Puget Sound Energy Resource Planning Advisory Group (RPAG) meeting

Meeting Summary

Tuesday, Feb. 13, 2024 | 12 – 3 p.m.

Meeting purpose and topics

Below are the meeting topics of this Resource Planning Advisory Group (RPAG) meeting:

- Present feedback summaries from Dec. 12, 2023 and Jan. 12, 2024 RPAG meetings
- Discuss equity in delivery system planning
- Review hosting capacity map
- Discuss decarbonization scenarios in the Integrated Resource Plan (IRP)

Time	Agenda Item	Presenter
12:00 p.m. – 12:05 p.m. 5 min	Introduction and agenda review • Safety moment • Introductions • Agenda review and meeting purpose	**Sophie Glass,** Facilitator, Triangle Associates
12:05 p.m. – 12:15 p.m. 10 min	Feedback summary • Dec. 12 RPAG meeting feedback • Jan. 12 RPAG meeting feedback	**Phillip Popoff,** Director, Resource Planning Analytics, PSE
12:15 p.m. – 1:00 p.m. 45 min	Equity in delivery system planning • Investment Decision Optimization Tool (iDOT) • Delivery system and planning process overview • Integrated equity • Next steps and discussion	**Corey Corbett,** Manager, Rate Plan Performance, PSE
1:00 p.m. – 1:40 p.m. 40 min	Hosting capacity map overview • Delivery system planning and IRP integration overview • Optimizing DER siting using hosting capacity map	**Ryan Lambert,** Manager, Electric System Planning, PSE
1:40 p.m. – 1:50 p.m. 10 min	Break	
1:50 p.m. – 2:50 p.m. 60 min	Decarbonization scenarios in the IRP • What we heard in 2023 • Electrification modeling approach	**Jennifer Coulson,** Manager, Operations and Gas Analysis, PSE

	• What we heard in the Dec. 12 RPAG meeting	
2:50 p.m. - 3:00 p.m. 10 min	Next steps and public comment opportunity	**Sophie Glass,** Facilitator, Triangle Associates
3:00 p.m.	Adjourn	**Sophie Glass,** Facilitator, Triangle Associates

The full meeting materials, including agenda, and presentation are available online under the Feb. 13, 2024 meeting heading on the IRP website.

Action items

Below is a summary of actions from the Feb. 13, 2024, RPAG meeting.

What	Who	When
Circle back with RPAG members re: more information on iDOT's structure	PSE	PSE provided this information in the Feedback Report for this meeting on the IRP website.
Follow up with RPAG members on the question regarding load reduction Delivery System Planning triggers	PSE	PSE provided this information in the Feedback Report for this meeting on the IRP website.
Follow up with more information on assumptions for industrial customers	PSE, Cadmus	In progress

Introduction and agenda review

Sophie Glass, facilitator, provided an overview of the agenda for the meeting and welcomed RPAG members (see "RPAG members in attendance" on the last page for a list of RPAG members who joined this meeting).

Feedback summary

Philip Popoff, PSE, provided a summary of the public feedback from the previous December and January RPAG meetings. PSE heard various concerns and interests about potential uses for hydrogen, additional feedback on scenario and sensitivity themes, and interest in decarbonization and electrification from the Dec. 12, 2023 RPAG meeting. Additionally, PSE took note of detailed feedback from the Sierra Club and Climate Solutions. Public feedback from the Jan. 12, 2024 meeting included a request to model a negative gas customer growth scenario, concerns about the use of hydrogen and its viability as a resource, concerns about nuclear generation, and support for modeling lithium-ion over sodium-ion batteries as a generic

resource. PSE additionally received written feedback from Public Counsel, Utilities and Transportation Commission staff, Sierra Club, and Renewable Northwest regarding electric vehicle (EV) and gas load forecast, and generic resources and emerging technologies assessment. PSE noted that the EV forecast will continue to be dynamic as there is currently a lot of uncertainty in the EV marketplace and variation in how customers will be charging their vehicles.

PSE answered questions from RPAG members on public feedback.

- RPAG member: I think the public comment regarding modeling a negative gas customer growth scenario was more so about ensuring gas customer accounts are grounded in what is happening.
    - PSE response: Thank you for sharing; we are reflecting on what has been happening within the past year in our trends in terms of volume and peaks.

Equity in delivery system planning

Corey Corbett, PSE, presented on PSE's energy delivery system approach and use of an investment decision optimization tool (iDOT). This section of the presentation fell under the "collaborate" category on the International Association of Public Participation (IAP2) spectrum of public participation.

PSE uses iDOT as part of the Delivery System Planning (DSP) process. Incorporating Equity into iDOT is related to the 2022 General Rate Case Condition 26. Since November 2022, PSE has been engaging with the Equity Advisory Committee (EAG), RPAG, and customers for input on integrating equity into the DSP and iDOT,

iDOT and DSP are used for both the electric and natural gas energy delivery system. The energy delivery system refers to the infrastructure between generation source and customers needed to deliver energy and maintain reliability. In the electric system this is focused on local circuits, neighborhoods, and cities. It includes distribution lines, transformers, service lines, and more. On the natural gas side, the infrastructure is centered around pipeline systems including gate stations, district regulators, storage facilities, and more.

DSP is integrated with infrastructure construction. DSP initiates the construction process of two categories of investments: programmatic and major projects. Programmatic investments are smaller projects with many assets such as PSE's pipeline replacement program or cable remediation programs that addresses reliability and safety. Major project investments include transmission projects or new substation projects where the planning process identifies a need. Within the construction lifecycle there are five stages from initiation to project closeout. DSP falls within the initiation phase.

PSE provided an overview of the DSP process. There are multiple planning triggers that indicate a need for system evaluation. Data from customer programs, Integrated Resource Planning (IRP), load forecasts, and modeling software are essential in assessing whether a trigger has occurred. If a trigger occurs, planners conduct a system evaluation to identify project needs. These needs are used to develop alternatives and recommended solutions. Next, there's an optimization step before the portfolio of projects is generated and passed forward for consideration and construction.

PSE described iDOT in greater detail. PSE currently uses Power Plan's Asset Investment Optimization (AIO) module. AIO is a multivariable attribute-based benefit cost tool that helps PSE optimize their portfolio of DSP projects and programs by looking at multiple project benefits. Prior to 2023 engagement, iDOT's benefit cost analysis was structured around costs, health, safety, environment, customer satisfaction (such as with outages), regulations, public feedback, as well as platform success including innovation, flexibility, and new technologies. As part of the engagement with the EAG, PSE has made enhancements to iDOT to integrate equity into the analysis by leveraging customer benefit indicators (CBIs) and named community data from the Clean Energy Implementation Plan (CEIP), which is weighed in a qualitative manner. This methodology aligns with distributional equity analysis and calculates equity separately to direct benefits to named communities. By calculating equity separately, PSE can set a minimum threshold to ensure a minimum level of benefits flow to named communities.

PSE answered questions from RPAG members on equity in delivery system planning and iDOT.

- RPAG member: Where do non-wires (NWAs) and non-pipes alternatives (NPA's) fall within this?
    - PSE response: This is part of the solutions process within delivery system planning.
- RPAG member: Is the scoring based on both benefits from the project and its location?
    - PSE response: Benefit cost analysis is analyzed independently from equity in iDOT. Equity is incorporated directionally by considering if a named community is benefiting from the scored CBIs.
- Three RPAG members: Is PSE able to share a list of the metrics or variables that it uses to evaluate and optimize costs, benefits, and equity elements of different resource options? The conceptual summary here is very helpful but it would be great to understand the specifics of how they are implemented.
    - PSE response: PSE will flag this for follow-up to provide more information on how iDOT is structured.
- RPAG member: Which percentage are you aiming to direct to named communities?
    - PSE response: We will answer this in the upcoming slides of this presentation.

Next PSE provided more details regarding their initial equity related integration approach. Their three guiding objectives are to (a) have something in place by 2023, (b) have a straightforward and transparent approach, and (c) hold a continuous improvement mindset. Their three goals for their approach are to (a) leverage work on CBIs from the CEIP, (b) engage externally and (c) solicit feedback and iterate as needed.

PSE's engagement has shaped how they incorporate equity into delivery system planning. From their engagement they heard the following:

- PSE should clarify how benefits for equity advancement are applied.
- Projects should directly benefit communities where they are constructed.
- Portfolio selection should achieve desired targets for equity advancement.

PSE's DSP work occurs serval years in advance of construction. For example, in 2023 the DSP focused on preparing the portfolio of work for 2025 and 2026 construction. For the 2025 and 2026 portfolio, 38% of funded electric projects provide benefits to named communities and 62% of electric projects benefited customers in PSE's entire service area.

PSE piloted early community engagement in 2023 to better understand impacts and customer energy burdens in a named community experiencing power outages located in Lake Youngs/Maple Valley. Community engagement has historically occurred later in the process as part of the construction process. PSE started with online surveys and postcards to gather information. PSE then engaged in phone conversations and in-person meetings and incorporated the feedback they heard into project needs. Building on this pilot, PSE is looking into further integrating early engagement into the DSP process.

PSE plans to continue to evolve iDOT and incorporate improvements into the methodology for the 2027 portfolio. They are additionally looking to evolve early community engagement to inform needs in the DSP process.

PSE answered questions from RPAG members on the equity related integration approach.

- RPAG member: Could you provide an example about how a project benefits a named community versus the PSE territory overall?
    - PSE response: In 2025 and 2026 there was a transmission automation project for reliability that benefited a named community. Other examples include a tree wire project for local distribution to a named community, and a dissolved gas monitor project for substation health that serves a named community. These projects historically would not have been funded based on a benefit cost analysis but were prioritized based upon equity and serving named communities.
- RPAG member: Can you provide more information about the desired target?

- PSE response: PSE used a target of at least 30% of delivery system projects provided benefits to named communities to align with the CEIP targets for energy efficiency and customer renewable programs. PSE's 2025 and 2026 portfolios provided a benefit of 38% to named communities.

- RPAG member: What is the discussion around selecting the minimum?
  - PSE response: There is the possibility for a constraint based upon equity to optimize for a minimum threshold. However, for 2025 and 2026 PSE was able to optimize without this additional constraint.
- RPAG member: It would be helpful to understand how DSP fits into the overall IRP. Presumably we would expect this tool to be able to provide some of the resource needs demonstrated in the overall planning process, such as investments made on the customer side of the meter or on the distribution level to meet some of the system peaking needs that PSE has identified thru the process. Could you clarify if DSP is a separate tool or if it is fully integrated within the IRP?
  - PSE response: PSE would like to see more consistency across the IRP and DSP processes. One of the differences between DSP equity and the IRP is the utility scale resources. The IRP indicates a geographic location that is less refined than the DSP location. PSE shared a link to a previous meeting on the IRP and DSP.
- RPAG member: What is the iDOT tool used for? Is it used for asset management or general overview planning?
  - PSE response: iDOT is used for energy delivery system investments including asset management to optimize the investment of projects. The equity component enables the optimization to direct investments towards named communities at a minimum threshold and to prioritize projects that benefit named communities. PSE is concerned with maintaining a code compliant safe energy delivery system, serving load, system reliability, and how to do that efficiently with reduced carbon. iDOT helps us optimize our projects across all these needs. In working with the EAG, PSE came to the decision to look at equity separately, to ensure PSE is selecting projects that give benefits to named communities.
- RPAG member: I recommend PSE emphasize non pipeline alternatives, especially in long-term energy demands. Additionally, in looking at a zero-customer growth scenario, I urge PSE to take future load and demand into account when making investments to prevent extraneous costs.
  - PSE response: PSE is very mindful of where we are making investments in natural gas. The load forecast has a projected decline in energy usage; what drives a majority of PSE's investment decisions is increasing federal and state requirements for pipeline safety. One example is the 2020 Pipes Act which requires greater focus

on reducing methane leaks. While we are aware of the shorter asset life, we must also balance federal regulation and customer safety as we move towards decarbonization.

- RPAG member: I agree with the previous comment to consider stranded asset risk within the benefit cost analysis. The safety considerations speak to the level of investment required and I encourage PSE to incentive electrification and decommissioning pipelines at any available opportunity to avoid the need for such an upgrade. I am happy to share resources regarding this in the context of Colorado. I additionally recommend that PSE evaluates what it considers Equity. For example, an analysis of how the electric vehicle charging portfolio stacks up against cost and equity metrics could be illuminating. Lastly, formulas are not sufficient. I recommend that PSE moves beyond having equity as a yes/no on projects and rather actively maximizes equity, which would be desirable and consistent with equity obligations imposed by regulation and statute.
    - PSE response: Thank you for your recommendations.
- RPAG member: I want to clarify and emphasize that we are not talking about upgrading pipeline facilities. We are discussing investing in the maintenance of existing facilities that are being used to ensure the systems remain safe. These investments are required to make sure infrastructure remains safe throughout the facilities' lifetimes.

Hosting capacity map overview

Ryan Lambert, PSE, presented the hosting capacity map and detailed how PSE's IRP and delivery system planning are closely linked. This section of the presentation is under the "inform" category of the IAP2 spectrum.

PSE's IRP and DSP are closely linked. The IRP optimizes resource selection to satisfy energy needs of customers meanwhile the DSP ensures the energy delivery system reliably receives and delivers energy where needed. While the two processes were created separately, today they are becoming more integrated, especially with distributed energy resources (DER) that serve both the IRP and DSP.

Delivery system planning and IRP process integration is evolving to support grid transformation. The delivery system analysis has complex inputs which then feed into the IRP. In return, the IRP also has complex inputs which inform the delivery system analysis value of system services.

To optimize DER siting, PSE considers hosting capacity, system capacity needs, and named communities. This is mapped out in three separate layers on the hosting capacity map. The first layer shows where PSE can put solar without significant grid upgrades. The second layer shows

the substation loading forecast and the third layer shows named communities including highly impacted communities. These three layers come together to indicate the ideal locations for DERs. Some outside constraints that need to be considered include land availability, jurisdictional permitting, and jurisdictional moratoriums.

PSE responded to RPAG questions on the hosting capacity map.

- RPAG member: How is this data used?
    - PSE response: This tool is used to get a better success ratio for our distributed solar and storage request for proposals (RFP). This tool helps us meet our general rate case commitment to apply distributed energy resources to areas that bring benefits to our delivery system and our customers. PSE shared a link with more information.
- RPAG member: How restrictive are these layers? For example, what if only two out of three layers are satisfied? Have you classed these layers?
    - PSE response: PSE shared a link with its scoring. PSE tries to direct to highly impacted communities.
- RPAG member: I'm working on an optimization model that uses GIS data. I'm interested in thinking about your DER sizing assumptions, what are the size ranges you are requesting? Additionally, is PSE having conversations with other utilities to collaborate across the state?
    - PSE response: The sizing assumption we used was from 200 kilowatt to 4.99 megawatts. PSE is not aware of any state collaboration. PSE shared a link to request access to the Hosting Capacity Map.
- RPAG member: What ground truthing has PSE done for solar batteries? Is PSE considering prioritizing resources in certain geographic areas?
    - PSE response: PSE believes that if a DER is put on a system, the available economic capacity increases. PSE did considerable outreach regarding DERs in named communities as part of a separate effort. This is a good discussion point and we are open to hearing more feedback.
    - RPAG member response: There is a field of research on understanding the sentiments towards renewable energy along multiple demographic indicators. Lawrence Berkeley National Laboratory (LBNL) has research on energy justice and equity. I can point you in the right direction in that field. Overall, there is a general understanding that it is not as negatively viewed as fossil fuel projects.

Decarbonization scenarios in the gas and electric IRP

Jennifer Coulson and Phillip Popoff, PSE, shared a summary of what PSE heard from 2023 Gas IRP comments and the December 2023 RPAG meeting. Overall, PSE heard seven different themes from the public feedback. These include (1) evaluating impacting without the use of alternative fuels, (2) incorporating the assumption that the gas system will be retired by 2050, (3) including both the gas and electric portfolio and infrastructure, (4) relying on Climate Commitment Act allowances is a risk to PSE and its customers, (5) incorporating natural heat pump adoption into the forecast, (6) no gas conservation on appliances, and (7) modeling additional electrification scenarios or sensitivities to reflect the different paces at which electrification can happen.

PSE provided an overview of their electrification scenario modeling approach. PSE inputs electrification load scenarios from the PSE service territory to model electric and gas transmission and distribution system planning analysis. These models are used to generate volume of infrastructure per area and fuel supply and emissions where applicable per scenario. PSE looks at the financial impacts to customers to understand the impacts of each scenario from a customer's perspective.

PSE responded to RPAG questions on decarbonization scenarios.

- RPAG member: When can we expect to see a feedback report from PSE following public meetings?
    - PSE response: PSE provides a feedback report four weeks after each meeting.
- RPAG member: How does PSE interpret "natural" in natural heat pump adoption?
    - PSE response: This refers to customers converting to electric end use with no incentives. For example, a customer converting because of their own personal preferences.
- RPAG member: Can you talk more about the assumption that the gas system will be retired by 2050. What does retired mean?
    - PSE response: We use retired to mean PSE would cease to provide gas service.
- RPAG member: Could you clarify what points apply to the base scenario versus electrification?
    - PSE response: Everything on this list is for electrification scenarios.
- RPAG member: Is there a translation in the electric system planning and gas/electric portfolio model? How is it accounted for in both processes?

    - PSE response: Currently, PSE is not accounting for the translation. PSE is reducing the gas load and seeing the impact on the electric curve. Essentially, PSE carries the load over and applies the electric framework.
- RPAG member: How is this approach different from what's being done with conservation? I think long-term the goal is that this process occurs endogenously with the model and that electrification is a resource that meets PSE's customers' energy needs while also reducing PSE's carbon. How close are we to that goal?
    - PSE response: This approach is focused on the electrification scenario where electrification is forced in. PSE is not doing the traditional cost effectiveness test on electrification. This scenario is forcing electrification faster than customers are willing to transition.
- RPAG member: Electrification needs to be treated as a selectable resource and it needs to be modeled more realistically. Some of the feedback should be applied to the base scenario not just the scenario where electrification is forced in. For example, this could be applied to transaction cost analysis strategy risk and the stranded asset risk associated with gas investments. I look forward to having a discussion on this and would love information on when that conversation will occur.
    - PSE response: Thank you for your comments. We will have a conversation on general reference cases and scenarios in March.

PSE presented on what they heard from RPAG members during the Dec. 12, 2024 white board exercise. Collectively, PSE heard about three levels of electrification: high, medium, and low.

The high electrification scenario would require full electrification by forcing gas conversion down to the consigned allowance line based on input and feedback looking at limiting that reliance on purchase of allowances. This would also involve retiring the gas system by 2050, eliminating gas conservation appliances and alternative fuels, and relying on the Inflation Reduction Act (IRA), and the Climate Commitment Act (CCA) for end use financial incentives.

The mid-electrification option considers end-use burn out and incentive impacts with no gas furnace replacement. Additionally, this considers gas asset life and no gas conservation or alternative fuels.

The low electrification option considers rate impacts and how customers feel throughout the transition. It additionally aligns electrification with a rate constraint.

PSE and RPAG members had a discussion on the three scenarios.

- RPAG member: A lot of the examples for retiring the gas system seem centered around residential load. I am curious about how this captures industrial load, especially industrial customers that do not have any alternatives at all.

- PSE response: Cadmus has some assumptions on industrial customers. PSE will follow up with more information.

- RPAG member: Does PSE do IRP planning only for core customers? What if customers procure their own gas separately from PSE planning?
  - PSE response: If customers procure their own gas, PSE does not plan for that load in the IRP, but does plan for firm transport loads for delivery planning. That is, we do not plan for the gas supply but do plan for the distribution service to such customers. PSE does plan for CCA allowances to "small" transport customers (firm and interruptible)--those transport customers that emit less than 25,000 tons/year.

- PSE Question: To retire the gas system by 2050, we are obligated to meet the CCA requirements for smaller-sized transport customers. What would you like to see? Would you like to see no more gas utility by 2050 or something different for that scenario?
  - RPAG member response: In this assumption of retiring the entirety of gas, are you only thinking about the impact on PSE's core customers? If gas utilities do not exist anymore, how are electric generators and industrial customers being accommodated?
  - RPAG member response: There's enough uncertainty around the definition of retirement that I'm unsure it is a useful model. We can all guess this is an infeasible scenario here. PSE should focus on what it would look like to transition all residential and commercial gas heating customers by 2050.
  - RPAG member response: I agree that retiring the entire gas system by 2050 is an infeasible scenario and not a useful model. I think PSE should be looking at this at a more granular level.
  - RPAG member response: I agree as well that a more granular approach to retiring part of the gas system by 2050 would be more helpful.
  - RPAG member response: I am thinking about the conversation we had about renewable fuels and what value they have. We should think about alternative fuels, but it might not make as much sense for residential load.
  - RPAG member response: Part of the reason we don't see much of a role for alternative fuels is we don't see it working out cost-wise in terms of availability. Regarding incremental funding sources, it seems difficult in the scenario where we are forcing in electrification faster than you can naturally incentivize it. You don't want to duplicate the mandate and it's important for scenarios to capture market transformation effects as you move down the cost curve. I will share information about what we've seen in Colorado around reducing incentives over time.

- PSE Question: For the high scenario we don't have to force customers to move off gas so quickly. Would you like to see a high scenario that could be less dramatic?

    - RPAG member response: I think it is still helpful to have high a conversion scenario but to include the distinction between conversion and retirement.
    - RPAG member response: I think studying to the fullest extent is useful, as the other scenarios goals are subsets of the larger goal (less expensive, easier).
      I think that a more tiered approach (slices of the load at a time) can be incorporated alongside the more aggressive "no carbon in the system" which ultimately is a societal goal.

- RPAG member question: How do rate constraints work in the model?
    - PSE response: It's an iterative approach. We start with the gas portfolio and iterate from there. We will be filing a General Rate Case quite soon where we can look at the gas revenue requirement. We can limit it to residential and commercial customers and assume a 5% rate increase to create a pot of money for electrification incentives.
- RPAG member: Is the pot of money created for electrification coming from gas customers? Why is the funding coming from gas customers and not electric?
    - PSE response: That's a great question. Should we assume the money comes from gas or electric customers?
    - RPAG member response: I think gas customers is a reasonable starting point, given that it is PSE's gas business with CCA obligations. But I agree that the allocation of these costs is an area for ongoing discussion.
    - RPAG member response: The cost allocation issue does not seem relevant to the planning conversation, in my perspective.

Next steps

- Feb. 27, 2024: Emerging Resources Alternatives: Small Modular Nuclear and Alternative Fuels Public Webinar
- Feb. 20, 2024: feedback report form closes for Feb. 13, 2024 meeting
- March 12, 2024: feedback report for Feb. 13, 2024 meeting is posted

Public comment

The public comments shared during this meeting can be viewed online in the feedback report posted under the Feb. 13, 2024 heading on the PSE website.

Attendees (alphabetical by first name)

RPAG members in attendance

1. Dan Kirschner
2. Fred Heutte
3. Joel Nightingale
4. Ezra Hausman
5. Jim Dennison
6. Katie Chamberlain
7. Stephanie Chase
8. Megan Larkin
9. Sommer Moser
10. Froylan Sifuentes
11. Aliza Seelig
12. John Ollis
13. Lauren McCloy

Public

1. Austin Nnoli
2. Bill Donahue
3. Brandon Green
4. Brian
5. Byron Harmon
6. Connor Birkeland
7. Dan Jaynes
8. Diana Aguilar
9. Don Marsh
10. Eugene Takahashi
11. Jaime Agredano
12. James Adcock
13. Jesse
14. Jon
15. Kevin Foley
16. Kiersten
17. Lori Hermanson
18. Marcus Sellers-Vaughn (Cascade)
19. Mark Klein
20. Mark Lenssen
21. Matt Larson
22. Meghan Anderson
23. Mike Hopkins
24. Pete Stoppani
25. Randy
26. Robert Edmiston
27. Robin
28. Ross
29. Seth Baker
30. Sophie Major
31. Thomas Kraemer
32. Virginia Lohr
33. Weber, Quinn (UTC)
34. Wesley Franks
35. Yaye

Presenters

1. Corey Corbett, PSE
2. Jennifer Coulson, PSE
3. Phillip Popoff, PSE
4. Ryan Lambert, PSE

Other PSE staff

1. Brett Rendina
2. David Landers
3. Kara Durbin
4. Meredith Mathis
5. Niecie Weatherby

Facilitation staff

1. Emilie Pilchowski
2. Pauline Mogilevsky
3. Sophie Glass
4. Will Henderson