

## 2021 Market Reliance Workshop Q&A

The questions and comments in the table below were submitted during the Market Reliance Workshop PSE hosted for interested parties on September 30, 2021.

#	Asked by	Question asked in chat	Question asked during live question session (option offered during second half of the web event)	Slide reference	Answer
1	Willard Westre	300 MW of renewables does not offset the loss of dispatchable resources when considering capacity factor - What will make up the difference - Gas?	Not applicable	5	In the 2021 Integrated Resource Plan ("IRP"), we found that biodiesel peakers were more cost-effective than gas peakers, when the social cost of carbon is applied as a planning adder rather than a dispatch cost. Our hope is that PSE would be able to meet those capacity needs with existing clean or renewable resources, such as hydro. However, we will have to look at the total existing available capacity through the RFP commercial process and likely also use short-term contracts, as needed, under the Northwest Power Pool Resource Adequacy Program to cover any gaps.
2	Sashwat Roy	Has PSE considered the flexibility (storage) of in-region hydro resources and aggressive procurement of firm resources like hybrid and standalone storage resources in the region by other utilities and its effect on the Mid-C market volumes in their market reliance reduction assumptions?	Not applicable	5	Yes, the long-term IRP modeling takes this into consideration. However, this modeling is primarily focused on what the need is rather than on how to fill the need.  PSE covered this topic in more detail at a later point in the presentation. PSE's shorter-term analysis includes everything in the current market.
3	Don Marsh	Slide 8, jump in load after 2030.	Not applicable	8	In the resource adequacy model, we performed two analyses, one in year 2027 and one in 2031. The line on the graph represents PSE's peak loads plus the planning margin. The jump in that line after 2030 is caused by an increase in the planning margin for 2031, which includes an increase in balancing reserves. In the 2027 study, we looked at the existing resources that PSE is currently balancing. In the 2031 report, we wrapped in estimates of what we would need to acquire to meet Washington state's Clean Energy Transformation Act ("CETA") requirement to supply 80 percent of electric sales with non-emitting or renewable resources by 2030. With the increase in new renewable resources, we have also significantly increased our balancing reserves.
4	Don Marsh	I'm not sure if I'm allowed to speak. If not, I will elaborate on my question. Slide 8 should have an asterisk that projections after 2031 may not be accurate due to reduced account of conservation.	Not applicable	8	Thank you for your comment on slide 8.
5	Don Marsh	The slope of the line increases after 2031. This is weird that we can't talk at this meeting?	Not applicable	8	Yes, as explained in response #3 above, the jump in that line after 2030 is caused by an increased planning margin for 2031, which includes an increase in necessary reserves.
6	Don Marsh	Most of these meetings have allowed verbal questions from participants. Why is this meeting using a different format? Typing questions in these boxes makes a conversation difficult. We object to this format.	Not applicable	Not applicable	In previous workshops, PSE has experienced a high volume of questions. In an effort to cover all of the presentation material and answer as many questions as possible, PSE opted to answer questions through the Q&A chat during the first half of the Market Reliance Workshop.  When it became clear that there would be sufficient time to cover the presentation topics and allow time for more discussion, PSE adjusted its approach during the second half of the workshop to support a more interactive dialogue.

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7	Sashwat Roy	How do you reconcile these studies with the most recent 2021 Power Plan modeling results which show a negligible LOLP in the region?	Not applicable	29	While the Northwest Power and Conservation Council has released a draft version of their new GENESYS model, it has not yet been approved by the Council's Resource Adequacy Advisory committees, or its Steering and Technical Committees. We appreciate the work that has gone into this draft; however, there is more work to be done. Concerns remain regarding the hydro-modeling capabilities of the draft version and the modeling of supply imports from other regions. At this time, PSE continues to rely on the last approved resource adequacy model to ensure that our analysis is built upon a foundation of vetted, finalized information.
8	Don Marsh	Thanks Will. I note that this workshop is an hour shorter than other workshops. You could add at least half an hour to this session for verbal questions. Allowing only typed questions is really not acceptable by any public engagement standard that I'm aware of. Considering that PSE is getting low scores for public participation, this is going in the wrong direction. I hope UTC Staff are noting our objections to this.	Not applicable	Not applicable	Thank you for your comment, Don. See PSE's response to Question #6 above.
9	Anne Newcomb	When will we all get to take a look at the submitted proposals for new resources?	Not applicable	Not applicable	PSE has posted a summary of the proposals received in response to its 2021 All-Source RFP on its RFP website ( <a href="http://www.pse.com/rfp">www.pse.com/rfp</a> ) in the Updates and Notifications section (under Docket Updates) and in the Public Participation section.
10	James Adcock	Slide 23: What was the NPCC assumption on limits of imports associated with these LOLP?	The NPCC assumptions that generate the LOLP are based on hard-wired assumptions they are putting on imports. My question is on slide 23 what assumption on the limit of imports are you using on that slide?	23	For regional assumptions, the number can be found in the resource adequacy assessment. For PSE's assessment, we set the import limit to 3,400 MW in GENESYS, as presented in Chapter 7 of the 2021 IRP.
11	James Adcock	Slide 23: Compare to Page 11 of "Pacific Northwest Power Supply Adequacy Assesment for 2024" which finds that if the imports assumption is not artificially limited then there is little or no additional capacity need.			The reference on Slide 23 to a 68 percent LOLP in the 2027 study (if no new resources are added) corresponds to a 3,400 MW limitation on imports in the GENESYS model.
12	James Adcock	Slide 26: Has PSE switched over to using the new Hydro data from BPA which corrects for current operational standards? I had asked this question during IRP meetings in previous years and never got a clear answer.	It was unclear if PSE had switched over to using the new BPA hydro-data which includes the change-over in operational practices that BPA put in place in the mid-80s. The data includes compensations on the historical data back to the to account for their new operational practices.	26	We use the most recent data from BPA, which is from the 80-year hydro data set and compensated for current operational practices.
13	James Adcock	Slide 27: Why in the modeling does PSE not show summer LOLP events, but in recents years in reality PSE has had several "emergency shortfall" events?	There are no summer events on the modeling, however in practice we know that there were three recent summer emergency events, why are those happening in practice, but not showing up in the modeling?	27	In much of our reporting, PSE uses models to reflect what could happen. As we continue to gather and apply new information, we broaden our scope and our ability to incorporate more weather data. We use simulations to anticipate potential outcomes; but, in a real-time event, there are unforeseen hurdles. PSE is committed to modeling well-informed possibilities; however, we cannot always account for anomalies.

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14	Don Marsh	Thank you! I still have questions about slide 8. I appreciate the adjustment in your program.	A coalition of environmentalists sent a letter earlier this week wondering about how PSE's modeling, on both resource adequacy and LOLP, a variety of things are based on sampling 88 years of temperature data and in our paper, we show that climate change in our region seems to be accelerating and getting more extreme. The hottest and coldest temperatures are climbing faster in recent years than they were through the 88 years. If you sample from the 88 years, then you are missing the trend of this acceleration. What we are worried about is that there is a year with multiple factors that will affect access to resources, where there are hot temperatures, low hydro and low wind. If you aren't accounting for climate change in the winter, then you are concentrating resources for the winter when we need to be focused on the summer. We are concerned that PSE is not accounting for this in their modeling. Do you have any comments about that?	8	Our charts include the last ten years of data, notably 2015 and 2016, which were particularly hot years. One of the reasons we are focusing on market reliance is that during years where there are shifts in resource availability, it becomes a market reliance issue.
15	Don Marsh	Two questions: 1) With climbing LOLP metrics, I'm surprised that PSE isn't accelerating acquisition of resources in the IRP. Many organizations are encouraging PSE to step up those investments.		8	We are asking what our relationship with the market is, as well as how much we should rely on it. If we rely solely on market, we may not have enough energy to meet peak needs.
16	Don Marsh	2) Are you accounting for peak demand reductions from Time Varying Rates and Peak Time Rebates that PSE is proposing next year? Brattle estimates peak reductions of 10% in winter and 6.8% in non-winter. Do you model these effects in slide 8?		8	
17	Don Marsh	We believe in stacking. But we don't think PSE is modeling it correctly. Slide 27.	I do think we need to be worried about market, especially because prices could go quite high as people scramble for energy resources. I'm just not sure that your simulations are really capturing that. Are you also accounting for the possibility that there could be these correlations between these high temperatures, low hydro and low wind?	27	
18	Don Marsh	I would like to ask questions about PSE's stochastic modeling that is driving these conclusions.	One more clarification, is that why it's not going to be possible to get these results until mid-next year? Is it because you are waiting on the data from the council?	32	PSE is working to incorporate climate change into the load forecasting and resource adequacy analytics that will be completed in time for phase 2 of the 2021 All-Source RFP. When we receive the data from the Northwest Power & Conservation Council on their climatology studies, we will use those numbers to shape how we move forward. PSE will integrate the Council's temperature data and hydro generation output into our analysis.
19	Sashwat Roy	The market purchase reductions shown in these graphs are I believe "frequency" and not "magnitude"? Is that correct? Could you provide how much in MW/MWhs the market purchases are reduced?	Is this graph showing the frequency of market purchase reductions? I am wondering about the magnitude. There may be market purchase reductions throughout the day, but how much it is reduced may depend on other factors. Can you speak to the magnitude that you see being reduced in particular hours of the day?	27	That is correct. This graph is showing frequency, not magnitude. With over 7,000 possibilities running through the data, curtailments could be anything from zero to 5 or 10 MW, up to all 1,500 MW in some hours in more extreme simulations. In the GENESYS modeling, there could be a variety of things happening to change the curtailments, such as low hydro, high loads, or a simulated forced outage. To understand why these curtailments are shifting, we would need to be able to dig into the GENESYS model to understand all of the factors. Because GENESYS is a Northwest Power & Conservation Council model, PSE can really only see what is happening on our end.

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20	Anne Newcomb	Elizabeth, can you please explain the 68% need for new power after coal retirement? Possibly I heard this wrong 🙄 Thanks!	Elizabeth, I heard you say that there will be a 68% need for new power after coal retirement. Could you explain that?	N/A	That 68 percent represents the loss of load probability ("LOLP") after coal retirements in the 2027 study. PSE runs the system with no new resources added to determine the LOLP. Sixty-eight percent is the probability that PSE will have an event that would cause the company to lose loads. The goal is to reduce this probability to a 5 percent LOLP. This is accomplished by adding new, perfect capacity resources to the model until the system reaches the desired LOLP. To reach a 5 percent LOLP, PSE would need to add approximately 907 MW of new perfect capacity resources.
21	Fred Heutte	Does the PSE analysis incorporate expectations of new resource acquisitions by other utilities as indicated in their IRPs and RFPs?	Just to follow up on previous discussion with Sashwat. One thing to recognize about the PNCC RA analysis, which uses the GENESYS model, is that typically in the past they have not included specific resources that would be available. This creates a timing issue – basically the council’s rules assume only committed resources that already exist or have begun construction. This planning does not include resources delineated in utility IRPs or maybe with more certainty in their RFPs. We believe it’s important to incorporate those new resources into the analyses. When you drop resources that are reasonably certain to be acquired, the LOLP values will drop substantially. My question is has Puget assessed what other utilities are willing or committed to do in looking at the availability of resources in the region and ultimately the impact on the market.	N/A	Often a utility may have something in its plan that does not come to fruition. Because of this, PSE includes resources under construction as new resources in its analysis, but does not include development resources prior to construction. This strategy prevents PSE from relying on resources that may not be there when we need them. If we plan on a resource that is never built, then our projections for energy in our region could be short. PSE projects based on current known and certain resources, and adds new resources that are not already part of the GENESYS model.