EXH. AAA-1T
DOCKETS UE-240004/UG-240005
2024 PSE GENERAL RATE CASE
WITNESS: AARON A. AUGUST

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **PUGET SOUND ENERGY,** **Respondent.**	**Docket UE-240004** **Docket UG-240005**

PREFILED DIRECT TESTIMONY (NONCONFIDENTIAL) OF

AARON A. AUGUST

ON BEHALF OF PUGET SOUND ENERGY

FEBRUARY 15, 2024

PUGET SOUND ENERGY

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I. INTRODUCTION

Q. Please state your name, business address, and relationship with Puget Sound Energy.

A. My name is Aaron A. August and my business address is 355 110th Avenue NE, Bellevue, Washington 98004. I am the Senior Vice President, Chief Customer and Transformation Officer at Puget Sound Energy ("PSE").

Q. Have you prepared an exhibit describing your education, relevant employment experience, and other professional qualifications?

A. Yes, I have. Please see the First Exhibit to the Prefiled Direct Testimony of Aaron A. August, Exh. AAA-2, which describes my education, relevant employment experience, and other professional qualifications.

Q. What are your duties as Senior Vice President, Chief Customer and Transformation Officer at Puget Sound Energy?

A. I oversee PSE's departments that lead customer experience design creation, local and national business account engagement, customer energy management program design and delivery, customer clean energy (EV, solar and storage) program design and delivery, customer energy innovation development, and

customer operations (billing, credit, and contact center). Charged with enabling customer energy orchestration efforts, I focus on empowering customers to manage and optimize their desired energy experience. This includes coordinating customer and community outreach, and refining customer experience journeys and developing customer engagement programs and services. Empowering customers is all in support of delivering on the clean energy transformation.

Q. What topics does this prefiled direct testimony cover?

A. There are monumental changes occurring in the energy industry, and PSE is in the midst of its efforts to continue accelerating its transition to a result that is not just CETA compliant, but also fulfills the goals of PSE 2030. The magnitude of this transition is arguably unprecedented in the history of PSE and will take time. Further, PSE endeavors to achieve this outcome while maintaining necessary standards for reliability, safety, affordability, and energy equity. In other words, PSE is positioning itself to continue being the energy provider of choice for our customers.

To that end, Section II of this prefiled direct testimony provides details regarding specific elements supporting the transition vision underway at PSE with a particular focus on how customers will play a crucial role in the clean energy transformation through their understanding of, and participation in, renewable energy, smart technologies, transportation electrification, and distributed energy resources. Customers will have greater control over energy choices and usage,

and PSE must work to deliver customer-centric innovation experiences that allow both PSE and its customers to unlock the potential of a clean energy future.

Section III of this prefiled direct testimony provides an update regarding PSE's processes to acquire distributed energy resources. This section also presents non-energy benefits PSE is tracking in support of this transformational time, over the proposed multiyear rate plan period.

Section IV of this prefiled direct testimony presents PSE's proposed metrics to evaluate DER performance and evaluate customer satisfaction for this multiyear rate plan period. In addition, I discuss a potential future modification to Service Quality Indicator 5 ("SQI-5"). The existing metric focuses on a simple, quantitative measure of the time taken by the customer care center to answer a customer phone call with first-contact resolution. PSE is considering a metric focused on the qualitative measure of what percentage of customer contacts are resolved in the first contact.

Section V of this prefiled direct testimony describes PSE's engagement with named communities in the clean energy transformation providing details of how PSE captured feedback from essential voices within these communities, while taking steps to seek more direct engagement from Equity Advisory Group ("EAG") members. This section also presents how PSE intends to incorporate these valuable insights into the design of future products and services in support of named community needs.

II. BUILDING THE FRAMEWORK FOR CUSTOMER ENERGY ORCHESTRATION TO SUPPORT CETA

Q. How are customers' relationships with electric utilities changing?

A. Customers' relationships with electric utilities are fundamentally changing. For generations, the traditional electric utility model has consisted of electricity generation by remote large-scale centralized generation facilities, the transmission of the electricity as alternating current from these centralized generation facilities to customer loads, and the delivery of the electricity over distribution lines to customers. For a century, economies of scale associated with large centralized generation facilities encouraged vertical integration, drove down the cost of electricity, fostered universal access that improved the quality of life, and provided for reliable electric service. Over the last several decades, advancements in clean energy innovation, societal policies and grid modernization have introduced technologies, such as wind generation, solar generation (distributed rooftop photovoltaic, utility-scale photovoltaic, and concentrated solar thermal), demand side management (energy efficiency and demand response), and storage (customer-scale and utility-scale batteries, flywheels, and compressed air), that some may have once considered impractical or uneconomic. These are becoming vital pieces of the future of our clean energy ecosystem.

With distributed energy resource and electric generation advancements, energy intermittency will make grid operations more challenging. With the development of more and more intermittent renewable generation, fast ramping thermal

generation, energy storage, and load flexibility are likely to become more important. For the foreseeable future, electric utilities, like PSE, will need to balance grid operations using existing, legacy grid assets (e.g., natural gas power plants), more advanced forecasting techniques, and increased forms of energy storage and demand response. Whereas the traditional model encouraged vertical integration of electric utilities that would forecast, develop, and deliver all electricity needs, policy and technological changes will likely require electric utilities to transform into an "energy orchestration" model in which electric utilities act more as a network to conduct and manage a wide variety of generation sources, load demands, environmental policies, price signals, and reliability concerns.

Q. How is equity affecting this change?

A. Incorporating energy equity as part of this transformation is key to PSE successfully serving all customers, including named communities. As noted in in the Prefiled Direct Testimony of Troy Hutson, Exh. TAH-1T, PSE understands where named communities are located and continually seeks to understand customer needs utilizing the four tenets of energy justice as the foundation. For procedural justice, PSE has and will continue to engage with named communities in its product design process. For distributional justice, PSE developed a Distributional Equity Analysis ("DEA") and will be conducting a DEA pilot. Finally, for restorative justice, through equity-related regulatory requirements from statutes and orders such as the 2022 PSE GRC Order and 2021 CEIP Order,

PSE is increasing energy assistance to customers and incorporating equity in its current processes. For more information on PSE's strategy and approach on incorporating energy equity across the company please refer to the testimony of Troy Hutson, Exh. TAH-1T.

Q. What is meant by the term "energy orchestration"?

A. Energy orchestration refers to the increasingly complex and bidirectional interaction between electric supply and demand, the changing expectations of electric utility customers and regulators, and the need to balance affordability and environmental impact, while these elements are implemented equitably. Electric utilities, such as PSE, will likely need to develop a more dynamic and responsive electric network to manage these complex, and sometimes competing, energy goals. New tools, such as coordinated management platforms like virtual power plants ("VPP"), are available for electric utilities to orchestrate the various and flexible generation resources, including distributed energy resources ("DERs"), and load demands while maintaining efficiency, reliability, and affordability. I discuss PSE's VPP project later in my testimony.

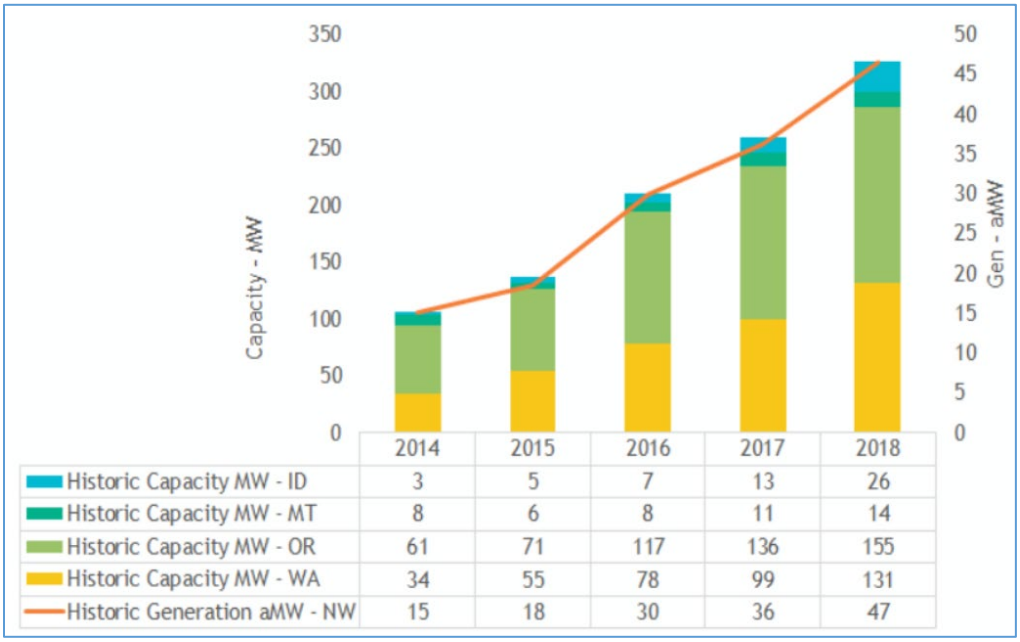
Q. Why is energy orchestration important?

A. Energy orchestration is important to meet the changing expectations of electric utility customers. The traditional vertical electric utility model consists of a unidirectional commodity transaction between utility and customer (i.e., the electric utility generates and delivers electricity to the end consumer). As energy

choice grows and the environmental attributes of electricity become as important, if not more important, than price to some customers, electric utilities must adapt business models to meet the more varied expectations of customers.

Technological and social policies will continue to increase the bidirectional flow of electricity and data between an electric utility and customers, who will increasingly both consume and produce electricity. The increase in behind-the-meter generations is telling. According to the Northwest Power and Conservation Council ("NWPCC"), the nameplate capacity of behind-the-meter solar installations in Washington nearly quadrupled in the five years from 2014 through 2018 (from 34 megawatts ("MW") in 2014 to 131 MW in 2018), and the aggregate energy generated by behind-the-meter solar installations in the Pacific Northwest tripled (from 15 average MW ("aMW") in 2014 to 47 aMW in 2018).

Figure 1. Historic Behind-the-Meter Solar Capacity by State[1]

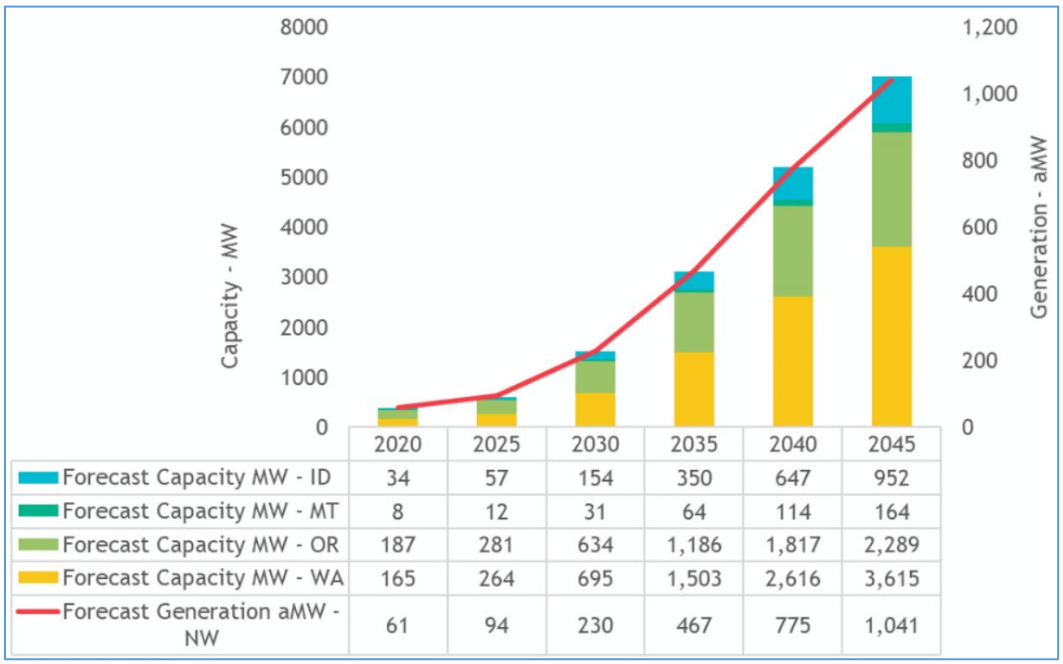


	2014	2015	2016	2017	2018
Historic Capacity MW - ID	3	5	7	13	26
Historic Capacity MW - MT	8	6	8	11	14
Historic Capacity MW - OR	61	71	117	136	155
Historic Capacity MW - WA	34	55	78	99	131
Historic Generation aMW - NW	15	18	30	36	47

Moreover, the NWPCC projects that the nameplate capacity of behind-the-meter solar installations in Washington will quintuple between 2018 and 2030 (from an actual 131 MW in 2018 to a projected 695 MW in 2030) and then quintuple again between 2030 and 2045 (from a projected 695 MW in 2030 to a projected 3,615 MW in 2045). The NWPCC further projects that the aggregate energy generated by behind-the-meter solar installations in the Pacific Northwest will nearly quintuple between 2018 and 2030 (from an actual 47 aMW in 2018 to a projected 230 aMW in 2030) and then nearly quintuple again between 2030 and 2045 (from a projected 230 aMW in 2030 to a projected 1,041 aMW in 2045).

[1] Northwest Power and Planning Council, *Behind-the-Meter Solar*, www.nwcouncil.org/2021powerplan_behind-meter-solar/.

Figure 2. Forecast of Behind-the-Meter Solar Capacity and Generation by State[2]



	2020	2025	2030	2035	2040	2045
Forecast Capacity MW - ID	34	57	154	350	647	952
Forecast Capacity MW - MT	8	12	31	64	114	164
Forecast Capacity MW - OR	187	281	634	1,186	1,817	2,289
Forecast Capacity MW - WA	165	264	695	1,503	2,616	3,615
Forecast Generation aMW - NW	61	94	230	467	775	1,041

Q. Is behind-the-meter solar generation the primary technology by which electric customers will produce electricity?

A. No, not necessarily. Although the increases in behind-the-meter solar generation projected by the NWPCC in Figure 2 indicate that this technology will have an impact in the region, this impact may pale in comparison if projected increases in electrification of transportation come to fruition. Indeed, electric vehicles may be the most emblematic technology of the bidirectional electric future because electric vehicles will represent a significant electric load but could also present a significant storage opportunity. The energy orchestration necessary to manage the

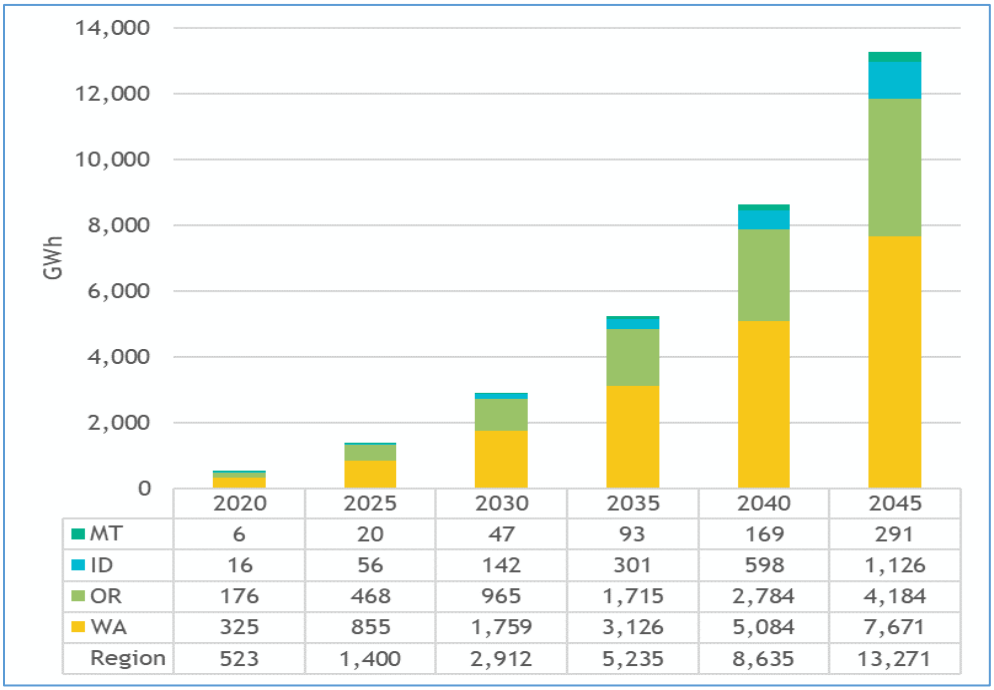
[2] *Id*.

impact of transportation electrification will be challenging and produce significant changes in orchestrating both sources of supply and of demand.

Q. What is the potential impact of transportation electrification on electric demand?

A. According to forecasts of the NWPCC, electric energy demand to fuel light duty vehicles in Washington will likely quintuple between 2020 and 2030 (from 325 gigawatt-hours ("GWh") in 2020 to a projected 1,759 GWh in 2030) and then more than quadruple between 2030 and 2045 (from a projected 1,759 GWh in 2030 to a projected 7,671 GWh in 2045).

Figure 3. Annual Light Duty Electric Vehicle Electricity Demand by State – Reference Case[3]

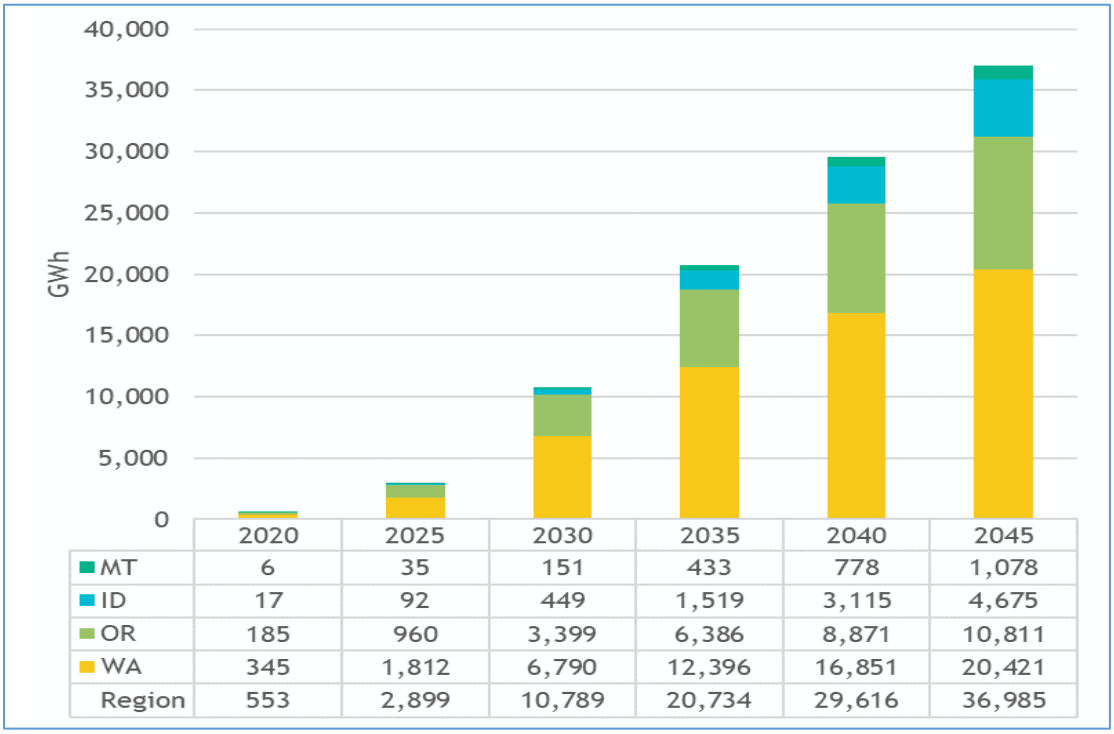


	2020	2025	2030	2035	2040	2045
MT	6	20	47	93	169	291
ID	16	56	142	301	598	1,126
OR	176	468	965	1,715	2,784	4,184
WA	325	855	1,759	3,126	5,084	7,671
Region	523	1,400	2,912	5,235	8,635	13,271

[3] Northwest Power and Planning Council, *Transportation Model Reference Case Results*, https://www.nwcouncil.org/2021powerplan_transportation-model-reference-case-results/.

The dramatic load increases projected in Figure 3 above generally represents the reference—not high—transportation electrification scenario. According to the NWPCC's high transportation electrification scenario, electric energy demand to fuel light duty vehicles in Washington could increase twenty-fold between 2020 and 2030 (from 325 GWh in 2020 to a projected 6,790 GWh in 2030) and then triple between 2030 and 2045 (from a projected 6,790 GWh in 2030 to a projected 20,421 GWh in 2045). This is shown in Figure 4 below.

Figure 4. Annual Light Duty Electric Vehicle Electricity Demand by State – High Electric Case[4]



	2020	2025	2030	2035	2040	2045
MT	6	35	151	433	778	1,078
ID	17	92	449	1,519	3,115	4,675
OR	185	960	3,399	6,386	8,871	10,811
WA	345	1,812	6,790	12,396	16,851	20,421
Region	553	2,899	10,789	20,734	29,616	36,985

These NWPCC projections reflect projected changes in load only. The storage potential of increasing numbers of electric vehicles remains largely unknown, and

[4] Northwest Power and Planning Council, *Transportation Model High Electric Case Results*, https://www.nwcouncil.org/2021powerplan_transportation-model-high-electric-case/.

vehicular batteries may serve to provide electric capacity long after they are no longer suitable for transportation uses:

> When the capacity of electric-vehicle batteries drops to between 70 to 80 percent of their original capacity, they generally become unsuitable for transport uses. However, these end-of-vehicle-life batteries may still have years of use in less-demanding grid-storage applications. Given their value and regulations, "we assume all batteries will be collected," [Chengjian Xu, an industry ecology researcher at the Delft University of Technology in the Netherlands] says. Repurposed batteries can be packed into a power bank "for providing grid services." The scientists calculated that when combined, vehicle-to-grid and end-of-vehicle-life capacity could reach 32 to 62 terawatt-hours by 2050. In contrast, they estimated grid demands for short-term storage would only be 3.4 to 19.2 TWh by 2050. In other words, in this respect at least, supply is projected to outstrip demand.[5]

Q. Would energy orchestration by PSE provide benefits to customers?

A. As discussed above, energy orchestration will be an important opportunity to manage the changing technologies and electric uses of customers. Additionally, electric orchestration has the potential to (i) increase customer and grid flexibility, (ii) enable customers to save money on energy bills, (iii) encourage cleaner generation technologies and reduce greenhouse gas emissions, and (iv) strengthen the resiliency of the energy system. Energy orchestration through virtual power

[5] Charles Choi, *EVs Are Essential Grid-Scale Storage*, Institute of Electrical and Electronics Engineers (IEEE) Spectrum, Jan. 20, 2023, https://spectrum.ieee.org/electric-vehicle-grid-storage.

plants has the potential to provide significant benefits to the grid, customers, and environment.[6]

DER ownership is expected to grow by several multiples within the next decade as shown in Figure 5, below. Several forces are driving VPP deployments:

Declining DER costs, particularly EVs and batteries;

Technological advancement in algorithms for managing and optimizing DERs;

Inflation Reduction Act (IRA) incentives, to promote electrification and efficiency;

FERC Order 2222 and accompanying initiatives to open wholesale markets to VPP participation;

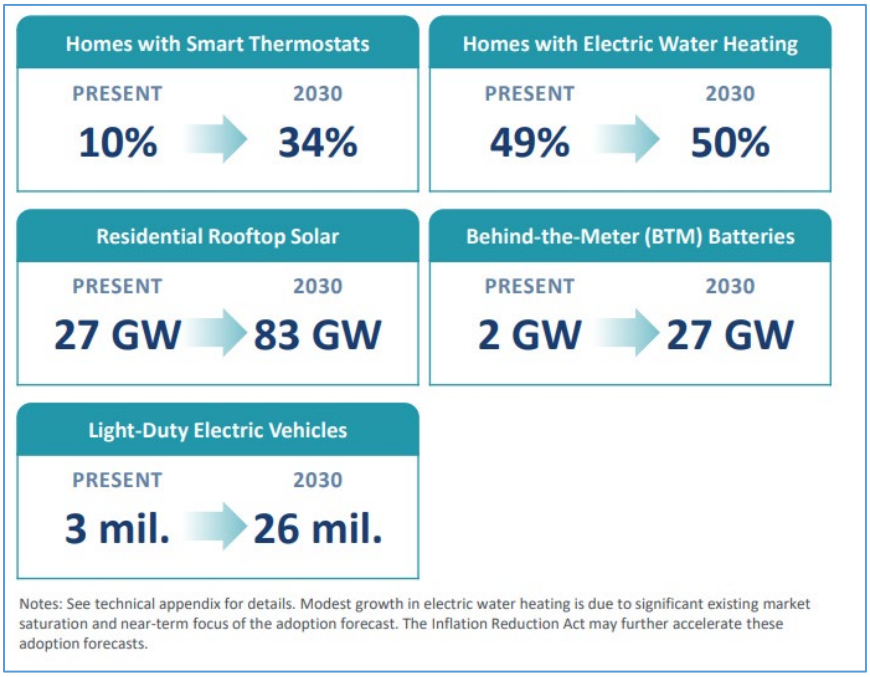
Growing model availability of EVs, thermostats, smart panels and others;

The decarbonization imperative, a focus on policymakers, utilities and consumers.[7]

[6] Ryan Hledik & Kate Peters, *Real Reliability: The Value of Virtual Power, Volume 1: Summary Report*, The Brattle Group, May 2023, at 4, https://www.brattle.com/wp-content/uploads/2023/04/Real-Reliability-The-Value-of-Virtual-Power_5.3.2023.pdf.

[7] *Id*. at 9.

Figure 5. U.S. DER Forecasted Growth Rates by 2030[8]



The pursuit of energy orchestration as the industry readies for this inflection point, should enable customers, policymakers and PSE to create an equitable, sustainable, and efficient two-way transformation of how and when energy is created, delivered, and used to support the state's decarbonization goals reflected in the Clean Energy Transformation Act ("CETA").

Q. How would PSE implement this concept?

A. To support PSE's CETA goals, PSE will needs to "orchestrate" the identification, customer understanding, adoption, integration and coordination of energy elements with, and for, our customers.

[8] *Id*.

As an example, PSE needs to orchestrate experiences that inspire customers to be able and amenable to shifting energy use from times of day when it is more costly, through programs like Time-Varying Rates (TVR), highlighted in the Prefiled Direct Testimony of Birud D. Jhaveri Exh. BDJ-1T, thereby reducing the need for additional power generation during peak periods. PSE is building avenues to better integrate and orchestrate these two-way energy resources. Optimizing customer interactions to positively impact overall engagement and enrollment will be important given "customers and society at large must be convinced that they will benefit".[9]

Q. What is required to enable energy orchestration?

A. The following are the five key components to delivering energy orchestration with, and for, PSE customers:

1. Next Generation Customer Education and Awareness: As customers begin the transformative shift in how they use energy, they will likely look to electric utilities for education and advice to help them understand the features, benefits, challenges, and value of their energy choices. According to a survey conducted by EY,

> [m]ore than half (59%) of consumers surveyed would like to turn to their energy providers for advice and support on sustainability, but most providers are falling short. The gap between consumers' desire for information and providers' ability to offer it presents an opportunity for energy companies to use education and awareness

[9] Tim Ledbetter, *Transactive Energy: Negotiating New Terrain,* Pacific Northwest National Laboratory, Nov. 23, 2020, https://www.pnnl.gov/news-media/transactive-energy-negotiating-new-terrain.

> to strengthen relationships, create new revenue streams and meet sustainability goals.[10]

If PSE is to provide this next generation customer education and awareness, it will need to increase both (i) its understanding of unique customer segment needs (from named communities to large businesses) and (ii) its engagement in educating and making customers aware of the environmental and economic advantages of enlisting in certain utility programs and clean energy technologies.[11] PSE's education efforts will utilize market segmentation and customer journey mapping to deliver more tailored outreach.

2. **Data Analytics and Predicative Modeling**: As noted in an industry perspective piece from McKinsey & Company, advanced analytics play a critical role

> in enabling exceptional customer service across channels. These elements can improve customer satisfaction … while unlocking lower cost to serve ….
>
> …Developing these capabilities will be critical for any utility that expects to be a customer experience leader and provide better service at a lower cost.[12]

The combination of the smart grid and data analytics and predictive modeling has the potential of optimizing the generation and use of electric energy while reducing energy losses.[13] PSE uses data analytics and predictive modeling to

[10] Greg Guthridge, *Energy Providers Can Guide Consumers in the Transition*, EY, Nov. 29, 2022, www.ey.com/en_us/power-utilities/when-energy-hits-home-will-providers-be-left-out-in-the-cold.

[11] Dan Power, *Customer Participation Is Essential to VPP Deployment*, Guidehouse Insights, Jan. 4, 2022, https://guidehouseinsights.com/news-and-views/customer-participation-is-essential-to-vpp-deployment.

[12] Bobby Dean, et al., *How Utilities Can Use Advanced Analytics to Elevate Customer Experience*, McKinsey & Company, Aug. 2022, https://www.mckinsey.com/industries/electric-power-and-natural-gas/our-insights/how-utilities-can-use-advanced-analytics-to-elevate-customer-experience.

[13] Gray Group International, *Smart Grid: The Silent Revolution in Energy*, Jan. 16, 2024, https://www.graygroupintl.com/blog/smart-grid.

support improved operational effectiveness, customer experience, grid enhancements, and energy equity. As PSE continues its pursuit of meeting the state's decarbonization goals reflected in CETA, data analytics and predictive modeling will likely become a more critical element for grid planning, customer energy engagement, and future product and program design.

3. **Customer-Centric Solution Identification and Integration:** Modern electric customers now demand customer experiences from electric utilities that are commensurate with the customer experiences provided by other service providers, including up-to-date and instant access to information on consumer platforms familiar to customers:

> The evolution of the customer experience means customers now want from their utility providers the same instant access to the most up-to-date information on the platform of their choice that they receive from other service providers. Additionally, the customer has historically been a more passive consumer of the product provided by the utility, whether that is electricity, natural gas, or water. But with the immense growth of grid-connected, customer-owned distributed energy resources and technologies, in particular, this is no longer the case with electric utilities. Active customer participation is putting the customer at the center of the grid equation like never before, and a fundamentally different approach to the electricity distribution grid is needed to accommodate this change.[14]

PSE utilizes a Product Development Process Standard to aid in introducing new products and services in support of creating relevant and engaging customer experiences. This standard serves as the base for future program adoption where

[14] Bradley Williams, *A Vision of the Customer-Centric Grid*, EE Online, March/April 2017, https://electricenergyonline.com/energy/magazine/1025/article/A-Vision-of-the-Customer-Centric-Grid.htm.

"[c]onsumer adoption of flexible devices such as heat pumps, electric vehicles (EVs), and battery storage is accelerating…."[15]

PSE will seek out strategic pilot partnerships to enable customer-centric outcomes at scale. Equally as important, PSE will continue its work with interested parties to create critical regulatory pathways, such as Schedules 611 (Residential Battery Storage System) and 667 (Purchases from Distributed Solar PV Systems), during the clean energy transformation.

4. **Collaboration and Partnerships:** As the energy ecosystem expands, so does the opportunity for collaboration with others in the energy industry, including interested parties, associations, academia, clean energy innovators/businesses, and communities. By combining diverse experiences, resources, and perspectives, PSE will seek to unlock the potential in strategic partnerships that should help accelerate clean energy innovation and implementation. For example, the growing number of efforts underway to electrify the transportation sector should increase opportunities for collaboration between automotive manufacturers and electric utilities:

> Electric vehicles could drive a 38% rise in U.S. electricity consumption by 2050. To prepare, utilities and other energy companies are partnering with auto manufacturers and other stakeholders to explore how to manage grid stress, use EVs as distributed resources and ensure customers make the transition to electric transportation smoothly.[16]

[15] Kevin Brehm, et al., *Virtual Power Plants, Real Benefits*, Rocky Mountain Institute, Jan. 2023, at 7, https://rmi.org/insight/virtual-power-plants-real-benefits/.

[16] Utility Dive, *Utility Partnerships with the Automotive Sector: How Electric Companies Are Preparing for EV Growth*, Sept. 6, 2023, https://www.utilitydive.com/news/utilities-partnerships-automakers-advance-electric-vehicles/687300/.

PSE intends to collaborate on similar partnerships that, when paired with PSE's experience with regulatory tariffs like Schedule 557 (Electric Vehicle Technology Demonstration), should inform PSE of technical feasibility, operational requirements, system impacts, market/customer readiness, and/or community benefits, all in support of improving customer experience.

5. **Solution Integration:** Energy orchestration requires an integration solution that empowers customers to manage energy consumption on their terms by allowing for two-way communication with customer devices, across a decentralized interconnected infrastructure. Over two consecutive years (2021 and 2022), EY surveyed 70,000 energy consumers across 18 markets and found that energy "[p]roviders that act now can build trust and point consumers in the right direction, engaging and inspiring them on their journey and creating a more sustainable future for all of us."[17] PSE aims to increase its ability to integrate smart devices, home and business energy management systems, electric vehicles, distributed generation, storage, and Internet of Things (IoT)-enabled appliances in a way that is intuitive, relevant, easy, and rewarding for customers.

Q. Has PSE undertaken any projects required to implement the energy orchestration discussed above?

A. Yes. PSE recently achieved an important milestone in its effort to implement a framework for energy orchestration of the diverse uses of the electric grid by

[17] Ernst & Young Global Limited, *Energy Transition Consumer Insights: When Energy Hits Home, Will Providers be Left Out in the Cold?*, 2022, https://assets.ey.com/content/dam/ey-sites/ey-com/en_gl/topics/power-and-utilities/ey-energy-transition-consumer-insights-final.pdf.

expanding its work with AutoGrid, a Schneider Electric unit, to launch a VPP. PSE expects that the VPP will grow over time (e.g., 100 MW by 2025) and include five key elements—energy efficiency, demand response, distributed energy resources, energy storage, and electric vehicles—that PSE will aggregate and use as a single resource.

Q. When did PSE begin work with AutoGrid to develop the VPP?

A. PSE and AutoGrid started developing a VPP in 2021 to provide a centralized application for enrolling, dispatching, and assessing the performance of individual and combined programs across PSE's portfolio. As mentioned earlier, PSE and AutoGrid announced an expanded relationship in November of 2023, where AutoGrid will provide capacity to PSE through AutoGrid Flex, an artificial intelligence-driven distributed energy resource management system. This expanded relationship is a first for AutoGrid and is a part of a shift in its business model. Whereas AutoGrid has traditionally licensed its software to utilities, AutoGrid will instead deliver capacity to PSE under a contract with a term of at least five years. According to AutoGrid, this business model will provide AutoGrid with sufficient certainty to front load financial incentives that will allow PSE customers to buy assets that can be a part of the VPP.[18] Please refer to the

[18] *See* Ethan Howland, *Puget Sound Energy, AutoGrid Aim to Develop a 100-MW Virtual Power Plant by 2025*, Utility Dive, Nov. 28, 2023, https://www.utilitydive.com/news/puget-sound-energy-autogrid-pse-virtual-power-plant-vpp/700806/

Prefiled Direct Testimony of Gilbert Archuleta, Exh. GA-1T, for additional details regarding PSE's work with AutoGrid and other related VPP efforts.

Q. What are the benefits of using a VPP to optimize energy programs, solutions, and customer experience in an orchestrated way?

A. Utilizing the right collection of education channels, solutions, programs, and communication signals should reduce overall costs, increase customer choice, and increase resiliency and reliability in the face of growing variability in generation supply and load demand.

Q. How could energy orchestration through the VPP lead to potential cost reductions?

A. There is growing research on the overall benefits of a VPP to the grid and the customers served. A recent study by the U.S. Department of Energy[19] concluded that deploying 80 to 160 gigawatts (GW) of VPPs by 2030 could support growing electrification, while redirecting grid spending to DER owners and reducing overall grid costs.[20]

While VPP implementations throughout the country are nascent, the cost savings from energy orchestration through a VPP may provide the potential to support the avoidance of costs associated with meeting increased load or replacing retiring

[19] Jennifer Downing, et al., Pathways to Commercial Liftoff: Virtual Power Plants, U.S. Department of Energy, Sept. 2023, https://liftoff.energy.gov/wp-content/uploads/2023/10/LIFTOFF_DOE_VVP_10062023_v4.pdf.

[20] *Id*. at 33 (Harnessing 80-160 GW of capacity (10-20% of 2030 peak) with low-cost VPP models can avoid over $10B per year in grid spending that translates to energy savings for all Americans, whether or not participating in a VPP).

generation and not necessarily a reduction in existing customer costs. Costs avoided in grid spending may result in savings for all customers and not just those participating in the VPP program.

Q. How could energy orchestration through the VPP lead to potential increases in resiliency and reliability?

A. The U.S. Department of Energy study emphasized the non-financial benefits of a VPP, including the potential to reduce the risk of outages and increasing efficiency:

> Beyond financial impacts, VPPs have the potential to reduce the risk of outages caused by capacity shortfalls, increase the efficiency of existing and new grid infrastructure, support rapid decarbonization, deliver health benefits from improved air quality, and empower communities. Intentional design and deployment of VPPs will be critical to ensure these benefits target the communities that need them most. Liftoff for VPPs will be achieved when utilities, regional grid operators, and their regulators account for the potential value of VPPs and integrate VPPs into core grid planning and operations.[21]

PSE seeks to use programs to coordinate DERs and battery storage, through programs such as PSE's Schedule 611 (Residential Battery Energy Storage Systems). This should allow PSE to support customer storage solutions similar to those employed by the Vermont-based utility Green Mountain Power.

> Vermont utility Green Mountain Power got in early on using small-scale solar and storage in customers' homes to improve the overall functioning of the grid. Since 2015, the company has subsidized customers who want battery backup power, in exchange for using those batteries to lower grid costs for all customers during hours of peak electricity demand. Now that fleet has grown to 4,800 batteries totaling 27 megawatts of capacity.

[21] *Id*.

> After a string of extreme weather disasters in Vermont this year [2023], more customers asked for batteries to power their homes through winter storms, floods and heat waves.[22]

While these technologies and corresponding benefits are still nascent, PSE intends to use the VPP developed in partnership with AutoGrid as a step towards enabling customers to adopt clean energy solutions that optimize energy, cost, use, and source.

III. PROGRESS ON DISTRIBUTED ENERGY RESOURCE ACQUISITIONS AND PROPOSED METRICS

Q. Please provide an update on PSE's DER acquisition processes.

A. PSE's integrated resource planning analysis, which evaluates and establishes PSE's capacity (physical reliability) and renewable energy (policy driven) needs, guides the electric resource acquisition process. On April 1, 2021, PSE filed the 2021 Integrated Resource Plan (the "2021 IRP") with the Commission in Dockets UE-200304 (electric) and UG-200305 (natural gas). The 2021 IRP demonstrated a need for additional resources to help meet PSE's peak capacity needs and comply with CETA.

On June 30, 2021, PSE issued its 2021 All-Source Request for Proposals (the "2021 All-Source RFP"). The 2021 All-Source RFP solicited bids for resources to meet all or part of PSE's capacity and/or CETA needs. Responses to the 2021 All-Source RFP were due to PSE on September 1, 2021. Although PSE

[22] Julian Spector, *Vermont's Biggest Utility Dramatically Expands Home Battery Subsidies*, Canary Media, Aug. 24, 2023, https://www.canarymedia.com/articles/batteries/vermonts-biggest-utility-dramatically-expands-home-battery-subsidies.

received 95 proposals for approximately 21 GW of new resources, PSE did not receive any demand response or distributed energy resource proposals in response to the 2021 All-Source RFP.

PSE supplemented the 2021 All-Source RFP with the targeted 2022 Distributed Energy Resource Request for Proposals (the "2022 DER RFP") to focus on distributed resources and provide for a more tailored evaluation approach that emphasized the customer benefits associated with distributed energy resources. PSE issued the 2022 DER RFP on February 7, 2022, and responses were due to PSE on March 21, 2022. PSE received 29 offers from 15 unique bidders in response to the 2022 DER RFP. The majority of proposals were for demand response programs. PSE received proposals for only three MW of battery storage and none for "Category A" solar resources. Please see the Prefiled Direct Testimony of Gilbert Archuleta, Exh. GA-1T, for a discussion of the three demand response projects acquired by PSE in response to the 2022 DER RFP.

PSE subsequently issued a Distributed Solar and Storage Request for Proposals (the "2023 DSS RFP") in December of 2022[23] to support the DER MW sub-targets outlined in PSE's 2021 Clean Energy Implementation Plan (the "2021 CEIP"). In July 2023, PSE shortlisted 34 DER projects (33 power purchase

[23] Puget Sound Energy, *Informational Filing for Puget Sound Energy's 2023 Voluntary Targeted Distributed Solar and Storage Request for Proposal Pursuant to WAC 480-107-021(1)*, Docket UE – 220971 (Dec. 22. 2022).

agreements and one ownership proposal), which, in the aggregate, would provide 56.59 MW of nameplate DER solar capacity and 33.5 MW of DER storage.

Q. Does PSE expect to acquire new resources from the shortlisted 34 DER projects?

A. Yes. PSE is in the process of finalizing agreements for all 34 DER projects, including power purchase agreements, asset purchase agreements, and interconnection agreements, and anticipates executing these agreements with counterparties in the first quarter of 2024. The anticipated commercial operation dates for these resources are throughout calendar year 2025.

Q. Does PSE expect to acquire all shortlisted DER projects?

A. Although PSE intends to acquire all shortlisted DER projects, the total number of projects acquired remains uncertain due to inherent risks associated with project development activities. For example, one or more shortlisted DER projects may encounter insurmountable permitting challenges that may prevent the construction of a project.

Q. Are there risks that one or more of the shortlisted DER projects will not achieve commercial operations in calendar year 2025?

A. Yes. Risks of delays that might result in one or more shortlisted DER projects not achieving commercial operations in calendar year 2025 include delays resulting from: the interconnection process, engineering requirements, or jurisdictional

permitting requirements. Permitting has proven to be more difficult for some of the large-scale battery energy storage system proposals.

Please see the Prefiled Direct Testimony of Brennan D. Mueller, Exh. BDM-1T, for forecasted power costs associated with the shortlisted DER projects.

Q. How did the 2023 DSS RFP incorporate equity?

A. The 2023 DSS RFP incorporated equity through the entire lifecycle, specifically through Design/Intake, the Evaluation process, and in contract negotiations. Within the Design/Intake process, ArcGIS data of highly impacted communities and vulnerable population areas was provided to the bidders. PSE contacted various CBOs to advertise the RFP to Small, Minority, and Women Owned Business Enterprises ("SMWBEs"), and all proposal submissions from bidders required a CETA equity plan and company commitments. Within the Evaluation process that ultimately led to a shortlist, PSE specifically considered the impacts on the CEIP customer benefit indicators, business values including SMWBE contracting and labor standards, and the benefits to highly impacted communities and vulnerable populations. Within contract negotiations, PSE is developing standard contracting language to address the above equity commitments and is establishing a mitigation plan to hold developers accountable through construction and commissioning.

Q. What non-energy benefits does PSE project from the shortlisted DER projects as providing?

A. Developers responsible for the engineering, procurement, and construction of these DER resources must track and report to PSE all labor benefits through construction. Please see Table 1 below for a list of non-energy benefits to be tracked by project developers and reported to PSE:

Table 1. Non-Energy Benefits of the 34 Shortlisted DER Projects

Category	Metric
Non-energy benefits	Number of jobs created for residents of highly impacted and vulnerable populations
Non-energy benefits	Number of local workers living in the community where the project is being built
Non-energy benefits	Number of workers living in Washington state
Non-energy benefits	Number of part-time and full-time jobs by project
Non-energy benefits	Range of wages paid to workers and if they meet prevailing wage requirements
Non-energy benefits	Demographics of workers
Non-energy benefits	Dollar amount sub-contracted to small business and minority, women and veteran owned business enterprises (SMWVBE)
Non-energy benefits	Property taxes paid annually
Non-energy benefits	Additional benefits (See Section 21)

IV. PROPOSED DER AND CUSTOMER SATISFACTION PERFORMANCE METRICS

Q. Is PSE proposing any metrics to evaluate DER performance and customer satisfaction over the proposed multiyear rate plan period?

A. Yes. Table 2 below describes PSE's proposed metrics to evaluate DER performance, and Table 3 below describes PSE's proposed metrics to evaluate customer satisfaction over the proposed multiyear rate plan period.

Table 2. PSE's Proposed DER Metrics for the Proposed Multiyear Rate Plan Period

Metric	Metric Definition	Revisions from 2022 GRC	Metric Calculation
Number of customers served by PSE's DER programs.	Annual number of customers served by PSE's DER programs to date	Modify to roll up each DER programs to one total for all	Sum the total number of customers participating in DER programs at the end of the calendar year including net metering, solar, and battery programs only.
The capacity provided through each of PSE's DER programs.	Annual nameplate capacity (MW) of PSE's DER programs	Modify to only report on capacity not energy and roll up each DER program to one total for all	Sum of the total nameplate capacity (MW) at year end of all DER programs.

Table 3. PSE's Proposed Customer Satisfaction for the Proposed Multiyear Rate Plan Period

Metric	Metric Definition	Revision	Metric Calculation
SQI #2 - Complaints per 1,000 Customers to the WUTC	WUTC complaint ratio per 1000 customers. No more than 0.40 complaints per 1,000 customers, including all complaints filed with WUTC.		Electric and natural gas complaints recorded by WUTC divided by the average monthly number of electric and gas customer multiplied by 1000. The average monthly customer count is the average of the total number of PSE customers, per month, during the reporting period.
SQI #5 - Calls Answered by a Live Representative Within 60 Seconds of Request	Monthly call answering performance within 60 seconds. At least 80% of calls answered by a live representative within 60 seconds of request to speak with live operator.		Aggregate number of calls answered by company rep within 60 seconds divided by the aggregate number of calls received.
SQI #8 - Field Service Operations Transactions Customer Satisfaction	Monthly percentage of satisfied customers based on weekly random independent research company phone surveys to customers who called PSE the previous week and received natural gas field service. At least 90% satisfied (rating of 5 or higher on a 7-point scale).		Aggregate number of survey responses of 5, 6, or 7 divided by the aggregate number of survey response 1, 2, 3, 4, 5, 6, or 7.
SQI #10 - Percent of Appointments Kept	Annual performance of gas or electric service appointments kept. At least 92% of appointments kept.		Annual appointments kept divided by annual appointments missed plus annual appointments kept
Successful billing accuracy	Percentage of successful automated billing data received	Modify to remove averaging monthly actuals for annual cumulative of all reads and roll up gas and electric to one total.	Sum the number of successful electric plus gas customer automated meter reads to be used for billing purposes for all billing cycles divided by the total number of electric plus gas customer meter bills for all billing cycles multiplied by 100.

Q. How do PSE's proposed DER performance metrics compare with PSE's existing DER performance metrics?

A. PSE is proposing to consolidate DER performance metrics, with revisions to two DER metrics.

A. PSE's Proposed Metric for Calculating the Number of Customers Served by PSE's DER Programs

Q. Please describe the performance metric, "Number of customers served by PSE's DER programs" proposed by PSE.

A. This metric measures the number of customers receiving service through one or more of PSE's tariffed DER programs. PSE is proposing to revise the existing DER performance metric by aggregating customer participation in all DER programs into one number for purposes of reporting rather than reporting on each DER program individually. Under the proposed modification, PSE would sum the total number of customers participating in DER programs at the end of the calendar year including net metering, solar, and battery programs.

Q. Why is it appropriate to change the calculation of this metric for the proposed multiyear rate plan period?

A. The number of customers served through PSE's DER programs directly measures the number of customers benefitting from these programs. By summing these program level values into one value, PSE will simplify the reporting structure.

B. PSE's Proposed Metric for Calculating the Nameplate Capacity Provided Through PSE's DER Programs

Q. Please describe the performance metric, "The capacity provided through each of PSE's DER programs" proposed by PSE.

A. This metric measures the nameplate capacity of all DERs involved in PSE's DER programs. Here, PSE is proposing to revise the existing DER performance metric by eliminating the energy calculation and aggregating nameplate capacity for all DER programs into one number rather than reporting on each program individually. Under the proposed modification, PSE would sum the total nameplate capacities of all resources in DER Programs at the end of the calendar year including net metering, solar, and battery programs. PSE proposes to eliminate the energy calculation due to the inherent inaccuracies that would result without requiring customers, utilizing behind-the-meter DER systems, to install production meters that can measure all energy generated and not just returned to the grid.

Q. Why is it appropriate to change the calculation of this metric for the proposed multiyear rate plan period?

A. By summing these program level values into one value, PSE will simplify its reporting structure.

Q Is PSE proposing modifications to any of the customer service performance metrics currently being reported to the Commission?

A. Yes, PSE is proposing modifications to the metric 'successful billing accuracy'. This metric change is described in the Prefiled Direct Testimony of Roque B. Bamba, Exh. RBB-1T.

Q. Is PSE considering any other modifications to the Customer Satisfaction performance metrics listed in Table 3?

A. Yes. While we are not proposing a change at this time, PSE is considering future modification of SQI-5, which is a metric that focuses on how quickly PSE's customer care center answers a customer call. Rather than measuring the time to answer a call, PSE is exploring measuring first-contact resolution, a metric that measures the percentage of customer calls resolved by the customer care center in a single interaction. By measuring the percentage of customer calls resolved in a single interaction, PSE's customer teams can better understand how quickly customers concerns are resolved and what information is most relevant and impactful in resolving customer concerns.

Q. Why is PSE considering modifying SQI-5 to focus on first-contact resolution?

A. PSE has two primary reasons for considering modification of SQI-5 to focus on first-contact resolution:

(i) The first-contact resolution metric places greater emphasis on deeper, more engaging discussions between customers and PSE's customer care center representatives and focuses these discussions on addressing and resolving the increased complexity of questions posed by customers.

(ii) Over the last decade, investments in tools like digital, web-based engagement, interactive voice response, and self-service platforms have built a platform from which PSE can focus less on quantitative measures, such as time to answer a customer phone call, and more on qualitative measures, such as call handling quality.

Q. Is PSE's consideration of SQI-5 to measure first-contact resolution consistent with similar metrics used by other utilities?

A. Yes. Customer care center functions of entities in most service-based industries, in general, and the utility industry, in particular, use the first-contact resolution metric as a primary measure of customer service performance.

Q. What is the proposed pathway to transition to a revised SQI-5 metric?

A. PSE will enter a transitional period of SQI-5 for this MYRP, maintaining the current SQI-5 measure, target and associated penalties until elements of this SQI can be evaluated and considered by interested parties and by the Commission. In parallel, PSE will implement a first-contact resolution initiative to establish operational definitions and processes, collect baseline data, and determine an appropriate performance target. These results will be used to determine a fully formed recommendation to be made within PSE's next GRC that would include metric calculation, targets, and any associated penalties and/or incentive considerations.

Q. How does PSE propose to calculate the first-contact resolution metric for evaluating customer service performance in SQI-5?

A. To commence this transition, the base calculation for first contact resolution would be captured as a percentage using the below formula:

> ((# resolved first calls) / (# resolved first calls + # unresolved first calls)) *100

Q. Why is it appropriate to consider this change to SQI-5?

A. As mentioned earlier, customer expectations of electric utilities are changing, and the change in customer expectations requires a shift in the utility's roles. In addition to more traditional customer service activities, such as responding to outages or addressing billing questions, utility customer care center representatives must also act to educate and advise customers in understanding the features, benefits, challenges, and value of customer choices in a broader number of services.

> First-contact resolution (FCR) is an important contact center metric to measure the quality of customer interactions and help decrease the volume of repeat contacts. Common metrics such as service level and abandonment can show you how well your contact center performs at an operational level, but FCR captures how effectively agents answer customers' questions.
>
> It doesn't matter to customers how quickly an agent answers the phone or completes a chat if they have to reach out multiple times. What matters to customers is the quality of the interaction and whether the agent resolved their issue.[24]

[24] Liza Minor & Lisa Schulte, *Why FCR is a Valuable Metric for Utility Contact Centers*, E Source, Jan. 11, 2023, https://www.esource.com/blog/427221kzsn/why-fcr-valuable-metric-utility-contact-centers.

In short, first-contact resolution addresses the quality of the customer service interaction rather than speed by which the interaction is over.

Q. Why is it appropriate to recommend this pathway to change SQI-5 at this time and in the context of the proposed multiyear rate plan?

A. Before investing a significant amount of time and resources to implement the preparatory work discussed above, PSE is seeking Commission and interested party input and support for pursuing a transition of SQI-5 to first contact resolution. With this support, it would provide PSE an indication that this would be a worthwhile effort for all involved.

V. EQUITY SUPPORT AND ENGAGEMENT

Q. How has PSE engaged named communities in the clean energy transformation?

A. From September 2022 through May 2023, PSE conducted community engagement on future DER products, including batteries, solar, and demand response. PSE engaged with over 300 residential customers, with a focus on limited income households, seniors on fixed incomes, rural communities, BIPOC communities, and individuals whose first language is not English. PSE also engaged with over 60 community-based organizations, government agencies, and Tribal entities that serve and benefit the aforementioned residential customers. PSE used interviews, focus groups, workshops, and surveys to hear directly from customers about the benefits and barriers they may face when engaging with DER

products, and how future product design can alleviate these barriers, meet customer expectations, and provide desired customer benefits. PSE also conducted two similar tranches of community engagement on transportation electrification topics in 2021 and 2022 and was able to connect with over 300 residential customers and over 100 commercial customers through those engagements. PSE's engagement efforts are discussed in more depth in the Prefiled Direct Testimony of Troy Hutson, Exh. TAH-1T.

Q. What barriers did these named communities identify?

A. Upfront costs associated with asset procurement and installation, along with the ongoing cost of maintenance, were consistently highlighted as the largest barriers across all clean energy products and for all customer segments Customers felt daunted by the processes and resources they believed would be necessary to participate in clean energy programs or installing and maintaining clean energy products. Although participants expressed an interest in participating in clean energy products, they also communicated that there are many education and outreach gaps left to fill. Participants had questions about costs, environmental impacts, and community benefits so that they can make informed decisions about product participation. The existing knowledge gap could translate into skepticism

about whether DERs can deliver on the promised benefits without straining financial and non-financial customer resources. [25]

Q. How is PSE incorporating this feedback into the design of its products and services for these communities?

A. The following table shows the equity-focused product design elements specific to PSE's proposed residential battery and solar offerings (discussed later in testimony) that address barriers raised during engagement with named communities and their service providers.

[25] Puget Sound Energy, *Community Engagement Summary: Distributed Energy Resources (DER), Batteries, Solar and Demand Response,* https://www.pse.com/-/media/PDFs/Storing-your-own-Power/7989_DER_Community_Engagement_Report.pdf

Table 4. Equity-focused product design elements for PSE's proposed residential battery and solar offerings

		Barriers identified during community engagement			
		Cost	Installation and maintenance support	Flexibility of products	Education and outreach
Product design elements	**BOTH PRODUCTS**				
	Increase product access to named communities and their service providers	X	X		X
	Allow up front incentives instead of rebates to address cash flow issues	X		X	
	Connect customers with preferred vendors who can act as trusted advisors throughout the process		X		X
	Utilize high-touch, culturally relevant marketing, education and outreach tactics.		X		X
	Help customers locate State and Federal funding and tax incentives	X			X
	RESIDENTIAL BATTERIES				
	Include incentives for Vulnerable Populations. Specifically customers for whom back up power is critical (e.g. those with medical devices, lack of food access)	X	X	X	
	Include incentives for customers who have a high number of outages	X	X		
	Partner with community-based organizations to identify and invite customers from Vulnerable Populations to apply to the program				X
	Allow customers to self-attest that they qualify, wherever possible, to increase trust and reduce operational burdens			X	
	Offer additional enrollment and annual participation incentives to customers if PSE accesses their battery during peak energy times	X			
	SOLAR BUY BACK				
	Provide additional upfront financial incentives towards installation costs for community-based organizations, Tribal entities and government agencies who serve named communities	X	X		
	Prioritize applications based on the benefits they will provide to named communities	X		X	X

Q. In what other ways has PSE supported customers in named communities?

A. In 2023, PSE launched the Bill Discount Rate, in support of our most vulnerable customers. This rate works in conjunction with PSE's other energy assistance programs to reduce energy burdens to less than six percent for most customers. Please see the Prefiled Direct Testimony of Carol Wallace, Exh. CLW-1T, for more details on these programs and how they have been implemented.

Q. How does PSE intend to engage with named communities in product design in the future?

A. As previously referenced, and discussed in the Prefiled Direct Testimony of Troy Hutson, Exh. TAH-1T, PSE has established four core tenets of energy equity, with one of those tenants focused on procedural justice. PSE intends to provide meaningful opportunities to increase procedural justice in its product design process by engaging customers in named communities and their service providers in future product design. For example, in 2023 PSE began work on a DER public participation "empowerment" pilot (2022 GRC Order 08, Condition 20) that builds upon previous work in named communities and will engage customers in named communities in developing DER offerings specifically for those customers. Project design has begun, through initial conversations with interested parties and the EAG, and will continue in early 2024 leading to direct engagement with customers and organizations in named communities in 2024-2025. PSE will seek input from the EAG on project design elements, such as defining clear and measurable objectives, engagement tactics, and geographic priorities. Through this pilot, our intent is to empower those in named communities in designing and/or modifying one or more DER offerings from concept to delivery.

In addition, PSE took steps to seek more direct engagement from EAG members for the Green Power Solar Grants, offered annually. In 2022, two members of the EAG volunteered to join the grant selection committee; and in 2023 three members of the EAG participated in the selection process for 2024 funding. EAG

members have been instrumental in providing valuable feedback so thatthe application and selection process minimizes barriers for the most resource challenged applicants and prioritizes awarding solar projects for those who can most benefit.

Q. How does PSE's vision for an energy orchestration future respond to these barriers?

A. PSE seeks to center customer feedback in product design. Named communities and their service providers noted financial incentives could mitigate or eliminate costs customers may encounter when participating in clean energy products.

PSE has responded by enhancing incentives for these customer segments in clean energy products. For example, PSE's upcoming Residential Batteries product offering (Schedule 611) would include incentives of up to $10,000 to offset the cost of purchase and installing batteries in areas with vulnerable populations. PSE's upcoming Solar Buy Back product offering (Schedule 667) would include incentives of up to $250,000 to offset the cost of purchasing and installing solar panels for community-based organizations, government agencies, and Tribal entities serving named communities.

To address the real or perceived education and outreach gaps, PSE continues to partner with local community-based organizations to educate customers, create in-language customer information, and explore hyper-local, high-touch engagement campaigns targeted at specific communities. In January 2024, PSE presented to

the members of the EAG on both Schedules 611 and 667 to gather feedback on product design, as well as the best approach to education and outreach in order to reach customers in named communities. PSE is in the process of reviewing the recommendations provided by the members of the EAG and will look to incorporate the feedback in final product design and marketing as PSE prepares to launch both products later this year.

VI. CONCLUSION

Q. Does that conclude your prefiled direct testimony?

A. Yes, it does.