Resource Planning Advisory Group feedback report

1. Meeting details

- Thursday, February 26, 2026, 1:00 p.m. - 3:15 p.m.
- Virtual webinar hosted by PSE and facilitated by Triangle Associates
- Links to:
  - Presentation
  - Meeting recording

2. Feedback

The following records participant questions and PSE responses from the public comment opportunity and comments submitted via online feedback form or email to isp@pse.com. Meeting materials are available on the clean energy planning website.

PSE endeavors to provide clarity in responses but subsequent follow-up may be required at times. Please direct any follow-up clarifications to isp@pse.com.

RPAG member feedback

Quinn Weber on behalf of the Washington Utilities and Transportation Commission, March 5, 2026 via isp@pse.com

Staff appreciates PSE's work on the novel ISP cost test. If a question asked below will be answered in a later RPAG meeting, a response identifying when the topic will be discussed is a sufficient answer for the feedback report.

Thank you for the feedback and flexibility.

Cost Test

Slide 16 notes that qualification means “impacts and benefits can be described.” Staff is interested in better understanding PSE’s plan for conducting qualitative analysis of various impacts and how it is viewing “description” in this sense. While this is ultimately a topic for future discussions regarding the decision framework, Staff recommends PSE take this early opportunity to explain how any qualitative analysis of an impact will be weighed against monetized and qualified impacts (including a potential example/straw proposal to convey what this may look like).

Thank you for your feedback. PSE is focused now on developing clear definitions for elements outlined in WAC 480-96-030 (8) and, where appropriate, metrics for measurement. We will continue evolving the cost test and decision framework through consultation with the RPAG through much of 2026. We recognize the complexities of evaluating monetized, quantitative, and qualitative data and will continue to be thoughtful and transparent through this process. We do not intend to propose an example or straw proposal until we have a better understanding of what can/cannot be measured in the three categories.

Staff acknowledges that many impacts may be difficult to account for through monetization and/or quantification. At the same time, there are material costs and benefits to these impacts, and qualification of these impacts may run the risk of not adequately accounting for them. Is PSE considering using proxy values to account for these impacts?

Not currently, but we continue to solicit feedback on the approach and appreciate any specific research and/or sources that may inform definitions or metrics for cost test elements. Commission rules explicitly allow for non-monetized elements including, but “not limited to, rate impacts, bill impacts, economic development impacts, and equity impacts.” While we recognize there could be risk in not monetizing or quantifying some benefits and impacts, there is also risk in applying values without thoroughly researched and vetted processes. We are particularly concerned that applying novel approaches would likely have unintended consequences, particularly in the category of equity, but potentially in other categories as well. In this space, it is critically important to recognize that while we may have some quantitative data, those data may not tell a complete story in the context of a portfolio level analysis. In which case, it may be better to acknowledge the data we have while also describing any related uncertainties or limitations in the data.

Staff’s understanding is that FERC/NERC have concrete standards for reliability, but not so much for resilience. What FERC/NERC standards does PSE propose to use for measuring resilience?

NERC does not have a formal definition for resilience in their Glossary of Terms but often adopts the FERC-supported definition "The ability to withstand and reduce the magnitude and/or duration of disruptive events, which includes the capability to anticipate, absorb, adapt to,

and/or rapidly recover from such an event". While NERC has not explicitly identified resilience standards, resilience concepts are embedded in the reliability standards that address extreme weather, grid security, and grid operations.

From a Transmission Planning perspective, the FERC and NERC standards and requirements that PSE could use to specifically measure resilience include:

- *TPL-008: Transmission System Planning Performance Requirements for Extreme Weather*
  - *While NERC Standard TPL-001-5.1: Transmission System Planning Performance Requirements does require the evaluation of significant outages that may be experienced during extreme events like severe weather, wildfire, or cyber-attack, the standard does not require us to plan the system to mitigate the impact of these types of events. The new TPL-008 standard will establish performance requirements for extreme events that will drive the development of transmission projects specific to extreme weather resilience. It is possible that extreme weather events can account for supply risks associated with Variable Energy Resources (VERs), such as heat dome events and associated low wind output.*
- *TPL-007-4: Transmission System Planned Performance for Geomagnetic Disturbance (GMD) Events*
  - *This standard establishes transmission system performance requirements during GMD events. This standard has been effective for several years and PSE currently participates in regional studies to identify and mitigate GMD impacts on the system.*
- *FERC Order 1920: Long-Term Regional Transmission Planning*
  - *The new FERC Order establishing requirements for Long-Term Regional Transmission Planning includes requirements to develop long-term scenarios representative of extreme weather events and requires the evaluation of regional projects for their ability to mitigate extreme weather events or unexpected system conditions.*
- *CIP-014-3: Physical Security*
  - *This standard identifies transmission stations/substations that if damaged or rendered inoperable due to physical or cyber-attack, would result in unacceptable performance within the interconnection. While this standard typically results in the implementation of physical protections at critical substations, it could drive system projects to mitigate instability, uncontrolled separation, or Cascading within the Interconnection.*

Outside of transmission planning, there are additional NERC requirements for resource preparedness during extreme cold-weather events, such EOP-012-2: Extreme Cold Weather Preparedness and Operations. There are also multiple standards under development that will address extreme cold weather grid operations, preparedness, and coordination.

If resilience standards overlap with reliability standards, it will be important to watch out for the potential double counting of benefits and costs between reliability and resilience impacts. Has PSE considered how it will avoid double counting impacts, in this context, and in general?

PSE recognized the potential for and risks of double-counting. As we further develop the cost test and decision framework, we are working to avoid double-counting. At this time, we do not expect to quantify these elements because they are addressed in the planning models. As noted below, all portfolios are required to meet the same standards for reliability, resilience, and security of supply.

Costs and benefits that PSE must include in the cost test are often accrued at different scales or to different populations. For example, benefits or costs might impact PSE or the utility system, host customers, society as a whole, or other subpopulations. Similarly, some costs and benefits have impacts within a geographic boundary or have a fixed time frame. Staff recommends that impacts be measured and communicated to account for different scales and perspectives of who will bear a cost or burden. For example, resilience benefits may accrue both for the utility system as well as different participants in various DERs. Has PSE considered how it will account for and differentiate recipients of costs and benefits accrued? Has PSE considered how it could account for different timescales of impacts, where relevant, and if so, how?

PSE recognizes that not all benefits and impacts may apply across all customers and will be considering this as we further develop the cost test and decision framework. However, there are significant limitations to what we can evaluate in a portfolio-level analysis. For example, the long-term generic resources selected for the preferred portfolio will be a mix of generic (hypothetical) resources without geographic specificity making it pure speculation as to who, if anyone, would be impacted by these resource builds. Similarly, at the portfolio level we cannot know where or by whom DERs will be adopted. As noted on slide 13, PSE believes the ability to assess costs and benefits to a specific customer segment increases as PSE gets closer to the implementation of projects and programs.

PSE notes on slide 26 that one way to measure health and safety impacts would be to assess a given portfolio's consistency with existing health and safety requirements. Would this be evaluated as a yes/no as to whether a given portfolio meets the requirements? Would PSE ever consider a portfolio that doesn't meet existing health and safety requirements?

Absent receiving actionable and timely feedback through the engagement process, we expect this question to be binary (yes/no) for the 2027 ISP. PSE would not consider a portfolio viable if it could not meet local, state, and federal health and safety requirements.

Does PSE plan to rank portfolios based on the amount of health and safety benefits they provide (for example, if a portfolio clearly exceeds listed health and safety requirements) or otherwise provide information about the health and safety impacts of each portfolio to the Commission?

PSE does not intend to rank portfolios by any single element and has not, at this time, identified established metrics that would objectively evaluate different levels of health and safety benefits that would not also result in double counting. For example, PSE is already accounting for the social cost of greenhouse gas emissions and quantifying other emissions in other cost test categories. We envision the cost test and larger decision framework as a way of disclosing impacts and benefits to inform decision-making, but we do not anticipate scoring or ranking of portfolios by all metrics given that several are likely to be qualitative. Within this approach, PSE may see differences in health and safety and denote those impacts as informational.

Staff is interested in hearing more about PSE's methods for estimating jobs by portfolio build in the economic development impact metric. Is this something PSE has done before and already has a set methodology for, or is PSE still developing a plan for doing this?

This approach is building off of the work done in collaboration with the EAG in fall 2025 to revise the jobs CBI. In the research leading up to and the discussions with the EAG, we proposed using a model that estimates jobs based on specific resources. PSE is still developing a plan/methodology to potentially estimate jobs and discussed this with the EAG on March 16. PSE can provide an update at the March 26 RPAG meeting.

On slide 24, PSE proposes a plan for which impacts to discuss with its various advisory groups. While Staff acknowledges the need to efficiently spread out the various impacts across different groups to maximize robust conversation, Staff sees a risk in limiting conversation. For example, the resiliency benefits of a DER resource is something that each advisory group can bring a unique perspective to. Staff recommends PSE give thoughtful consideration to how it tailors future discussion and avoid limiting discussion of impacts across advisory groups to the extent possible.

Thank you for the feedback and recognition that PSE has very limited time to engage advisory groups, particularly the EAG, in discussions. We endeavor to make meeting discussion as robust as possible while acknowledging this limitation and encouraging additional feedback via other channels, especially the feedback form.

Building Electrification Impact Tool

Please clarify what stage of development and implementation this tool is currently in. Has PSE begun to incorporate outputs from the tool into ISP analysis?

The Building Electrification Impact Tool has been used to develop the load shifting from the gas to the electric utility for the scenarios. PSE is currently working to incorporate those impacts into the load forecast. This will allow for consistent assumptions and inputs across the ISP once the various groups are ready to start modeling the scenarios. PSE plans to share the various scenario load forecasts with the RPAG in July.

Slide 38: Please clarify, in general terms, how reference attributes were quantified to develop weighted scores?

The customer attribute captures the ease and willingness of customers to adopt a measure. The technology attribute captures aspects of technologies such as transaction costs , technology complexity, depth of renovation or operational change required, and ancillary benefits. The barriers attribute captures other characteristics that limit the adoption of measure packages such as customer awareness and confidence, supply chain and workforce development, and availability of finance solutions. The customer and technology attributes both have a weight of 25% each, and the barriers attribute has a weight of 50% (for a total of 100%). The barriers category is weighted more heavily because of the range of barriers captured by this attribute.

*Cadmus qualitatively assigned each measure application a score for these three attributes from amongst the following options: 'unfavorable' (quantified value of zero); 'somewhat unfavorable' (quantified value of one-third); 'somewhat favorable' (quantified value of two-thirds); 'favorable' (quantified value of one). The quantified score values for each attribute are multiplied by their respective attribute weights and the results summed to yield the weighted score. E.g., all favorable ratings will yield (1 * 0.25) + (1 * 0.25) + (1 * 0.50) = 100%.*

Can PSE explain in more detail the equation used to calculate the S-Curve for Scenario 1?

The Bass diffusion equation is a differential equation which describes the “S-curve” pattern of new product adoption. This equation has been leveraged in numerous customer decision analyses (including in New York, Ontario, and others) and lends itself well to calibration based on academic research. Two coefficients, p and q, influence the slope and duration of the S-Curve produced by the Bass diffusion equation. p represents the coefficient of innovation and q represents the coefficient of imitation.

Note that within Cadmus' adoption methodology, the term 'S-Curve' refers to the component of the adoption algorithm that forms a ramp from zero to 100% over time and is agnostic of project economics.

$$\text{Final Annual Adoption } \% = \textit{Payback\_Acceptance} * \text{S\_Curve\_\%} * \text{CompShare}$$

$$\text{S\_Curve\_\%} = \frac{1 - e^{-(p+q)t}}{1 + \left(\frac{q}{p}\right) e^{-(p+q)t}}$$

Public feedback

James Adcock, February 26, 2026, public comment opportunity

I've been involved in some regards with PSE on these things for about 15 years now. First, about the established social cost of greenhouse gas; that's a science-based measure. It is not Democratic. It is not Republican. It is not federal nor state. This number is currently about $180 to $195 a ton based on scientific peer-reviewed publications. It is not about $60 per ton. How is it reasonable that Puget uses a number that's off by a factor of three? How is it the UTC uses a number that's off by a factor of three? I would ask that you fix this problem. In regard to monetized or not monetized measures; if you cannot measure it, then you do not know what you are doing. If you can measure it, then you can monetize it. Please monetize everything. Do what it takes to get there. Otherwise, you're just guessing. You're not optimizing. Our ski industry is already destroyed. Next comes the extinction of salmon and mega statewide fires. Please change your behaviors and thought processes.

Per RCW 80.28.395, PSE bases the social cost of greenhouse gas (SCGHG) on the Interagency Working Group on Social Cost of Greenhouse Gases, Technical Support Document, August 2016 update. That document projects a 2.5 percent discount rate, starting with $62 per metric ton (in 2007 dollars) in 2020, and lists the CO_2 prices in real dollars and metric tons. The Commission provides a gross domestic product deflator adjusted social cost of carbon dioxide in 2024 dollars.