an aggressive amount of conservation and demand response. Beyond the required conservation and demand response required in sections .040 and .050 of CETA, additional innovative conservation, efficiency, storage and demand response should be considered for Energy Transformation Projects. Exploring those has the double impact of further reducing/managing load and achieving additional GHG reductions.	Thank you for your feedback, PSE will add a sensitivity to increase conservation and demand response as part of the alternative compliance options to the list of portfolio sensitivities.
9/8/20	Joni Bosh, NW Energy Coalition	Regarding the two charts on pages 24 and 38 of the presentation, it would be helpful to have more discussion on the impact of a couple of assumptions: 1. How would demand look in both the short and long run if there is a second or even third wave of coronavirus infections? 2. How does the current economic demographic model on slide 24 link with the demand forecast by the mid-2020s on slide 38? Is most of the lower peak attributable to lower per customer usage? –	Thank you for your two questions on pages 24 and 38 of the September 1, 2020 webinar. PSE's responses are provided below: 1. The base demand forecast includes assumptions about the pandemic, based on Moody's May 2020 economic outlook assumptions. The base demand forecast assumes that new infections begin to abate in July 2020 and there is no second wave of infections. PSE has not developed a demand forecast specifically for alternative pandemic scenarios. As part of regular IRP practice, in addition to the base demand forecast, a low and high demand forecast will be developed. The low demand forecast could be used as a proxy for a more severe pandemic scenario. 2. The employment forecast presented on slide 24 is an element of the customer growth and usage forecast, with employment levels appearing mostly in non-residential modelling. The 2020 slowdown impacts the demand forecast through lower usage in the short term and lasting "lost" customer additions in the medium and long term. However, separate from downstream impacts resulting from the economic contraction, other modelling updates yielded lower projections of non-residential customer growth and usage as well. The lower IRP peak demand after 2025 is a mix of several things: inclusion of 2020/2021 conservation targets not included in the 2019 IRP process, lower customer usage projections (particularly non-residential), and lower customer growth (which includes the lagged economic effects presented on slide 24).
9/8/20	Joni Bosh, NW Energy Coalition	We would strongly encourage using a 15-year historical base for heating and cooling day analysis instead of the 30-year base, as the data on slide 29 certainly supports that approach. Assuming "average weather" is probably acceptable for the energy forecast, if PSE uses the shorter time period of 15 years, as the shorter time period incorporates actual, real climate change impacts. Using the 15 year historical base could well modify the forecast peak trends.	PSE has added a temperature sensitivity to the list of portfolio sensitivities.
9/8/20	Robert Briggs, Vashon Climate Action Group	Given the strong correlation between PSE's electric load and outdoor temperature, I'm surprised PSE has not tapped into regional expertise in climate modeling to inform the IRP process. During the webinar, much discussion centered around what length of historic weather data should be used in load forecasting. PSE uses economic and other types of forecasting in projecting future loads. Why not do the same for climate, which impacts temperature-driven space-conditioning loads and water availability for hydro? World-class capabilities in regional climate modeling can be found at the University of Washington's Climate Impacts Group [https://cig.uw.edu/] and at Pacific Northwest National Laboratory's Atmospheric Sciences and Global Change Division [https://www.pnnl.gov/atmospheric/]. During the webinar, one of the presenters suggested that PSE's winter electric peak was typically about one gigawatt	Thank you for your comments and suggestions. PSE has added a temperature sensitivity to the list of portfolio sensitivities.

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		higher than its summer peak. This could change very rapidly given the rate at which heat records are being broken in many parts of the world. The Pacific Northwest is particularly at risk of rapid, unprecedented growth in summer electric peaks, because residential buildings have not traditionally needed air-conditioning. For example, if 250,000 residences in the Pacific Northwest added central air-conditioning drawing 4 kW each, an additional GW of summer demand could appear very quickly. Heat and smoke from wild fires are making natural ventilation untenable. PSE needs to be planning for both summer and winter peaks and to be employing best available science to project how weather conditions will be changing in the future.	