# **PSE Delivery System Planning (DSP) Meeting with IRP Stakeholders**

# *June 7, 2022*

**Overview**

On June 6, 2022 Puget Sound Energy (PSE) hosted an online meeting with Integrated Resource Plan (IRP) stakeholders on Delivery System Planning (DSP), and to specifically:

* Share information and updates on PSE’s DSP efforts, and ways that resource planning via IRPs and system planning fit together.
* Solicit feedback from IRP stakeholders on various efforts related to DSP and grid modernization.

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 PSE staff during the meeting. 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 meeting.

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

**Attendees**

A total of 77 stakeholders, PSE staff and facilitators attended the meeting.

**Registrants included:**

Aaron Tam, Alexandra Karpoff, Allison Mountjoy, Anne Newcomb, Aruna Ranaweera, Arvia Morris, Bill Will, Bob Williams, Brad Cebulko, Byron Harmon, Carol Loughlin, Catherine Koch, Cindy Vu, Claire Moerder, Claire Wendle, Corey Corbett, Court Olson, Damon Fisher, David Branchcomb, David Morton, David Tomlinson, Deepa Sivarajan, Don Marsh, Doug Hart, Eleanor Ewry, Elizabeth Hossner, Elyse Hammerly, Fred Heutte, Gretchen Aliabadi, Gurvinder Singh, Halley Miklos, James Adcock, Jeffrey Larsen, Jennifer Coulson, Jennifer Magat, Jennifer Snyder, Jens Nedrud, Jesse Durst, Joel Nightingale, Jon Lange, Kara Durbin, Kasey Curtis, Katie Ware, Kelly Xu, Lawrence Becker, Leslie Almond, Marilyn Subala, Mark Lenssen, Markus Virta, Michelle Wildie, Mike Hopkins, Monica Blakeslee-Kish, Nancy Shimeall, Niecie Weatherby, Patrick Leslie, Phillip Popoff, Randy Hardy, Reid Shibata, Renchang Dai, Sashwat Roy, Seth Baker, Sophie Glass, Stephanie Chase, Sudipto Bhowmik, Tyler Tobin, Wendy Gerlitz, Will Henderson, Willard Westre.

**Questions Received**

Questions from attendees are posted in the order in which they were received. The meeting began at 9:00 AM PDT and ended at 12:00 PM PDT.

| **Name** | **Time Sent** | **Comment** |
| --- | --- | --- |
| David Morton | 9:01 a.m. | Good morning |
| Sophie Glass, Triangle Associates | 9:03 a.m. | sglass@triangleassociates.com |
| Aaron Tam (he/him), Public Counsel | 9:09 a.m. | should the slides be moving? |
| Claire Wendle, Triangle Associates | 9:12 a.m. | https://www.pse.com/IRP |
| Sophie Glass, Triangle Associates | 9:14 a.m. | https://www.pse.com/IRP/Get-involved/Give-feedback |
| Don Marsh, Sierra Club | 9:15 a.m. | I don't find it easy to locate the meeting materials on PSE's website. You start at pse.com/IRP. Then you have to click "Current IRP Process." Then you have to find a link in the embedded text. It's pretty obscure. |
| Sophie Glass, Triangle Associates | 9:17 a.m. | Thanks for that feedback, Don. I know PSE has been focused on the IRP website so they can take this suggestion into consideration as part of their current web work. |
| Aaron Tam (he/him), Public Counsel | 9:29 a.m. | yeah, Don is right. I clicked on "Delivery system planning" on the right side of the current IRP process page, and I thought it would lead me to these materials |
| Aaron Tam (he/him) | 9:20 a.m. | on the PSE website |
| Sophie Glass, Triangle Associates | 9:28 a.m. | Noted, Aaron. Thank you for the "user experience" perspective. |
| Deepa Sivarajan (Climate Solutions) | 9:21 a.m. | Slide 15: We wanted to note overall that after this slide, the delivery systems planning outlined in today's presentation is almost entirely focused on electricity and not on gas, except for a little discussion of RNG and hydrogen, and zero consideration of non-pipe alternatives and the ability to use a portfolio that includes energy efficiency, demand-response, electrification, and other supply-side resources to meet distribution challenges. There’s a huge missed opportunity here to examine cost-reductions instead of solely distribution upgrades. |
| Sophie Glass, Triangle Associates | 9:22 a.m. | Thank you, Deepa. We will have Jens speak to your comment in a bit. |
| David Branchcomb | 9:23 a.m. | PSE has been at this IRP for quite some time. However, in the last we we have seen dramatic changes in resource costs, in inflation and in most economic aspects of our lives. Does PSE have any plans to refresh their assumptions to better reflect today's economic reality? |
| Sophie Glass, Triangle Associates | 9:23 a.m. | Thank you, David. We will return to your question during the Q&A in a few minutes. |
| Deepa Sivarajan (Climate Solutions) | 9:25 a.m. | Slide 18: Would love more specificity about the value of system services and the specific streams of value that are being considered. Values not currently listed include specifics on the values of solar and DER, as well as avoided CCA cost, locational value, and ensuring equitable benefits to overburdened communities per CETA |
| Sudipto Bhowmik (ibvEnergy) | 9:26 a.m. | Do you allow reverse power flow at the distribution substation due to the proliferation of DER's (18)? |
| Sophie Glass, Triangle Associates | 9:26 a.m. | Thank you, Deepa. We added your question to our "stack" |
| Don Marsh, Sierra Club | 9:26 a.m. | PSE's actions don't match the words Jens is saying. PSE is currently investing hundreds of millions of dollars on an Eastside transmission upgrade that belongs to the old-fashioned centralized grid, not the "integrated grid" Jens says is so exciting. PSE's actions and investments should match your aspirations. They don't match. |
| Sashwat Roy, RNW | 9:26 a.m. | Hi, what kind of modeling framework is being planned to use to calculate that T&D deferral value of distributed and stationary storage? |
| Aaron Tam (he/him), Public Counsel | 9:27 a.m. | Is there a distinction between NWA and DERs? |
| Sashwat Roy, RNW | 9:27 a.m. | i.e. are benefit-cost ratios being calculated from a third-party tool or is PSE using an internal tool? |
| Sophie Glass, Triangle Associates | 9:28 a.m. | Thank you Don, Sashwat, and Aaron. We've noted your questions and are about to address them. |
| James Adcock Electrical Engineer Stakeholder | 9:28 a.m. | Raise Hand -- General Question "What are we trying to do here today?" This presentation does not appear to be part of the "IRP Process" yet transmission planning and DER integration clearly needs to be part of the IRP -- so how do we actually get there? |
| Don Marsh, Sierra Club | 9:29 a.m. | Jens just said solar would be useful to address summer peaks. PSE specifically excluded such analysis from the Energize Eastside project. This is a real problem. |
| Jennifer Snyder (UTC)(she/her) | 9:30 a.m. | slide 18: What customer and nonenergy benefits are considered? Is this standardized among resources or are resources considered with different values (ie EE definitely considers customer costs and NEIs) |
| Arvia Morris | 9:31 a.m. | Is PSE working to establish transmission lines to Montana to get the wind power from Montana to Washington. |
| Sophie Glass, Triangle Associates | 9:31 a.m. | Thank you Jim, Don, Jennifer, and Arvia. We've noted your questions. |
| Willard Westre - Union of Concerned Scientists | 9:32 a.m. | PSE requires Firm Transmission for new generation resources based on nameplate rating. With renewables having capacity factors of 25-50% this means that about 2/3 of the transmission line capacity is wasted. What is PSE doing to capture the Non-Firm transmission line capacity? |
| Willard Westre - Union of Concerned Scientists | 9:34 a.m. | Previous message - Slide 15 |
| Sophie Glass, Triangle Associates | 9:36 a.m. | Thanks Willard |
| Don Marsh, Sierra Club | 9:38 a.m. | Jens says that solar was evaluated to address summer peaks for Energize Eastside? Where is that study? PSE has not released it, to my knowledge. |
| Don Marsh, Sierra Club | 9:43 a.m. | PSE focuses on avoided T&D, but non-wire alternatives can also increase resiliency if a big earthquake or storm damages wires. PSE does not appear to prioritize this kind of resiliency, and so NWAs are dismissed or relegated to very small applications. Resiliency is so important to customers. |
| Sophie Glass, Triangle Associates | 9:45 a.m. | Thank you, Don. We are going to pause |
| Sophie Glass, Triangle Associates | 9:45 a.m. | All - we are going to pause questions after this current stack and return to the presentation after we get to all the existing questions in the stack. |
| Don Marsh, Sierra Club | 9:46 a.m. | Will my questions be addressed later? I am very interested in how PSE is really valuing solar and resiliency. It really isn't clear. |
| Sophie Glass, Triangle Associates | 9:47 a.m. | Yes - all questions in the chat will be addressed |
| Don Marsh, Sierra Club | 9:49 a.m. | Thanks, Sophie! |
| Willard Westre - Union of Concerned Scientists | 9:51 a.m. | Doesn't PSE currently have 750MW of transmission from Montana? |
| Sophie Glass, Triangle Associates | 9:52 a.m. | Elizabeth we can't hear you |
| James Adcock Electrical Engineer Stakeholder | 9:55 a.m. | $500 DER isn't "more expensive" -- it is "crazy too expensive." |
| Sophie Glass, Triangle Associates | 10:08 a.m. | Hi Sashwat - I see your hand. What slide do you have a question about? |
| Sashwat Roy, RNW | 10:08 a.m. | The current slide |
| Sophie Glass, Triangle Associates | 10:09 a.m. | Okay thanks. We will take questions at the end of Reid's presentation. |
| Fred Heutte (NWEC) | 10:09 a.m. | slide 21: to what degree does the proliferation of control software (ADMS, DERMS, etc.) facilitate or impede the integration of DERs? the broader question is how PSE decides what the needs are and how to select and implement these software applications |
| James Adcock Electrical Engineer Stakeholder | 10:10 a.m. | Slide 21 Raise Hand re "Lowest Reasonable Cost" and CEIP "Lowest Cost First." |
| Deepa Sivarajan (Climate Solutions) | 10:11 a.m. | slide 21: does this apply to the gas side as well? if not, how is it different? |
| Sophie Glass, Triangle Associates | 10:11 a.m. | Thanks, Fred, Jim, and Deepa. We've noted your questions. |
| Don Marsh, Sierra Club | 10:14 a.m. | For enhanced resiliency, we are excited about microgrids. When will we see specific microgrid projects? The specifics of these projects seem pretty fuzzy at this time. |
| Sophie Glass, Triangle Associates | 10:15 a.m. | Thanks, Don. We've added this question to the queue. |
| Sashwat Roy, RNW | 10:31 a.m. | Could PSE talk a bit about risk management from the lens of hydrogen leakage? Recent research shows that hydrogen leakage can have a much higher warming impact than carbon. What steps is PSE taking to ensure hydrogen leakage is measured effectively? <https://acp.copernicus.org/preprints/acp-2022-91/> |
| Anne Newcomb | 10:31 a.m. | slide 24. According to experts like Laura Feinstein; ex PSE engineer modernizing the regional energy grid, Hydrogen is not well suited for being fed into pipelines for heating due to the following concerns. Green hydrogen produced by excess renewable energy, will be in high demand and is well suited for hard-to-decarbonize sectors like steelmaking, long-haul shipping, and aviation, and in generating electricity during windless, cloudy periods. Hydrogen is very expensive and explosive. Moving to electric will reduce GHG faster.Do you agree that green hydrogen is the only hydrogen that has a hope of reducing GHG?Will PSE be considering any other hydrogen besides green hydrogen?Would you agree hydrogen is more expensive and explosive? Would you agree changing the pipeline infrastructure will most likely be expensive as well?Green Hydrogen is a form of energy storage. Can PSE use the funds spent on hydrogen explorations on other safer more environmentally friendly storage possibilities like gravity storage? |
| Sophie Glass, Triangle Associates | 10:31 a.m. | Thanks Sashwat |
| Sophie Glass, Triangle Associates | 10:31 a.m. | Thanks Anne |
| Deepa Sivarajan (Climate Solutions) | 10:32 a.m. | slide 24: disappointed to not see more specifics here. What are the cost assumptions for hydrogen? How is PSE evaluating the technical limitations of blending hydrogen into existing pipelines, and what point would PSE shift to investing in new pipeline infrastructure to support higher blends? How much hydrogen can PSE's existing system take? Given hydrogen’s high energy density, how much carbon will PSE be able to reduce by incorporating hydrogen, especially at lower blend levels? |
| Anne Newcomb | 10:33 a.m. | Where are you finding methane leaks and how are you eliminating them? |
| Fred Heutte (NWEC) | 10:33 a.m. | question on slide 24 |
| David Tomlinson Solar Horizon/Eurus Energy Contractor | 10:33 a.m. | Can you provide PSE Contacts to discuss H2 partnerships |
| James Adcock Electrical Engineer Stakeholder | 10:34 a.m. | Question re Green Hydrogen on the Gas side vs. the more efficient round-trip Battery Storage on the electrical side -- how does PSE as an organization evaluate that tradeoff? |
| David Tomlinson Solar Horizon/Eurus Energy Contractor | 10:35 a.m. | H2 = renewable hydrogen |
| Deepa Sivarajan (Climate Solutions) | 10:35 a.m. | Slide 25: What does PSE mean by hybrid heating? Would a hybrid heating program incentivize new gas furnaces as the back-ups to heat pumps? |
| Anne Newcomb | 10:35 a.m. | Can you give examples of RNG you will be using? |
| Deepa Sivarajan (Climate Solutions) | 10:35 a.m. | Slide 24: Is PSE committing to green hydrogen only or will it consider other colors of hydrogen? |
| Deepa Sivarajan (Climate Solutions) | 10:35 a.m. | Slide 25: What metric is PSE using to measure the availability of RNG nationally and regionally? With utilities around the country potentially competing for limited resources, how will that be factored into the RNG potential assessment? |
| Don Marsh, Sierra Club | 10:36 a.m. | Very skeptical that hydrogen or RNG are cost-effective solutions. Also concerned that these fuels are critical to decarbonize heavy industry and shipping. If PSE reduces its emissions using these fuels, it might hinder availability for other industries, not reducing total emissions. We want PSE to be a holistic team player for the environment. |
| Sophie Glass, Triangle Associates | 10:39 a.m. | Thank you, all. I am going to pause the question stack after Don's question. Gotta get you all your break! |
| Anne Newcomb | 10:40 a.m. | Is PSE looking at any only green Hydrogen? |
| Deepa Sivarajan (Climate Solutions) | 10:43 a.m. | +1 on Anne's question (which was in Anne's original question and wasn't answered, so before the stack was closed) |
| Sophie Glass, Triangle Associates | 10:43 a.m. | Thanks, Deepa. We can fold that one in re: green Hydrogen. |
| Don Marsh, Sierra Club | 10:44 a.m. | Map |
| James Adcock Electrical Engineer Stakeholder | 10:44 a.m. | Map |
| Aaron Tam (he/him), Public Counsel | 10:44 a.m. | Map |
| Sophie Glass, Triangle Associates | 10:49 a.m. | <https://app.mural.co/t/triangleassociates9200/m/triangleassociates9200/1653345390721/bb9827eeef28d6412637c3225613d775408da66a?sender=akilburg5841> |
| Joel Nightingale (UTC) | 10:57 a.m. | Is this map available publicly on the PSE website? |
| Sophie Glass, Triangle Associates | 10:57 a.m. | Yes - I'll provide you with the link (also in the agenda) |
| Sophie Glass, Triangle Associates | 10:58 a.m. | <https://pugetsoundenergy.maps.arcgis.com/apps/webappviewer/index.html?id=980fc190ffd648489a492f8363a1d2cc> |
| Court Olson | 10:59 a.m. | How does PSE define Microgrids? |
| James Adcock Electrical Engineer Stakeholder | 11:02 a.m. | Slide 28 Does PSE ever actually intend to share any of those qualitative and quantitative benefits "scorings" with IRP stakeholders, so that we can actually "Participate" with PSE in the IRP Process by giving PSE feedback about whether or not any of those "scorings" make any sense to us? As opposed to PSE simply continue giving us "Presentations?" |
| Aaron Tam (he/him), Public Counsel | 11:04 a.m. | What is the "CEIP Equity Assessment"? Is that the CEIP itself or a separate document/analysis? |
| Don Marsh, Sierra Club | 11:04 a.m. | +1 James. We have been dismayed with PSE's previous scoring process used in the IRP. It was arbitrary, simplistic, and even double-counted some things (like cost). We should have some say in how the scoring method is developed. |
| Deepa Sivarajan (Climate Solutions) | 11:06 a.m. | Slide 33: Will PSE be proposing a formal stakeholder advisory group process or will it be less formal? |
| Kara Durbin, PSE  | 11:07 a.m. | Aaron - Thank you for your question. The Equity Assessment is work that PSE plans to do this year and next year to further understand existing disparities, building off of last year's work. This assessment was listed in Chapter 8 "Future Commitments" of the CEIP. |
| James Adcock Electrical Engineer Stakeholder | 11:08 a.m. | Slide 33 Comment -- we really need to implement the "Feedback Loop" -- we need to see how PSE is currently "scoring" so that we can give intelligent feedback about how we think PSE needs to improve that. |
| Sophie Glass, Triangle Associates | 11:09 a.m. | Re-adding the map here: <https://pugetsoundenergy.maps.arcgis.com/apps/webappviewer/index.html?id=980fc190ffd648489a492f8363a1d2cc> |
| James Adcock Electrical Engineer Stakeholder | 11:11 a.m. | Map 34: If DER in a region is less than consumption then why would there be a "Distribution Problem?" |
| Joel Nightingale (UTC) | 11:11 a.m. | Does this map substation loading layer correspond to winter peak, summer peak, overall energy use? |
| Kara Durbin, PSE | 11:14 a.m. | Jim - Thank you for your comment. We will give some more thought as to how we can better share information with you so you can give meaningful feedback. |
| Sudipto Bhowmik | 11:15 a.m. | (34) Does this take into consideration reactive power and is the loading used an operational basecase or a planning basecase |
| Claire Wendle, Triangle Associates | 11:16 a.m. | <https://app.mural.co/t/triangleassociates9200/m/triangleassociates9200/1653345390721/bb9827eeef28d6412637c3225613d775408da66a?sender=akilburg5841> |
| James Adcock Electrical Engineer Stakeholder | 11:22 a.m. | My eyes don't like the "bumblebee" of pointers in the interactive map "feedback" app, but my question would be if PSE could explain how the "Energize Eastside" project fits into this DSP / DER future PSE is describing? |
| James Adcock Electrical Engineer Stakeholder | 11:24 a.m. | Sorry, I thought "Energize Eastside" was part of this map. |
| Jens Nedrud (PSE) | 11:25 a.m. | Jim - Energize Eastside is not part of this map. The hosting capacity map is specific to the distribution system where DERs would be integrated. |
| Jennifer Snyder (UTC)(she/her) | 11:26 a.m. | How detailed is this map? I assume you can zoom into a parcel but you know what happens when you make an assumption . . . |
| James Adcock Electrical Engineer Stakeholder | 11:26 a.m. | OK -- I still don't understand that statement. |
| Jens Nedrud (PSE) | 11:27 a.m. | Jennifer - the map is detailed down to the street level. So it can get zoomed into the address level. |
| Jens Nedrud (PSE) | 11:29 a.m. | Jim - The hosting capacity map shows the ability of the distribution network (12.47kV and 34.5kV system) to accommodate DER's. |
| James Adcock Electrical Engineer Stakeholder | 11:30 a.m. | SO I guess you are saying this heat map is \*prior\* to the addition of Energize Eastside? Which will certainly change the heat map. |
| Don Marsh, Sierra Club | 11:35 a.m. | Looks like project #9 on slide 38 is a capacity project. But it's only needed for an extremely unlikely outage emergency. Is that classified as reliability or capacity? I'm confused. |
| Don Marsh, Sierra Club | 11:36 a.m. | Perhaps you can clarify what the difference is between a reliability project vs a capacity project? |
| Sudipto Bhowmik | 11:39 a.m. | do you also identify which contingency caused the reliability need or do we need to look at the Long term planning study for it? |
| James Adcock Electrical Engineer Stakeholder | 11:41 a.m. | I did send that message just to just the presenter. She is the one who just chose to make it "public." |
| Sophie Glass, Triangle Associates | 11:41 a.m. | My fault entirely - sorry Jim, sorry Jens, and sorry all. I was looking too quickly. |
| Deepa Sivarajan (Climate Solutions) | 11:43 a.m. | slide 40: does this also account for transportation electrification impacts on the grid, or only building electrification? |
| Court Olson | 11:44 a.m. | Yes, forecasting electrical load is challenging in these times of transition, but, PSE continues to overlook the potential for conservation and increased energy efficiency in the building stock which is getting increasing attention. |
| Don Marsh, Sierra Club | 11:46 a.m. | Slide 40: If PSE were committing to total electrification, and if that was the justification for Energize Eastside, then the project might really make sense. It would be a true capacity project. Otherwise, it looks like an unwise expenditure of hundreds of millions of ratepayer dollars for a questionable relaibility project. PSE should make this commitment! |
| Court Olson | 11:49 a.m. | PSE's historical load growth over the past decade has been flat, but PSE seems to continue to ignore this reality and project it going forward. |
| Anne Newcomb | 11:49 a.m. | Slide 41: Could TVR and DR help with reducing load projections? |
| Katie Ware | 11:50 a.m. | Pushing back on the value of gas in supporting T&D deferral, please see the Brattle study entitled "Unlocking the Queue," which reveal in its case study that utilizing grid-enhancing technologies (GETs) doubled the renewable integration potential on the grid over a five year period vs. the business as usual scenario. The cost and emissions saving potential is significant. Find the study here: <https://watt-transmission.org/unlocking-the-queue/> |
| Katie Ware | 11:52 a.m. | There is federal funding available now to help support the economic viability of these projects |
| Aaron Tam (he/him), Public Counsel | 11:52 a.m. | Time Variable Rates |
| Don Marsh, Sierra Club | 11:52 a.m. | Time Varying Rates |
| Aaron Tam (he/him), Public Counsel | 11:54 a.m. | Does increased T&D Deferral Value increase the value of DERs as well? |
| Don Marsh, Sierra Club | 11:56 a.m. | It's still hard to imagine a mile of transmission lines to connect a battery. What am I missing? Batteries should be located close to the customer or the substation near a generation resource. |
| Jennifer Coulson (PSE) | 11:58 a.m. | Per Deepa's question: "slide 40: does this also account for transportation electrification impacts on the grid, or only building electrification?" Answer: The EV assumptions are the same as those in the 2021 IRP load forecast, for EV assumptions reference Chapter 6 of the 2021 IRP. |
| James Adcock Electrical Engineer Stakeholder | 11:59 a.m. | Slide 43: Is it really true that current PSE thermal plants are only connect to 1-mile long tie line lengths? |
| Jens Nedrud (PSE) | 12:00 p.m. | Aaron - the increased costs of T&D deferral value highlights that DER's may be more valuable in addressing T&D needs. |
| Claire Wendle, Triangle Associates | 12:00 p.m. | Feedback form: <https://www.pse.com/IRP/Get-involved/Give-feedback> |
| Anne Newcomb | 12:00 pm. | Great job everyone! Excellent map work!!! |
| Jon Lange | 12:00 p.m. | switching to a TOU type rate structure could be one or the largest drivers of conservation of resource, what is the biggest obstacles to making this change? |
| Claire Wendle, Triangle Associates | 12:02 p.m. | Reposting Sophie Glass' email: sglass@triangleassociates.com |
| Sophie Glass, Triangle Associates | 12:02 p.m. | sglass@triangleassociates.com |
| David Morton | 12:02 p.m. | Thank you! |
| Jens Nedrud (PSE) | 12:02 p.m. | Thanks to everyone for the hosting capacity map feedback. :) |