# Puget Sound Energy Resource Planning Advisory Group (RPAG) meeting summary

Tuesday, July 29, 2025 | 10:00 a.m. – 1:00 p.m.

## Meeting objectives

Below were the meeting objectives of this Resource Planning Advisory Group (RPAG) meeting:

- Provide an update on PSE's vehicle-to-everything (V2X) program
- Provide an overview of energy efficiency and demand response and how they affect the demand forecast for the 2027 Integrated System Plan (ISP)
- Discuss PSE's demand forecast after conservation for the 2027 ISP
- Provide an opportunity for public comment

| Time | Agenda Item | Presenter |
|---|---|---|
| 10:00 a.m. – 10:05 a.m.<br>*5 min* | **Introduction and agenda review**<br>• Safety moment<br>• Introductions<br>• Agenda | **Annie Kilburg Smith,** Facilitator, Triangle Associates |
| 10:05 a.m. – 10:15 a.m.<br>*10 min* | **Introduction and updates**<br>• Recap July public webinars<br>• Schedule overview | **Ray Outlaw,** Manager, Communications Initiatives, PSE<br>**Jennifer Coulson,** Manager, Operations and Gas Analysis |
| 10:15 a.m. – 10:45 a.m.<br>*30 minutes* | **Vehicle-to-Everything (V2X) program update and ISP integration**<br>• V2X program overview<br>• PSE V2X demonstrations<br>• V2X benefit potential | **Malcolm McCulloch,** Manager, New Products and Services, PSE |
| 10:45 a.m. – 11:15 a.m.<br>*30 min* | **Energy efficiency and demand response**<br>• Review demand-side resources (DSR) inputs in the demand forecast<br>• Analysis of energy efficiency and demand response goals | **Kasey Curtis,** Senior Market Analyst, Customer Energy Management, PSE<br>**Tom Smith,** Demand Response Supervisory, Customer Energy Management, PSE |

| Time | Agenda Item | Presenter |
|---|---|---|
| 11:15 a.m. – 11:25 a.m.<br>*10 min* | **Break** | |
| 11:25 p.m. – 12:50 p.m.<br>*75 min* | **Gas and electric demand forecast**<br>• Overview<br>• Key assumptions<br>• Electric results<br>• Gas results | **Lorin Molander,** Manager, Load Forecasting & Analysis, PSE<br>**Stephanie Price,** Lead – Electric, Load Forecasting & Analysis, PSE<br>**Chhandita Das,** Lead – Gas, Load Forecasting & Analysis, PSE |
| 12:50 p.m. - 1:00 p.m.<br>*10 min* | **Next steps and public comment opportunity** | **Annie Kilburg Smith,** Facilitator, Triangle Associates |
| 1:00 p.m. | **Adjourn** | **All** |

# Introduction and agenda review

Annie Kilburg Smith, Facilitator, provided an overview of the meeting agenda and welcomed RPAG members. See RPAG members at the end of this document for a list of RPAG members who joined the meeting.

# Introduction and updates

Ray Outlaw, Manager, Communications Initiatives, PSE provided an overview and shared a report out of the July 2025 public webinars. PSE public webinar attendance has held steady, with good engagement from participants. The July webinars focused on resources that could power PSE's clean energy future. PSE plans to hold two more public webinars in the fall of 2025. Public webinar attendees expressed interest in learning more about emerging technologies for clean energy.

Jennifer Coulson, Manager, Operations and Gas Analysis, PSE provided an overview of the ISP topics and the completion of foundational presentation topics. PSE noted that they will send out a scheduling poll for the September meeting. PSE reminded members and attendees that there are no RPAG meetings in August nor December 2025.

# Vehicle-to-Everything (V2X) program update and ISP integration

Annie introduced Malcom McCulloch, Manager, New Products and Services, PSE, to provide an overview of PSE's vehicle-to-everything (V2X) program. V2X refers to transferring electricity stored in the batteries of electric vehicles (EVs) to the electric grid, buildings, homes, external loads, and/or other vehicles. PSE is exploring new and innovative technologies and evaluating targeted, limited-scale demonstration projects to utilize V2X to increase resiliency and grid stability. PSE is exploring time-of-use (TOU) rates, EV demand response, fleet depot rates, and vehicle to home/building and vehicle to grid options.

RPAG members asked questions and made comments throughout the meeting and PSE responded. Several of these questions and responses are summarized below:

- RPAG member: Can PSE explain the process of working with site-hosts on the limited-scale demonstration projects? For instance, were the school districts onboard with these projects? Were there challenges?
    - PSE response: PSE is conducting vehicle-to-grid with the Olympia and Snoqualmie school districts. PSE solicited school districts with compatible electric school buses stationed at depots to demonstrate bidirectional charging capabilities. The school districts were excited about the opportunity. PSE hopes to have the chargers installed by the third quarter of this year and able to dispatch demand response events during peak times by the end of 2025.

Malcom presented on vehicle-to-building (V2B) and vehicle-to-home (V2H) assessments. The presentation included the V2X pipeline, its interconnectivity, and benefits. For customers, V2X will provide lower energy costs through demand charge mitigation and time-of-use rate arbitrage, backup power for customers via V2B and V2H, and potential compensation for grid services. The system benefits include a more resilient and robust energy grid, peak capacity resources, load balancing and grid stability, and distribution system upgrade deferral.

- RPAG member: What kind of reporting will be available to the public? And what challenges are there for cost-effectiveness?
    - PSE response: PSE will conduct an impact evaluation with customers to understand both the technical and customer perspectives.
- RPAG member: Does PSE have a timeline for the construction? How much data will be included in the follow-up impact analysis?
    - PSE response: PSE wants to include at least a year of data. PSE will also observe peer utilities and create benchmarks based on reporting.

    - RPAG member: Have there been demonstrations from other utility providers? Who might be the collaborators on V2X?
    - PSE response: In California, PG&E is one partner. There are a few other organizations such as the Vehicle-Grid Integration Council (VGIC) and Alliance of Transportation Electrification that are putting together collaborations between vehicle providers, manufacturers, owners, and utility providers.

- RPAG member: What level of charger do customers need for V2X or V2B? What is PSE's assumed ramp rate? Is PSE looking into distribution among its customers in the future to avoid net-metering challenges where benefits go to early adopters?
    - PSE response: PSE has direct current fast chargers (DCFC); a larger charger for school buses. For homes it requires a level 2 charger and additional technologies like a black start battery if necessary. As for vehicles, PSE will conduct an analysis to better understand V2X compatible vehicles available in the service area. The results will detail the potential capacity that PSE could leverage in the future.

- RPAG member: Are there obstacles to using V2H to apartment buildings and to lower income households?
    - PSE response: V2H can provide resiliency benefits which customers, including lower income populations, can leverage to avoid food loss during outages as one example.

- RPAG member: Why would it need black start capability? Is black start capability mostly for peak shaving? Black start capability should benefit the public and should be something the homeowner pays for.
    - PSE response: PSE can share some of that data, but it should be more of a backup generator. (Additional details are included in the meeting feedback report on the ISP website.)

# Energy efficiency and demand response

Kasey Curtis, Senior Market Analyst, Customer Energy Management, PSE, provided an overview of PSE's ISP customer strategy. PSE's customer plan will include ISP forecasts for PSE's customer-facing programs, acknowledging the fact that customers will be a crucial component of the future of energy. In the ISP, the Conservation Potential Assessment (CPA) helps determine load impacts of demand-side resources, along with planning done by our customer programs to help determine what the market will look like in the short term.

- RPAG member: What is the rational for conducting the CPA before knowing the load forecast?
    - PSE Response: There is a chicken-and-egg dilemma embedded in this question: conservation must aim to achieve 2% of annual load, but the load isn't known until conservation is netted out. PSE will resolve this by applying the most recent load forecast and conservation goals from our filings when we prepare these plans. As we

update our assumptions every two years as part of PSE's Biennial Conservation Plan (BCP) or interim ISP filings, we will update our projections so that we're using the latest data.

- RPAG member: How does the CPA methodology help select more conservation as a distribution resource? Does this methodology help with the smaller factors that go into distribution system investments?
  - PSE response: The CPA analysis is not location specific. PSE is currently conducting separate non-pipes evaluations as part of the ISP process.

Kasey provided an overview of electric conservation and achievable technical potential. The full achievable technical potential is not cost-effective. PSE will analyze the impact on ratepayers to understand how PSE will expand programs without negatively affecting ratepayers.

- RPAG member: Have savings from EV and datacenters been accounted for in the electric conservation achievable technical potential analysis?
  - PSE response: There is a telecommunications program that is currently exploring efficiency at datacenters. EVs are an added load but there is not much opportunity for conservation. As EV growth continues there is not a lot of conservation potential.
- RPAG member: How does PSE deal with the disconnection between the Decarbonization Act and the actual commercial feasibility of decarbonization? What percentage of total demand savings will EV DR resources represent? And how does that compare to their share of projected growth in peak demand?
  - PSE response: The Decarbonization Act states that annual load can go below 2% if 2% is not commercially feasible. Recent draft rules have provided us with more guidance on how to demonstrate commercial feasibility.
- RPAG member: Can PSE clarify the cost effectiveness of the achievable technical potential?
  - PSE response: Based on load shapes, PSE can estimate the capacity savings. Cost effectiveness is compared to Washington State's cost test to determine if costs are beneficial to ratepayers. The current graph on Slide 28 does not represent cost effectiveness; it measures feasibility. The orange and dark blue on slide 28 represent PSE's program savings over the next five years. PSE uses the CPA to provide PSE with the longer-term projections.

Kasey presented the top 25 electric and natural gas measure potentials.

- RPAG member: Does growth rate account for new rules for not providing incentives?
  - PSE response: Yes, PSE takes that into account.
- RPAG member: Why is the growth rate of heat pump water heaters (HPWH) projected to be negative?

- PSE response: The growth rate was calculated by the average year-over-year growth potential over 20 years. In the case of HPWHs, there is a lot of potential assumed in the early years, which then lowers over time. The 20-year average growth rate trends lower over time because the CPA model assumes higher adoption levels in earlier years. As a result, most subsequent years show less potential than the year before, leading to a lower average growth rate overall.

- RPAG member: What are the units of the energy efficiency measure potential?
  - PSE response: PSE used megawatt hours (MWh) for electricity and therms (thm) for gas.
- RPAG member: Are the tables on slide 29 representing economic potential?
  - PSE response: No, the table represents the total achievable technical potential. No cost-effectiveness or economic screen is applied in those totals.
- RPAG member: The Berkeley Lab is conducting a study, Best Practices Guide for Benefit-Cost Analysis of Managed EV Charging. It should be available in Fall 2025 and more information can be found here: https://emp.lbl.gov/publications/best-practices-guide-benefit-cost
  - PSE response: Thank you for sharing.

Tom Smith, Demand Response Supervisory, Customer Energy Management, PSE, presented on PSE's demand response (DR) potential. He provided a scope of PSE's available DR programs.

- RPAG member: How is PSE considering rate structure within its time-of-use (TOU) programs?
  - PSE response: PSE will have more details soon.
- RPAG member: What kind of control signal is PSE going to send to the water heaters? Is there a reason why WIFI has higher potential of demand flexibility than cellular?
  - PSE response: PSE is investigating all types of controls and collecting data to analyze usage modulation methodologies. PSE is currently in the study phase and partnering with Rheem and another water heater manufacturer. This partnership will help model DR dispatches, grid connection applications, and grid enabled use cases. PSE's intent is to have a thorough study by the second quarter of 2026. PSE has found that Wi-Fi and Wi-Fi receivers overall have improved making Wi-Fi a more feasible connectivity measure.
- RPAG member: How do unpredictable summer peaks affect EV load in the future?
  - PSE response: PSE wants all EV resources to be included in the portfolio so customers have options and are not put into a program that might not apply to them. PSE is trying to expand our portfolio to include these factors. PSE's territory historically peaks during winter, and the portfolio is based from PSE's historical data.

- RPAG member: In California during a high temperature period, I received an automated message asking to lower energy use during peak times. Does PSE have a similar direct communication plan?
    - PSE response: PSE has two behavioral programs that allow for direct communication to PSE customers. One program does not require a device, but customers can opt into text messages and calls. PSE is hoping to increase this type of communication.
- RPAG member: It is encouraging to see the diverse offerings of DR programs. Does the potential include legacy stock of water heaters? Or are the programs assuming people will need to purchase a new water heater?
    - PSE response: If a customer has a water heater with a CTA-2045 port (small standardized socket built into many modern electric water heaters), they will not need to purchase a connectivity module. PSE will send it to them through the PSE marketplace.
- RPAG member: Regarding CTA-2045 versus Wi-Fi, CTA-2045 command set was designed to be more advanced than Wi-Fi in how it interacts with the water heater. Is that no longer true?
    - PSE response: PSE has had conversations with major water heater manufacturers, and they have recognized the value in load flexibility and options. Manufacturers are now building Wi-Fi connectivity into water heaters and including control commands in their integrated Wi-Fi solutions that mirror that of CTA-2045 commands.
- RPAG member: How are the DR efforts and potential captured or incorporated in present and future virtual power plant (VPP) program(s) at PSE? Is there cross-pollination and active collaboration? Do the two paths intersect?
    - PSE response: Our development teams collaborate very closely to design DR and flexibility programs so they can determine the best control approach and opportunities to expand beyond traditional peak demand management to serve multiple grid needs. Yes, there is an abundance of cross-pollination and active collaboration every day.

## Gas and electric demand forecast

Lorin Molander**,** Manager, Load Forecasting & Analysis, PSE, introduced PSE's demand forecast and provided an overview of the 2027 ISP demand forecast. The forecasts included demand-side resources and represent the base/reference case. ISP scenarios are still under development. The forecasts in the presentation were compared to the 2023 Electric Progress Report (EPR) and the 2023 Gas Utility Integrated Resource Plan (IRP). PSE's demand forecast key assumptions included building electrification, customer growth, transportation electrification, demand-side resources (DSR), climate change, and large load additions (block loads).

- RPAG member: Why is assuming fewer large loads "conservative"?

- PSE response: In the base case PSE includes the large loads that PSE have certainty of connectivity. The risk with including more large loads is that PSE may over forecast the load and overbuild the system. PSE is trying to assume certainty of connectivity.

- RPAG member: What kind of feedback has PSE received from the building community on gas customer growth? Is PSE discussing alternatives with the building community? Does climate change include more intense periods over a longer duration such as cold snaps and heat domes? Is there planning for large load additions and requests?
  - PSE response: Our discussions with the building community have provided us insights that home builders continue to be very interested in installing natural gas in homes even with the most recent change in state building codes. Feedback has been that home buyers still want at least gas cooking and other low-intensity uses of gas. Regarding climate change, the temperature data includes extremes such as heat domes. The model accounts for historical trends and extremes. For gas modeling, the climate data has factored in peaks and weather extremes. For large load additions and requests, PSE includes requests for connection that are in late stages of study and are highly likely to ultimately connect to the system.
- RPAG member: How does PSE bridge the gap between assumptions about large loads and how PSE will handle requests for customers?
  - PSE response: The ISP process should look at these scenarios to understand the customer impact. PSE is navigating policies and how to appropriately allocate costs to accommodate large loads.

Stephanie Price, Lead, Electric, Load Forecasting & Analysis, PSE, provided an overview of PSE's electric customer growth forecast. The 2027 ISP forecast is lower than the 2023 EPR. She presented the average annual rate growth and percentage of total system load of PSE's 2027 ISP load forecast.

- RPAG member: Are the large loads included in the forecast composition?
  - PSE response: There are some new large loads included in the forecast. PSE includes discreet planned projects and EV loads, but PSE is not including data centers that are currently speculative.
- RPAG member: It would be good to better understand what criteria PSE is using to assess which data centers to include. I am not sure I understand the distinction if it is just based on who owns the data center and what it is used for now.
  - PSE response: PSE will note this and provide a response in the feedback report from this meeting to follow-up. (Additional details are included in the meeting feedback report on the ISP website.)

Stephanie explained that the electric system load forecast is greater than the 2023 EPR. PSE forecasted higher energy demand due to an increase in forecasted EV load, updated savings

from demand-side resources, and updated use per customer. She also gave an overview of the electric system winter peak forecast composition and its comparison to the 2023 EPR. The 2027 ISP forecasts lower new customer growth, higher EV peak, and less peak energy efficiency and codes/standards savings, which results in a higher peak forecast in the long term.

- RPAG member: How extreme is the climate change model in the winter peak forecast?
  - PSE response: PSE established a 30-year rolling window to include both forward looking climate change data and historical data. This included the coldest temperature during winter and warmest temperature during summer. The 30-year rolling temperature data are evaluated to determine a temperature at which the 1-in-2 peak occurs. PSE used hourly data provided by the Northwest Power and Conservation Council developed as part of NWPCC's 2021 Power Plan Analysis.
- RPAG member: Some climate change models include acceleration. Does PSE's model include acceleration?
  - PSE response: Historical and forward-looking data had more constant increases, but not fast acceleration.

Chhandita Das, Lead, Gas, Load Forecasting & Analysis, PSE, provided an overview of PSE's natural gas policy assumptions and the natural gas forecast. PSE's natural gas policy assumptions include Washington State Building Codes, Seattle Building Emissions Performance Standards (SBEPS), PSE Line Extension, PSE decarbonization programs, and gas conversions to electric without incentives. PSE forecasts that natural gas customer growth is less than the 2023 IRP forecast. Growth will still occur but at a slower rate. PSE's natural gas peak forecast started higher than the 2023 IRP, but PSE forecasts a steady decline in new customers and an increase in large loads.

- RPAG member: Does the forecast include the effect of increasing per-unit cost as large commercial, etc. phase out gas?
  - PSE response: This is not directly included in the forecast model. However, the ISP scenarios consider different levels of customer response to increase in gas prices. The comparison between the scenario analyses and the reference case will help assess the impact on usage arising from behavioral responses.
  - RPAG member: Does the forecast include the need for emission allowances? If the price of gas is going up, does the forecast reflect the increase in rates?
  - PSE response: Increasing rates resulting from emission allowances or increasing gas prices are not explicitly included in the model. Please see the response above.
- RPAG member: Does the model account for customers with more low-intensity uses of gas? Can gas be easily converted?

    - PSE response: PSE will examine all the components, but PSE has not been observing a big decrease in gas customers. Once we examine other scenarios and sensitivities, PSE will be able to see the impacts.
- RPAG member: Is the industry ensuring that there are improvements in insulation and reduction to energy usage?
    - PSE response: PSE's forecasts reflect new building codes and appliance lifecycle, which reflect better insulation and performance.
- RPAG member: The most recent federal legislation expired the tax credits for renewable projects. Is PSE taking steps to ensure customers can acquire those tax credits and help achieve affordable billing?
    - PSE response: PSE is wrapping up the 2024 All-Source RFP, but does not have updates on other projects yet.
- RPAG member: When will RPAG members see large load scenarios? Can you provide an overview of these scenarios? There is a taskforce working on large load scenarios supported by the Department of Energy (DOE). It is called the Energy System Integration Group Large Loads Task Force. Information about the group can be found here: https://www.esig.energy/large-loads-task-force/. Specifically, PSE may want to review materials available to volunteer members of the Load Forecasting Team.
    - PSE response: For the ISP, PSE would like to look at a histogram of customers and load size, and current data. Thank you for the information.
- RPAG member: PNUCC has held discussions about large loads. It seems beyond PSE to be the only utility provider to provide the only solution to load growth, but there is definitely a need to figure out how to fill the infrastructure.
    - PSE response: Data centers are challenging, especially with regional transmission constraints.
- RPAG member: The following link is for the ESHB 1589 Rulemaking - Hybrid Rulemaking Adoption Hearing, scheduled for August 6th at 9am in case RPAG members would like to attend: https://www.utc.wa.gov/event/87496.
    - PSE response: Thank you for the information.

# Next steps

Annie previewed upcoming activities.

- August 5, 2025: Feedback form from July 29, 2025 meeting closes
- August 2025: No RPAG meeting

Annie welcomed comments and questions from public attendees. Please visit PSE's recording of the July 29 meeting for full public comments. At the conclusion of the meeting, participants

were invited to complete a post-meeting feedback poll to share their insights and help improve future sessions.

# Public comment opportunity

All public comments and PSE's responses are located in the feedback report for this meeting on PSE's clean energy planning website.

Don Marsh, representing the Sierra Club Washington State Energy Committee and the Washington Clean Energy Coalition, commented on PSE's current load forecasting approach. He noted that past forecasts, such as those used in 2015 for the Energize Eastside Transmission Upgrade Project, assumed over 2% annual peak demand growth, while current forecasts project 1.2–1.5% annual growth. He expressed concern that these projections may not fully account for the additional electric load expected from building electrification under HB 1589 and the Climate Commitment Act.

Referencing slides 40 and 42, he noted that the forecasts show little impact on electric load or peak demand from electrification. He urged PSE and the UTC to ensure the ISP reflects the anticipated transition from gas to clean electricity and to strengthen electrification planning going forward.

Tom Kraemer, representing Third Act Washington, commented on PSE's gas demand forecasts. He said he was surprised to see projections showing continued growth or minimal reductions in gas load following the passage of HB 1589. He noted that the law calls for transitioning customers away from direct fossil fuel use, requiring significant reductions in gas demand through electrification and other measures. Tom expressed concern that the reductions shown in slide 46 do not align with the emissions reduction targets of 95% by 2050 and interim milestones set by HB 1589.

He acknowledged PSE's response that the figures presented were reference cases and that future integrated planning should reflect greater reductions. He added that coordinated planning between the gas and electric utilities, paired with incentives to reduce gas use, would be a positive step forward.

## Attendees

Attendees are listed alphabetically by first name. These numbers do not include viewers on PSE's YouTube channel.

## RPAG members

1. Aliza Seelig
2. Callie Moriyasu
3. Dan Kirschner
4. Dennis Suarez
5. Donald Williams
6. Ezra Hausman

7. Froylan E. Sifuentes
8. Katie Chamberlain
9. Lauren McCloy
10. Lisa Schwartz
11. Megan Larkin
12. Sommer Moser
13. Quinn Weber

## Presenters

1. Chhandita Das, PSE
2. Jennifer Coulson, PSE
3. Kasey Curtis, PSE
4. Lorin Molander, PSE
5. Malcolm McCulloch, PSE
6. Ray Outlaw, PSE
7. Stephanie Price, PSE
8. Tom Smith, PSE

## Support staff

1. Elizabeth Hossner, PSE
2. Emma Taylor-Chapman, PSE
3. Meredith Mathis, PSE
4. Phillip Popoff, PSE
5. Kelly Xu, PSE

## Facilitation staff

1. Annie Kilburg Smith, Triangle Associates
2. Ben Relampagos, Triangle Associates
3. Jack Donahue, MFA

## Members of the public

1. Chris Searcy
2. Chelsea Woodfin
3. Denelle Peacey
4. Don Marsh
5. Ian McGetrick
6. Jaime Agredano
7. Jeff Harris
8. John Robbins
9. Juan Builes
10. Kevin Smit
11. Larry Miles
12. Matt Larson
13. Nelli Doroshkin
14. Robert Hughes
15. Seth Baker
16. Sophie Major
17. Teun Deuling
18. Tom Kraemer
19. Wesley Franks
20. Willard Westre