

## Webinar #3: Transmission Constraints Q&A

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DRAFT 7/1/2020

### Overview

On June 30, 2020 Puget Sound Energy hosted an online meeting with stakeholders to discuss transmission constraints. Stakeholders shared their input on transmission capacity constraint modeling methodology, transmission capacity constraint magnitudes, and how to model transmission capacity uncertainty. Additionally, participants were able to ask questions and make comments using a chat box provided by the Zoom platform.

Below is a report of the questions submitted to the chat box. Answers to the questions were provided verbally by IRP staff during the webinar. Please note that questions were answered in order of relevance to the topic currently being discussed. Questions regarding other topics were answered at the end of the webinar session.

To view a recording of the webinar and to hear responses from staff, please visit the project website at [pse-irp.participate.online](http://pse-irp.participate.online).

### Attendees

A total of 61 people attended the meeting, plus another 13 attendees who only called into the meeting and did not identify themselves (74 people total).

Attendees included: James Adcock, Anika Argunta, Larry Becker, Charlie Black, Rob Briggs, Rachel Brombaugh, Colin Crowley, Cody Duncan, Kara Durbin, Lori E, Ben Farrow, John Fazio, Jeff Fox, Kyle Frankiewicz, Zach Genta, Brian Grunkemeyer, Ron Hankewich, Fred Heutte, Brandon Houskeeper, Doug Howell, Kevin Jones, Pete Jones, Eric Kang, Brendan Kelly, Mark Klein, Cathy Koch, Corey Kupersmith,, Sarah Laycock, Steve Lewis, Virginia Lohr, Jim Loring, Lisa MacKay, Kassie Markos, Don Marsh, Jennifer Mersing, David Meyer, Justin Moffett, Brian Muoneke, Anne Newcomb, R.C .Olson, Anthony O'Rourke, Bill Pascoe, David Perk, Phillip Popoff, Andrew Rector, Lowell Rogers, Jason Sanders, Matthew Shapiro, Cindy Song, David Tomlinson, Brian Tyson, Katie Ware, Wendy Weiker, Elyette Weinstein, Willard Westre, Bob Williams, Scott Williams, Ned Witting, and Zac Yanez.

## Questions Received

Questions from attendees are posted in the order in which they were received. The webinar began at 1:30 PM PDT and ended at 4:06 PM PDT.

Time sent	Name	Comment
13:31:59	Alison Peters	For those just joining, we are waiting just a couple more minutes for folks to arrive. Thank you!
13:34:28	Fred Huette	Will we be able to ask questions and make comments by voice or only in the chat?
13:36:11	Alison Peters	Hi Fred, I can answer that now and let's make sure everyone sees the response. Attendees can ask questions in chat or verbally. Thank you!
13:37:12	James Adcock	Jim Adcock is here.
13:37:29	Doug Howell	Doug Howell is here.
13:37:35	Don Marsh	Don Marsh
13:38:29	James Adcock	Where's the mute button?
13:38:33	Kyle Frankiewich	Hello everyone, Kyle Frankiewich with WUTC staff here.
13:38:43	Kevin Jones	Jim, Doug and Don - please check your email for a recent communication from me
13:39:06	Charlie	Charlie Black is present
13:39:18	Virginia Lohr	Was there a way for us to know PSE's level of public engagement intended for this meeting before the meeting?
13:39:18	Fred Heutte	We're not seeing the mute button in Zoom on our end, so presume the audio has been disabled for participants.
13:39:39	Don Marsh	I assume "unmute" will become available later in the presentation?
13:40:39	Don Marsh	I know how to use "unmute" on Zoom, but there is no option on this webinar. Check your settings presenters?
13:41:04	Don Marsh	Unmute is available now. Thanks.
13:41:06	David Perk	Aha, received the unmute option, thank you
13:41:11	R.C. Olson	Court Olson is present.
13:41:59	Fred Heutte	ok working now thanks
13:41:59	Kevin Jones	Virginia - please check your email for a recent communication from me.
13:42:35	James Adcock	Thank you -- a mute/unmute options just appeared in my Zoom.
13:46:24	R.C. Olson	Kevin, please copy me too.
13:52:23	Kevin Jones	Court - done.
13:52:37	James Adcock	Do all participants know what a "Wheel" is?
13:55:25	David Perk	Thanks, Jim, appreciate that clarification.

Time sent	Name	Comment
13:56:28	James Adcock	Can you explain why you have a "two area system zonal model" but then multiple area "Resource Groups?"
13:57:37	Kyle Frankiewicz	Do PSE's generation portfolio optimization tools include some representation of the cost of additional transmission if, for example, some new or augmented T is needed for a given proxy resource?
14:02:09	Kevin Jones	Thanks for explaining the generation / transmission analysis approach. How is storage then added into this analysis approach?
14:05:00	Andrew Rector	I still don't think I get what "PSE's system" is. Is it just PSE's BA or...?
14:06:45	R.C. Olson	Do your lowest costs in the optimization include the social cost of carbon?
14:07:14	Don Marsh	Is Aurora the best modeling software for handling generation, transmission, and storage optimization? Are other utilities using something different?
14:11:00	Kyle Frankiewicz	Is WA or OR solar also included?
14:11:28	Zach Genta	Is PSE considering solar from any other regions with higher solar resource values (i.e. Oregon, Idaho, etc.)?
14:11:45	Kyle Frankiewicz	I trust that slide 20 was a broad representation of the distance of some of the higher-capacity-factor renewable resources, rather than the exhaustive list of what is being considered.
14:12:15	R.C. Olson	Last year there was talk of considering solar in Idaho, so why does this not appear on your renewable resource options map? (The advantage is they come on line earlier, because they are farther east. )
14:13:30	Charlie	The map shown on slide 20 only displays solar in western and eastern Washington. Will this preclude consideration of co-located renewables (e.g., wind and solar) outside Washington?
14:14:24	Fred Heutte	Also asked these in the comment form. At the appropriate time here are two initial questions: (1) what transmission planning models does PSE use (powerflow and production cost) and how will the analysis with those models interact with the AURORA IRP analysis (2) is PSE using the most recent ATC values published by BPA for its transmission paths, especially those with substantial effect on PSE's system, such as West of Cascades North, North of Hanford, Raver-Paul, BC Intertie and the paths from Montana westward
14:14:44	James Adcock	What capacity, if any, does PSE have on the IP line?
14:16:55	Kevin Jones	What plans does PSE have to repurpose the transmission lines from Colstrip MT?
14:17:01	Don Marsh	Are the Tier amounts the maximum available at all times of day, or is there additional capacity at low demand hours?
14:23:05	R.C. Olson	The map on slide 21 shows a transmission connection going toward southern Idaho and Wyoming. Could this line not carry solar power from Southern Idaho
14:25:23	Doug Howell	Many new proposals include combinations of wind and/or solar and/or battery. Does the transmission study account for possible combinations of renewables and/or batteries in one Resource Group Area?

Time sent	Name	Comment
14:26:17	Fred Heutte	my third question: what approach does PSE employ to consider non-wires alternatives to transmission expansion (i.e., new lines) to expand the capability of the existing grid -- thinking broadly this could include in-system elements (phase shifters, static var compensators, storage as a transmission asset, etc.) and also flexible demand/demand response and storage
14:29:42	Ron Hankewich	can you explain how BPA transmission capacity from Lower Snake River area can be delivered across the Cascades? Is there adequate capacity?
14:31:35	Charlie	What is PSE assuming about ability to repurpose transmission from Centralia due to the coal plant retirement?
14:31:40	Brian Grunkemeyer	How does dual purposing your transmission lines affect resource adequacy? My understanding is many of the peakers you would be redirecting from (Goldendale & Mint Farm) are only used for a few peak hours. Sharing with renewable generation could limit your max capacity, correct?
14:36:26	Kyle Frankiewich	Brian, that's a good question, but I was thinking the opposite impact would be the case. If PSE is holding transmission rights for peakers all the time, but only use them infrequently, building renewable resources to piggyback off of those rights could better-utilize them, and the gas peakers could firm up the renewables.
14:36:57	Corey Kupersmith	Has PSE submitted any recent LTF transmission requests into BPA's annual cluster study to gauge the availability of Cross Cascades ATC that is discussed in the Eastern and Southern WA tiers?
14:37:35	Anne Newcomb	Will PSE and partner sources be creating new wind and solar as well as using already existing? I will stay on mute
14:38:28	Andrew Rector	Are there any upgrades/alterations to the transmission lines in order to achieve dual purposing?
14:39:35	Kyle Frankiewich	Ah, ya, that makes sense, Brian. I don't think it would 'hurt' resource adequacy, but it also wouldn't help. This dual-purpose approach wouldn't increase total capacity available, but would increase the percentage of renewables used to meet load.
14:45:23	Anne Newcomb	Will PSE and partner sources be creating new wind and solar as well as using already existing? I will stay on mute Thanks,
14:49:49	Anne Newcomb	Will PSE be selling Coalstrip power to other power companies? Muted Anne :-)
14:57:46	Doug Howell	Zoom enables participants to communicate with other individual participants. Would you please enable that function?
14:58:59	Fred Heutte	I definitely have questions about PSE's interest in B2H and Gateway West
15:01:58	Corey Kupersmith	How did PSE consider BPA constraints from Boardman to PSE System for the 400 & 600MW of ID/WY capacity on B2H?
15:02:01	Ron Hankewich	How will you model BESS systems especially if coupled with renewable generation - incremental capacity requirement for discharge or generation time shift?

Time sent	Name	Comment
15:02:21	Alison Peters	Hi Doug, I'm seeing if I can enable this during the meeting. It may have been that it can only be turned off before the meeting starts.
15:04:44	David Perk	+ 1 Fred's comment on new opportunities
15:06:05	Alison Peters	Sharing with all; from Anne Newcomb--Will PSE be selling Coalstrip power to other power companies? (already asked verbally and answered)
15:06:48	Ron Hankewich	I was thinking for BESS more wrt transmission capacity.
15:12:23	James Adcock	Jim Adcock continues to raise his hand for a clarification question.
15:12:54	Don Marsh	Don Marsh has hand raised
15:18:04	David Perk	Agree with Don, an east side battery scenario would be great to see
15:20:57	David Perk	Not an expert, but it would seem that Opt 2 (slide 32) provides a good baseline that could be revised in subsequent IRPs.
15:21:44	Don Marsh	Reducing TX capacity sounds like a good deal for ratepayers if it is backed up by BESS on our side of the Cascades.
15:21:56	Fred Heutte	What thoughts does PSE have about BPA's ongoing changes to its transmission products, especially more flexible variations of Conditional Firm?
15:22:50	James Adcock	Comment: Modern Wind Farm options include choices of hub height for availability, blade design optimized for lower average wind speeds, and inverter options about how high "nameplate" the Wind Turbines can generate before limited by the inverter option chosen. So it's not just a "Transmission Model" issue.
15:22:59	Don Marsh	We would love to see PSE support more rooftop solar panels and batteries. Great for CETA compliance.
15:24:21	James Adcock	Feedback: I would be happy with just "Opt 1" -- which corresponds to the CETA breakpoints of 2030 and 2045.
15:39:49	Jeff Fox	No question, but thank you for mentioning your assumption for MT wind integration cost & that BPA is a potential option for integration. Oh & thanks for MT transmission loss update.
15:40:27	James Adcock	Clarification question re costs on Slide 46?
15:40:46	R.C. Olson	Again, I encourage PSE to consider solar PV in Southern Idaho (along with wind), since it has significant potential to help in the morning peak hours.
15:40:48	Ron Hankewich	Could you translate for us the cost of WY/ID wind to \$-kW month so that we have an comparative estimate to the other options?
15:44:57	R.C. Olson	Also add the Idaho solar to the chart on slide 23.
15:47:30	Ron Hankewich	might be easier for me to ask directly? sure I would like to follow up
15:50:34	Fred Heutte	I have a comment on future resource costs.
15:53:37	Brian Grunkemeyer	Why are the battery interconnection costs so high? They're 3x the cost of adding in a peaker plant + its gas pipeline.
15:55:06	R.C. Olson	Are the social costs of carbon included in the CCCT and Peaker costs?

Time sent	Name	Comment
15:55:11	Matthew Shapiro	Is it realistic to include gas turbines in the IRP when the requirement for carbon-free by 2045, since that would mean limiting their use to about 20 years? Or would that shorter lifespan be factored into their economic analysis in the IRP?
15:56:34	Virginia Lohr	I have questiond about the process from May 28 and June 10
15:57:01	Kyle Frankiewich	Are integration costs billed as \$/kw-yr or as \$/MWh? If it's \$/MWh, is there a reason to convert that to \$/kw-yr in the optimization model?
15:57:19	R.C. Olson	The social cost of carbon needs to be figured in your cost modeling!!!!
15:58:31	James Adcock	Did you miss Brian's question?
15:58:43	Anne Newcomb	Considering we are moving to 80% renewable by 2030, is it a waste of \$ to invest in pipelines and NG infrastructure from now on?
16:01:58	Irena Netik	<a href="https://pse-irp.participate.online/get-involved/planning-assumptions-resource-alternatives">https://pse-irp.participate.online/get-involved/planning-assumptions-resource-alternatives</a>
16:04:13	Ron Hankewich	Thanks PSE team. you did a great job today. Very informative.
16:05:14	Don Marsh	Appreciate the opportunity to speak in real time. Better than before.
16:05:39	James Adcock	Not happy that our questions do not get answered!
16:06:19	James Adcock	Interconnect costs on 2 hour battery are 43% of capital cost -- Not Reasonable!