EXH. DJL-1T
DOCKETS UE-240004/UG-240005
2024 PSE GENERAL RATE CASE
WITNESS: DAVID J. LANDERS

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

DAVID J. LANDERS

ON BEHALF OF PUGET SOUND ENERGY

FEBRUARY 15, 2024

PUGET SOUND ENERGY

PREFILED DIRECT TESTIMONY (NONCONFIDENTIAL) OF DAVID J. LANDERS

CONTENTS

PUGET SOUND ENERGY

PREFILED DIRECT TESTIMONY (NONCONFIDENTIAL) OF DAVID J. LANDERS

LIST OF EXHIBITS

PUGET SOUND ENERGY

PREFILED DIRECT TESTIMONY (NONCONFIDENTIAL) OF DAVID J. LANDERS

I. INTRODUCTION

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

A. My name is David J. Landers. My business address is 355 110th Ave. NE, Bellevue, Washington, 98004-5591. I am the Director of System Planning with Puget Sound Energy ("PSE" or the "Company").

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

A. Yes, I have. It is Exh. DJL-2.

Q. What are your duties as Director, System Planning for PSE?

A. I am responsible for leading PSE's planning of investments in electric and gas system infrastructure, collectively referred to as PSE's "Delivery System." Planning for these investments is referred to as "Delivery System Planning." Electric Delivery System Planning responsibilities include electric distribution and transmission planning, asset management, and grid modernization strategy. Gas Delivery System Planning responsibilities include distribution and transmission planning, integrity management, and pipeline modernization

strategy. All planning functions are performed with an emphasis on advancement of energy equity.

Q. Please provide an overview of PSE's System Planning organization and its responsibilities.

A. PSE's System Planning organization consists of approximately 60 engineers, engineering specialists, performance consultants, data scientists, managers, and support staff focused on Delivery System Planning. Delivery System Planning is the engineering and analysis function that evaluates PSE's operating needs under various future conditions and identifies solutions to predicted deficiencies. This organization is made up of four workgroups:

- **Electric System Planning.** PSE's Electric System Planning team determines the needed investments for PSE's local electric transmission and distribution system to provide safe, clean, and reliable power to customers. Subgroups within this team focus on near-term capacity needs, system reliability, asset management strategy, and long-range strategic system planning.

- **Grid Modernization.** PSE's Grid Modernization team focuses on advancing existing grid capabilities, while enabling new and emerging technologies to support the clean energy transition. This team is also responsible for developing and maintaining PSE's electric reliability strategy, seeking an optimum blend of existing asset management and new technology deployment for cost-effective achievement of targeted system performance.

- **Gas System Integrity.** PSE's Gas System Integrity team is responsible for evaluating trends in safety and reliability to determine the capital, operations, and maintenance needs of PSE's gas Delivery System. This work includes identification of pipeline modernization needs and preparation for safe delivery of lower carbon fuels.

- **Equity and Rate Plan Performance.** PSE's Equity and Rate Plan performance team is responsible for advancing energy equity considerations in Delivery System Planning processes and supporting

multiyear rate plan implementation to realize the intended benefits of planned investments.

In addition to these workgroup functions, the organization bears responsibility for compliance assurance and reporting on multiple local, state, and federal requirements related to the planned investments in customer and public safety, pipeline integrity, and electric system reliability.

Q. How does System Planning fit into PSE's broader organizational structure?

A. System Planning is located within the Clean Energy Strategy and Planning organization led by Joshua Jacobs. In this organization, System Planning is well-positioned to proactively identify and plan needed investments in the Delivery System to support PSE's clean energy transformation while continuing to provide safe and reliable service to customers and communities. Planned investments are developed in close coordination with the Energy Operations organization led by Michelle Vargo and implementation of planned work is overseen by the Project Delivery team, led by Roque Bamba, within Energy Operations.

Furthermore, System Planning works closely with the Finance organization led by Joshua Kensok in development of overall corporate financial plans and with PSE's Energy Equity team, led by Troy Hutson, so that planning decisions are made within PSE's framework for advancing energy equity of customers and communities.

Q. What topics are you covering in your testimony?

A. My testimony describes PSE's Delivery System Planning and the Company's continued focus on providing safe, clean, reliable, and equitable service to customers. In my testimony, I first describe PSE's Delivery System Planning process for PSE's transmission and distribution investments for customers and equity advancement. I then introduce and explain the need for the Delivery System transmission and distribution investments and work PSE will perform through the multiyear rate plan ending December 31, 2026. More details regarding PSE's Delivery System Planning and Delivery System investments during the multiyear rate plan are described in the exhibits to my testimony, as follows:

- Customer and Public Safety in Exh. DJL-3.
- Customer Growth and Service Needs in Exh. DJL-4.
- Electric Reliability and Automation Investments in Exh. DJL-5.
- Pipeline Reliability and Monitoring Programs in Exh. DJL-6.
- Major Backbone Infrastructure Projects in Exh. DJL-7.
- Storm Events that qualified for the storm deferral mechanism in Exh. DJL-8.
- Reliability Metrics Research in Exh. DJL-9.

Q. How is your testimony related to other witness testimony?

A. The context of my testimony is provided by the Prefiled Direct Testimony of Joshua J. Jacobs, Exh. JJJ-1T, which describes PSE's efforts to invest in clean

energy for customers today and tomorrow. Investments planned by System Planning are implemented by PSE's Energy Operations organization, introduced in the Prefiled Direct Testimony of Michelle L. Vargo, Exh. MLV-1T. In addition, several other PSE witnesses have testimony that relates to my testimony, including:

- The Prefiled Direct Testimony of Troy A. Hutson, Exh. TAH-1T, discusses PSE's commitment to equity and how equity is incorporated into Company operations, including System Planning.

- The Prefiled Direct Testimony of Roque B. Bamba, Exh. RBB-1T, describes PSE's processes for executing on planned programs and projects and certain ongoing projects that will be in-service during the multiyear rate plan.

- The Prefiled Direct Testimony of Ryan Murphy, Exh. RM-1T, discusses Delivery System investments for wildfire risk mitigation that will be included in a proposed Wildfire Mitigation Prevention Tracker.

- The Prefiled Direct Testimony of John Mannetti, Exh. JM-1T, discusses PSE's strategy to decarbonize customer end use gas sales, and actions to pursue public funding opportunities for system investments.

- The Prefiled Direct Testimony of Joshua A. Kensok, Exh. JAK-1CT, describes the corporate capital planning process of which I discuss how System Planning supports this process.

- The Prefiled Direct Testimony of Susan E. Free, Exh. SEF-1T, describes the plant closings forecasted and revenue requirement of planned Delivery System investments.

Q. Please summarize the rate recovery PSE is seeking in this proceeding for its Delivery System investments.

A. PSE is seeking forward rate recovery of projected, programmatic, and specific Delivery System investments to be made during the two-year rate plan period beginning January 2025, which is $1,091 million in electric transmission and distribution infrastructure, $416.5 million in gas distribution infrastructure, and $3.6 million in common infrastructure, supporting both electric and gas systems. Table 1 shows the two-year capital expense and the corresponding forecasted plant closings for each revenue rate period.

Table 1: Multiyear Rate Plan Delivery System Capital Expense and Plant Additions.

Revenue Rate Period	Electric ($ Millions)		Gas ($ Millions)		Common ($ Millions)	
	Capital expense	Plant additions	Capital expense	Plant additions	Capital expense	Plant additions
2025	532.1	488.8	211.2	200.4	2.0	2.0
2026	558.9	515.7	205.3	189.9	1.6	1.6

Table 1 is provided as a bridge between the financial numbers discussed in my testimony relative to the five-year capital expense (plan), as introduced in Exh. JAK-1T, and the financial numbers and forecasted plant closings discussed in Exh. SEF-1T. My testimony discusses PSE's Delivery System investments planned in the context of PSE's five-year capital plan, supported by programmatic business plans that are developed and managed to deliver benefits. In Table 1, the capital expense compared to the plant additions on an annual basis is within 92 percent, as much of the investment is in cyclical programmatic work, meaning new projects for completion in future years are in design and

construction as completing projects initiated in prior years are placed in service (plant additions). In all years, the capital expense is higher than the plant additions, generally reflecting increased project initiation and engineering expenses for work to prepare the Delivery System to meet growing needs of clean energy transformation such as increased electrification of transportation vehicles and integration of distributed energy resources. Increased project initiation and engineering expenses are also being driven by growing investment to mitigate wildfire risks, as well as projects for meeting increasing regulatory requirements for pipeline safety, and preparing for safe delivery of lower carbon fuels.

Q. Do the summarized Delivery System investments for which PSE is seeking rate recovery include investments in the proposed Wildfire Prevention Tracker?

A. Yes. The summarized Delivery System capital investments listed in Table 1 include a portion of investments identified for inclusion in the Wildfire Prevention Tracker proposed in Exh. RM-1T. Forecasted plant additions and revenue requirements are disaggregated to clearly distinguish core Delivery System investments from those investments proposed for inclusion in the Wildfire Prevention Tracker in Exh. SEF-1T. If the wildfire tracker is approved, this portion of electric Delivery System investments will be aligned to the Wildfire Prevention Tracker as summarized in Table 2.

Table 2: Planned Electric Delivery System Investments Aligned to Proposed Wildfire Prevention Tracker.

Revenue Rate Period	Electric Plant Additions ($ Millions)
2025	35.1
2026	13.8

II. PSE'S DELIVERY SYSTEM PLANNING PROCESS

A. Delivery System Planning Overview

Q. What is PSE's approach to planning and managing its Delivery System?

A. PSE's fundamental approach and over-arching goal in planning and managing its Delivery System is to provide safe, clean, and reliable energy to customers while supporting PSE's clean energy transformation and advancing energy equity in served communities. The Delivery System Planning team pursues its work with the following objectives: 1) maintaining customer and public safety; 2) meeting customer growth and service needs; 3) modernizing and automating the grid to support reliable and resilient clean energy; and 4) modernizing and monitoring the pipeline system to support reliable lower carbon pipeline energy. I address each of these in more detail below.

Q. What tools does PSE use for Delivery System Planning?

A. PSE recently developed complementary Delivery System Planning tools for use in identifying system needs and comprehensively evaluating system improvements from the perspectives of reliability benefit, capacity need, ability

to serve load shifts driven by decarbonization, integration of distributed energy resources for enhanced system carrying capacity, and advancement of energy equity within served communities. Specifically, these tools consist of an analytical database and corresponding geospatial information system ("GIS") display of localized customer and equity data, Delivery System performance information including capacity and reliability, forecasted load changes, and other parameters such as customer participation in energy efficiency programs and forecasted locational growth in electric vehicle charging. The database and GIS tools, referred to as PSE's Delivery System Scorecard, are used by Delivery System Planning staff to enable a comprehensive assessment of needs and opportunities that expands beyond the traditional planning lens of electric or gas system capacity and reliability needs. The new planning tools enable a coordinated view of both gas and electric system needs in PSE's combined service territory, bringing locational awareness to potential interactive effects of planning decisions made on either system.

Q. What are the emerging drivers of investment needs that the electric Delivery System Planning process is adapting to?

A. There are several emerging drivers necessitating change in PSE's electric Delivery System and electric Delivery System Planning process.

First, PSE's Delivery System must be transformed to integrate a significant number of new clean energy resources. As described in Exh. JJJ-1T, PSE's Delivery System is rapidly being transformed with new clean energy resources to

comply with Washington's Clean Energy Transformation Act ("CETA")[1] and other requirements driving the increased use of electricity.

Second, in conjunction with this, PSE's electric system must be transformed quickly to support clean energy resources that require interactive control and bi-directional power flow, and must function as a system that effectively integrates distributed energy resources and clean energy customer technologies such as electric vehicles, rooftop solar, and battery storage. Timely investments are also required for the system to be prepared for load growth due to electrification of transportation vehicles and decarbonization of the natural gas system, while enhancing overall resiliency to better withstand natural disaster events resulting from climate change. Forecasted growth has led PSE to develop plans for expedited system capacity increases where substation and circuit loading is exceeding thresholds that trigger planning studies for capacity increases. While integration of Delivery System Planning with resource planning will guide locational application of distributed energy resources, demand side management, and demand response resources, timely investment in local system capacity upgrades is essential to meeting customer demands.

The pace of this transformation is driving PSE to a proactive approach of upgrading the system in advance of arriving loads because newly evolving load types can arrive on the system faster than lengthening project permitting and construction timelines enable required system improvements to be completed.

[1] Chapter 19.405 RCW.

Proactive investment in areas of forecasted load growth is essential to avoid putting reliable service in jeopardy. In my testimony, I describe the investments PSE is planning to meet the challenges of developing a modern, customer-focused grid that is prepared to serve new loads when they arrive on the system.

Third, as introduced in Troy Hutson's testimony, Exh. TAH-1T, transformation of the Delivery System must be accomplished in a way that provides an equitable distribution of benefits and burdens across all segments of the community, prioritizing benefits for those with the highest and deepest need. Therefore, PSE's Delivery System Planning process has been modified to incorporate equity and portfolio optimization tools have been updated to enable achievement of targeted equity advancement in project portfolio design.

Lastly, climate change is another emerging driver of investment needs. Historically, the greatest natural threat to electric system reliability and performance has been seasonal storms consisting of significant wind and precipitation events. Climate change is increasing the frequency and severity of these weather events. Relatedly, climate change is increasing wildfire risk. To prepare for and mitigate these risks, PSE must continue to invest in its electric Delivery System to improve reliability and resiliency during severe weather, such as undergrounding, covered overhead conductors, and system automation. To accelerate Delivery System investments for wildfire risk mitigation, PSE has established a Wildfire Risk Mitigation team as discussed in Exh. RM-1T.

In sum, while PSE must continue to make traditional, core investments to maintain a safe and reliable Delivery System, the emerging needs described above place new demands on both the planning and investments needed to create and maintain a modern Delivery System.

Q. What are the emerging drivers of investment needs that the gas Delivery System Planning process is adapting to?

A. There are several emerging drivers impacting the natural gas Delivery System Planning process.

Federal regulations and requirements for pipeline and environmental safety, integrity management, and cyber security through the Pipeline and Hazardous Materials Safety Administration ("PHMSA") and Transportation Security Administration ("TSA") are increasing. Regulation and legislation such as the PHMSA Mega Rule[2] and PIPES Act[3] change how PSE operates and addresses operational issues. For example, the PIPES Act includes methane release as a safety issue and, as a result, PSE has moved to repairing all leaks as they are found, implementing gas recompression in lieu of venting or flaring on pipeline projects, and investing in Advanced Leak Detection technology. These actions result in an increase in operations and maintenance and capital investment costs

[2] RIN 2137-AF39 Pipeline Safety: Safety of Gas Transmission Pipelines: Repair Criteria, Integrity Management Improvements, Cathodic Protection, Management of Change, and Other Related Amendments.

[3] Protecting Our Infrastructure of Pipelines and Enhancing Safety ("PIPES") Act of 2020 and 2023.

associated with fulfilling the new regulatory obligations across the footprint of the gas Delivery System.

While federal, state, and local jurisdictional requirements supporting decarbonization impact how PSE plans safety and reliability investments, PSE remains obligated to provide natural gas service under current tariffs. Clean energy policy and building energy codes are restricting new uses of natural gas, and cost to customers for acquiring new gas service has been increased by PSE's line extension policy changes, but new customer additions are expected to continue in the near-term. While this trend may change in the future as clean energy transformation is anticipated to result in declining growth of natural gas use and eventual reduction in consumption, opportunities to avoid investment in pipeline reliability by full-scale retirement of sections of PSE's natural gas Delivery System are not expected in the near-term. Thus, robust pipeline safety and integrity management programs must remain in place.

With a large portion of the existing natural gas Delivery System expected to remain in service at least through mid-century, Delivery System Planning processes are adapting to accommodate lower carbon fuels so that energy may continue to be delivered safely and reliably to all customers receiving gas service from PSE.

B. PSE's Delivery System Planning Prioritizes Customers and Equity

Q. Is PSE's Delivery System Planning focused on customers?

A. Yes, it is. PSE's Delivery System Planning processes are designed to provide safe, clean, and reliable service to customers and to timely respond to new requests for service by having a backbone Delivery System that is prepared to meet changing load and service requirements.

Q. Is PSE's Delivery System Planning focused on incorporating equity?

A. Yes. In accordance with RCW 80.28.425(1) and a requirement of the settlement in PSE's 2022 General Rate Case, Dockets UE-220066/UG-220067 et al. ("2022 GRC Settlement"),[4] PSE is incorporating equity into its four objectives of Delivery System Planning, consistent with the 2022 GRC Settlement, as described below:

1. **Maintaining customer and public safety.** While PSE plans investments to maintain and operate the Delivery System in a manner that is safe to all customers and the public, safety-driven system improvements that enhance energy security and resiliency, along with emergency repairs for system restoration during major winter storm events, may be prioritized for implementation first in areas of vulnerable populations and highly impacted communities.

2. **Meeting customer growth and service needs.** By conducting Delivery System Planning in coordination with its Clean Energy Implementation Plan ("CEIP") process as part of an integrated system planning approach for distribution system investments, PSE will seek to leverage connected customer-side resources to provide system value for all customers and achieve an equitable distribution of benefits and burdens to vulnerable populations and highly impacted communities. In 2023 Delivery System

[4] *WUTC v. Puget Sound Energy*, Dockets UE-220066/UG-220067 and UG-210918 (consolidated) Settlement Stipulation and Agreement on Revenue Requirement and All Other Issues Except Tacoma LNG and PSE's Green Direct Program (Aug. 26, 2022).

Planning engaged with interested parties from its Integrated Resource Plan ("IRP") and the public to solicit input on prioritization of benefits when evaluating community-based distributed energy resources.

3. **Modernizing and automating the grid to support reliable and resilient clean energy.** Investments in system reliability and resiliency are evaluated and prioritized utilizing PSE's Investment Decision Optimization Tool ("iDOT"), which has been enhanced to include equity-related benefits, with input from PSE's Equity Advisory Group. This tool will continue to be updated, including incorporation of outcomes of the Commission Staff-led process to refine methods for distributional equity analysis. Additionally, in 2023, Delivery System Planning piloted a customer engagement framework to better understand the impacts and customer energy burdens from power outages occurring on a circuit that serves an area of vulnerable population and deepest need customers. This pilot informed development of an engagement approach that will enable customers in highly impacted communities, who will be most impacted from Delivery System Planning decisions, to have the opportunity to participate in the development of System Planning solutions. Subsequent engagement is being planned in 2024 that will continue to advance community involvement in local energy Delivery System Planning.

4. **Modernizing and monitoring the pipeline system to support reliable lower carbon pipeline energy.** Like electric system investment decisions, selection and prioritization of pipeline modernization projects is accomplished through use of the equity-related benefits and costs in iDOT. Additionally, in planning investments for pipeline modernization, PSE will apply learnings of the Targeted Electrification Pilot to leverage customer-based programs in meeting energy demands of constrained areas of the gas Delivery System, where effective.

The exhibits to my testimony separately describe in more detail how PSE is incorporating equity into Delivery System Planning for each of the above objectives.

Q. Has PSE met the 2022 GRC Settlement requirements relative to equity and customer engagement with the Delivery System Planning process?

A. Yes, as discussed in Exh. TAH-1T, Delivery System Planning processes have been updated to fulfill commitments of the 2022 GRC Settlement to increase

engagement with interested parties and provide an equitable distribution of benefits and burdens across all segments of the community.

Q. How else is Delivery System Planning incorporating equity?

A. Historically, Delivery System Planning has been a function performed downstream of integrated resource planning. Utilizing load forecasts developed to quantify resource needs, reduced by the application of cost-effective conservation investments, Delivery System Planning has identified investments in Delivery System capacity required to serve the anticipated net load growth. To integrate with long-range planning of the IRP and align with CEIP processes, Delivery System Planning is transitioning to provide information up-front in the IRP process on locations where distributed energy resources may benefit carrying capacity of the distribution system. This information, combined with locational data on highly impacted communities and vulnerable populations, will be shared with interested parties to inform their input on prioritization of community-based resource locations to enhance distribution system carrying capacity. This input will guide request for proposal solicitation for distributed energy resources at locations that most-effectively support the energy Delivery System and advance equity in communities of need.

C. Delivery System Investment Management Overview

Q. How are PSE's Delivery System investments structured?

A. PSE separates its Delivery System investments into discretionary and non-discretionary categories:

- **Discretionary investments** are those where PSE makes decisions regarding scope, schedule, and budget. PSE can evaluate risks and tradeoffs of these investments as part of PSE's annual business planning and budget allocation process.

- **Non-discretionary** investments are dictated by others or driven by requirements relative to timing and or scope outside of PSE's direct control.

PSE's annual business planning process aims at providing sufficient resources so that non-discretionary work is managed in accordance with good utility practice. Non-discretionary work takes priority over discretionary work.

Additionally, all Delivery System investments are categorized as being either planned or unplanned:

- **Planned investments** allow time to consider alternatives when deciding how and when to complete the work in accordance with Delivery System Planning and corporate business planning processes. An example of this is PSE's Cable Remediation Program where PSE has flexibility to determine the optimal scope and timing to achieve benefits.

- **Unplanned investments** generally must be addressed immediately or within a short timeframe, with little time to consider alternatives or for which there are no alternatives. An example of this is PSE's Emergency Outage Repair requiring the replacement of failed or damaged equipment to resolve immediate safety concerns and restore operations and power for customers.

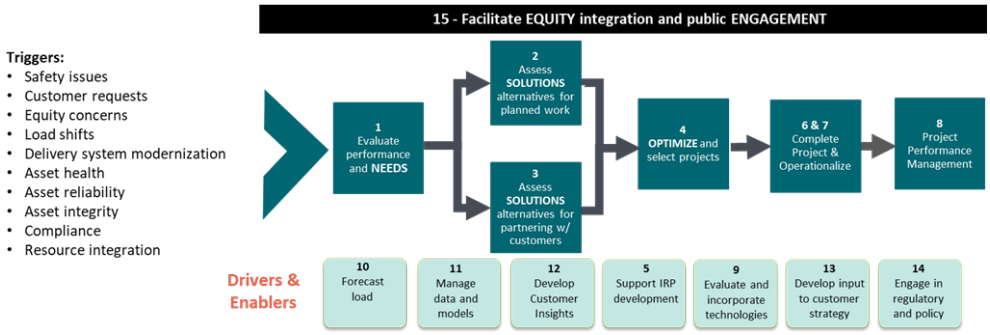
While discretionary investments are planned through PSE's rigorous Delivery System Planning and business planning processes, non-discretionary investments may fall into either planned or unplanned categories.

These categories help to demonstrate why flexibility is needed in project portfolios developed by the Delivery System Planning process. For example, investment plans and in-year adjustments fund unplanned non-discretionary work first, such as emergencies or increased customer requests, followed by planned non-discretionary work such as meeting regulatory compliance obligations. Planned discretionary investments, such as grid modernization and system reliability projects, are then adjusted as needed to accommodate non-discretionary variability.

Q. Please summarize PSE's Delivery System Planning process at a high level.

A. PSE's Delivery System Planning process has evolved from a primarily departmentally focused process to integrating information and handoffs throughout PSE. Multiple departments come together to help identify needs, perform studies, and identify benefit-based solutions that can be executed effectively. Figure 1 below shows the components of the Delivery System Planning process at a high level.

Figure 1: PSE's Delivery System Planning process.



The planning process begins with an evaluation of locational community equity parameters and the system's current performance and future needs through data analysis and modeling tools, utilizing established planning guidelines for consistent analysis at various steps of the process. Planning considerations include internal inputs such as reliability indices, Company goals and commitments, and the root causes of historic outages. In addition, external inputs such as service quality indices, regulations, municipal infrastructure plans, customer complaints, community equity concerns, and ongoing service issues are considered.

Q. How are Delivery System needs identified?

A. System needs are identified through modeling where solution alternatives are developed, vetted, and reviewed. Projects are compared against one another and against a portfolio of projects based on optimizing benefit and cost for a given funding level using PSE's iDOT.

In collaboration with PSE's Equity Advisory Group, in 2023, PSE updated iDOT to include customer benefit indicators ("CBIs") from CETA that met the intent of

accounting for societal benefits, non-energy benefits and burdens, and the social cost of greenhouse gases. All projects entered into iDOT are now scored on the CBIs and the final project portfolio is now optimized in a manner that ensures a targeted benefit threshold for vulnerable populations and highly impacted communities is met or exceeded in each release of projects.

Q. Is the process different depending on planning horizon?

A. No. The process is the same for both short- and long-term planning. PSE may run various scenarios of financial constraints to evaluate how the investment portfolio changes. PSE's planning process and optimization has moved from defining the following year's work to defining work to be completed two to three years out, at a minimum, to increase likelihood of successfully completing the work per the investment plan and to accommodate lengthening timelines for project permitting, procurement of equipment, and construction. The release of portfolios in further outlying years also provides added benefit of enabling PSE's Project Delivery organization to consider factors such as availability of construction resources, supply chain constraints, and concurrent work coordination risks in developing prioritized implementation plans.

Q. How does this process intersect with the corporate business planning process?

A. When it is time to update PSE's five-year investment plan, Delivery System Planning prepares Corporate Spending Authorizations ("CSA") to document

funding requests. Throughout the business planning process, and as described by Joshua Kensok in Exh. JAK-1CT, PSE applies rigorous governance, system-configured, and financial controls. The type of investment will drive the funding request type (i.e., projected, programmatic, or specific). For discretionary planned work, the first two-to-three years of funding requested in CSAs is informed by the Project Delivery organization based on work that is already in implementation. The outer years of the funding request are more heavily informed by projects identified in recent updates of PSE's programmatic business plans and longer-range plans such as the transmission planning studies required by NERC Reliability Standards. Funding requests earlier in the five-year investment plan are better defined than projects in the outer years. Funding requests later in the five-year investment plan are generally based on programmatic trends and historical average costs. As explained in Exh. JAK-1CT, management and governance of the business plan are year-round activities. During its development, the business plan is continually updated and iterated based on changing business conditions, inputs, and assumptions. The budget allocation process considers many corporate factors and leverages benefit, equity indicators, and other information from the CSAs to evaluate different investment scenarios. The annual cycle repeats, increasing focus on a given year's plan as it becomes more near-term, is better defined, and is informed through the corporate business planning process.

Q. Please describe how PSE coordinates Delivery System work.

A. There is significant collaboration within PSE to plan and manage all categories of Delivery System work:

- **Planned discretionary investments.** PSE's System Planning organization, which I oversee, is responsible for monitoring, identifying, and analyzing Delivery System needs and scoping solutions. System Planning coordinates with the Project Delivery organization which provides oversight of project and program delivery, ensuring strong governance and execution. PSE witness Roque Bamba leads the Project Delivery organization responsible for executing discretionary plans and performing project and program management to deliver these plans on schedule, to scope, and within budget. PSE's project and program implementation process is described in Bamba, Exh. RBB-1T.

- **Planned non-discretionary investments.** PSE's Customer and System Projects ("C&SP") organization responds to these types of requests, such as customer requests and public improvement projects. This organization is responsible for overseeing project execution through close-out following a similar lifecycle process that is typically simpler in comparison to the Project Delivery organization. Should project complexity increase, the Project Delivery organization may take over project execution, such as for large utility relocation projects to accommodate Sound Transit light rail expansion.

- **Unplanned non-discretionary investments.** PSE's Gas Operations and Electric Operations organizations oversee trends in investments associated with work that is performed following established procedures for repairs, such as outage restoration or third-party damages, and leverage established service provider contract arrangements to forecast and manage costs.

Q. Should the Commission have confidence in PSE's Delivery System portfolio because of PSE's Delivery System Planning process and coordination with Project Delivery?

A. Yes. The Commission should have confidence in the robust planning process that PSE employs. It is data driven, values benefits that advance energy equity and

are customer focused, allows decisions that optimize a portfolio of many different project types, and removes subjective influence in the decision process. PSE also continues to improve the process to adapt to current best practices, the regulatory environment, new technologies, and further incorporates equity into the planning process. The planning process and the portfolio optimized through it are coordinated with work delivered and implemented by the Project Delivery organization led by Roque Bamba and described in Exh. RBB-1T.

III. PLANNED DELIVERY SYSTEM RATE PLAN INVESTMENTS

A. Delivery System Investment Overview

Q. Please describe the reasons or drivers for PSE's Delivery System investments.

A. As described in Section II, PSE's Delivery System Planning work objectives include: 1) maintaining customer and public safety; 2) responding to customer growth and service needs; 3) modernizing and automating the grid to support reliable and resilient clean energy; and 4) modernizing and monitoring the pipeline system to support reliable lower carbon pipeline energy. These categories of investments comprise the Delivery System work during the multiyear rate plan. I address each of these in more detail below. Table 3 below summarizes each of the objectives.

Table 3: PSE Delivery System investment objectives and customer interests.

Objective	Customer Interests
Customer and public safety	• Infrastructure is safe for the public and those who work around it. • Infrastructure is actively maintained to perform as designed and in compliance with codes and standards. • Customers and the public have the information they need to stay safe around natural gas and electricity. • Robust preparedness and response by PSE when an emergency occurs.
Customer growth and service needs	• Gas and electric energy services are provided to new and existing customers under normal and peak conditions according to tariffs and service quality expectations. • Infrastructure enables integration of DERs and growing pace of electric vehicles.
Grid reliability and automation	• Infrastructure is actively monitored and managed to reliably perform as designed and as expected by customers. • Modern grid capabilities are implemented to improve system reliability, flexibility, and efficiency.
Pipeline reliability	• Infrastructure is actively monitored and managed to reliably perform as designed and as expected by customers. • Modern materials in pipeline investments enable clean fuel alternatives. • New technologies are implemented into operation processes to lower carbon emissions.

Q. Please provide an overview of the planned Delivery System work during the multiyear rate plan.

A. In the two-year multiyear rate plan, PSE will invest $1,091 million in electric transmission and distribution infrastructure, $416.5 million in gas distribution infrastructure, and $3.6 million in infrastructure that is shared between electric and gas transmission and distribution. For Delivery System projects identified through optimization of project portfolios in years 2025 and 2026, 52 percent of funded dollars went toward projects that benefitted customers in named

communities. Tables 4 and 5 below detail the electric and gas capital expenditures by category.

Table 4: Expected electric capital expenditures from 2025–2026, by category.

Exhibit	Investment Category	Example Programs	Capital Investment ($ Millions)	Primary Benefits
Customer and Public Safety	Emergency Repair	• Emergent Repairs	164.0	• Customer Service Gaurantees • Customer Satisfaction • Operations Safety • Reliability
	Electric Maintenance	• Pole Inspections and Remediation • Substation Reliability	118.9	• Reliability • Avoided Outages
	Public Improvement	• Relocations • Franchises • Control Zone	133.8	• Risk Mitigation
Customer Growth and Service Needs	Customer Requests	• Customer Requests	148.9	• Customer Satisfaction
	Capacity	• DER and Microgrid • Targeted Capacity • DER Enablement	75.8	• Clean Energy • Reliability
Reliability and Automation	Automation	• Distribution and Transmission Automation • Substation Supervisory Control and Data Acquisition ("SCADA")	134.0	• Reliability • Customer Service Gaurantees • Customer Satisfaction • Operations Safety
	Cable Remediation	• Cable Remediation	77.3	
	Circuit Modernization	• Targeted Reliability • Underground Conversion	125.4	
	Electric System Upgrades	• Fusesavers • Resilience Enhancement • Service Transformer Upgrade	60.4	
	Submarine Cable Mitigation	• Submarine Cable Replacement	15.0	• Avoided Outages
	Voltage Reduction	• Volt-Var Optimization (VVO)	12.6	• Enegy Savings
	Microgrid & Energy Storage Pilots	• CEF3 and CEF4 Living Labs	1.4	• Gaining insight for future projects
	ADMS Advanced Apps	• ADMS Advanced Apps	4.2	• Gaining insight for widescale VVO/DA implementation
Major Backbone Infrastructure	N/A	• Seabeck Area Reliability • Greenwater Tap Reliability	19.6	• Reliability • Capacity

Table 5: Expected gas capital expenditures from 2025–2026, by category.

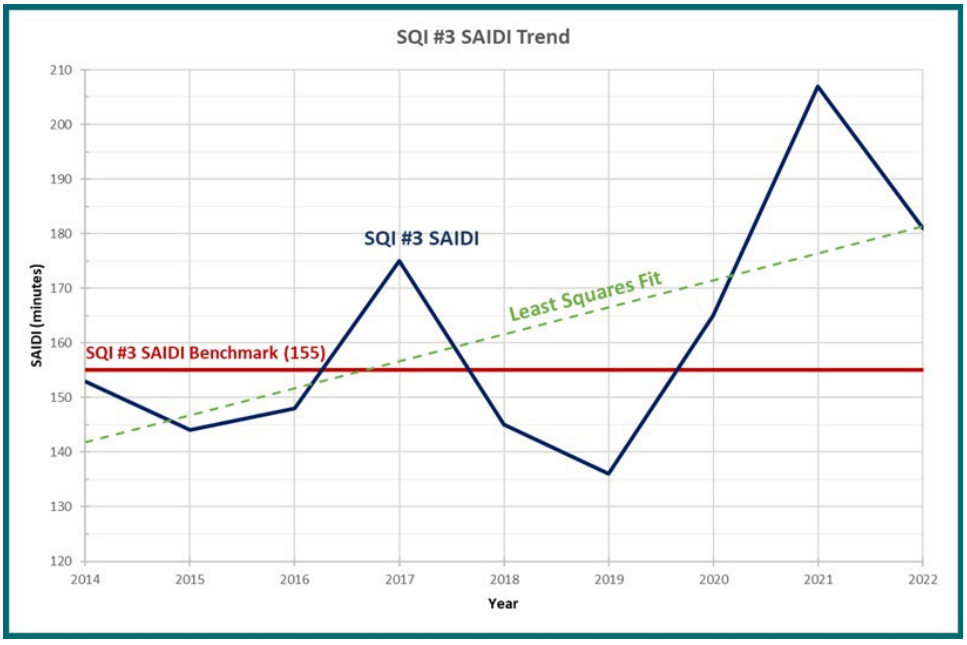
Exhibit	Investment Category	Example Programs	Capital Investment ($ Millions)	Primary Benefits
Customer and Public Safety	Emergency Repair	• Emergent Repairs	56.6	• Customer satisfaction • Operations safety
	Gas Maintenance	• Distribution Integrity Management • PRP • Enhanced methane emissions reduction	207.2	• Increased safety • Risk mitigation
	Public Improvement	• Relocations • Franchises	62.4	• Risk mitigation
Customer Growth and Service Needs	Customer Requests	• Customer requests	52.1	• Customer satisfaction
Pipeline Reliability and Monitoring	Pipeline Digital Monitoring	• Pipeline Digital Monitoring	5.4	• Reliability and safety by reducing response time
	Pipeline System Reliability	• Pipeline System Reliability	29.7	• Reduction in customer outages
	Alternative Fuels Readiness	• Alternate Fuels Readiness	3.0	• Learning and developing efficient transformation of the pipeline system

Q. How do the planned Delivery System investments in this case—and PSE's corresponding rate recovery request—enable PSE to deliver safe, reliable, and clean energy to its customers?

A. For PSE to (a) integrate the new clean energy resources that PSE must acquire to comply with CETA, (b) plan for and develop a Delivery System that is prepared for the significant load growth and bi-directional flexibility that will be necessary to integrate electric vehicle growth, distributed energy resources, and other clean energy customer technologies (e.g., rooftop solar and battery storage), (c) decarbonize the natural gas system, and (d) maintain a reliable and resilient Delivery System despite more severe weather events, growing wildfire risk and normal aging and degradation of its core system, PSE will need the funding requested in this case.

While PSE's previous multiyear rate plan helped to deliver capital projects contributing reliability benefit, PSE has continued to fall behind on Delivery System reliability investments required to achieve the SAIDI performance benchmark of 155 minutes that was established in 2016. Figure 2 shows the trend in SAIDI performance over the previous nine years. While performance is impacted significantly by weather events, causing wide variability in year-over-year reporting, the general upward trend in SAIDI performance demonstrates need for increased investment in system reliability projects to slow the degradation of reliability.

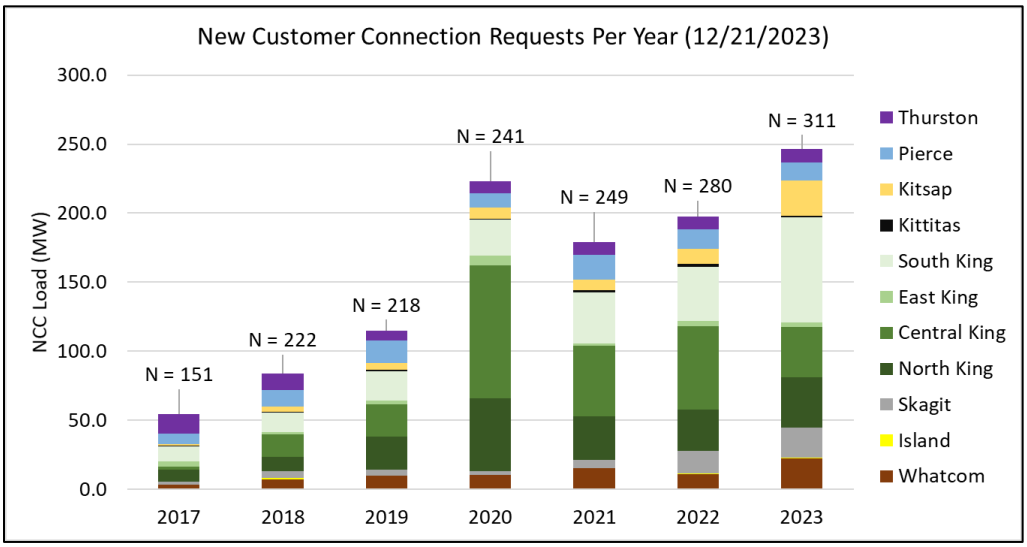
Figure 2: Electric system reliability performance from 2014–2022.



In addition to the need for increasing investments in reliability to make progress toward achieving a 155 minute SAIDI benchmark, electric customer load growth, driven in part by changing building codes and electrification of end uses

for decarbonization, is creating increased need for investment in backbone system capacity to maintain PSE's ability to provide timely responses to new load requests, which is becoming more challenging in an environment of lengthening timelines for project permitting and materials procurement. This need for increasing investment is demonstrated by Figure 3, which shows the upward trend in new customer load requests since 2017, which are expected to continue growing as more customer end-use loads are electrified and quantity of personal, fleet, and public electric vehicle chargers continues to grow.

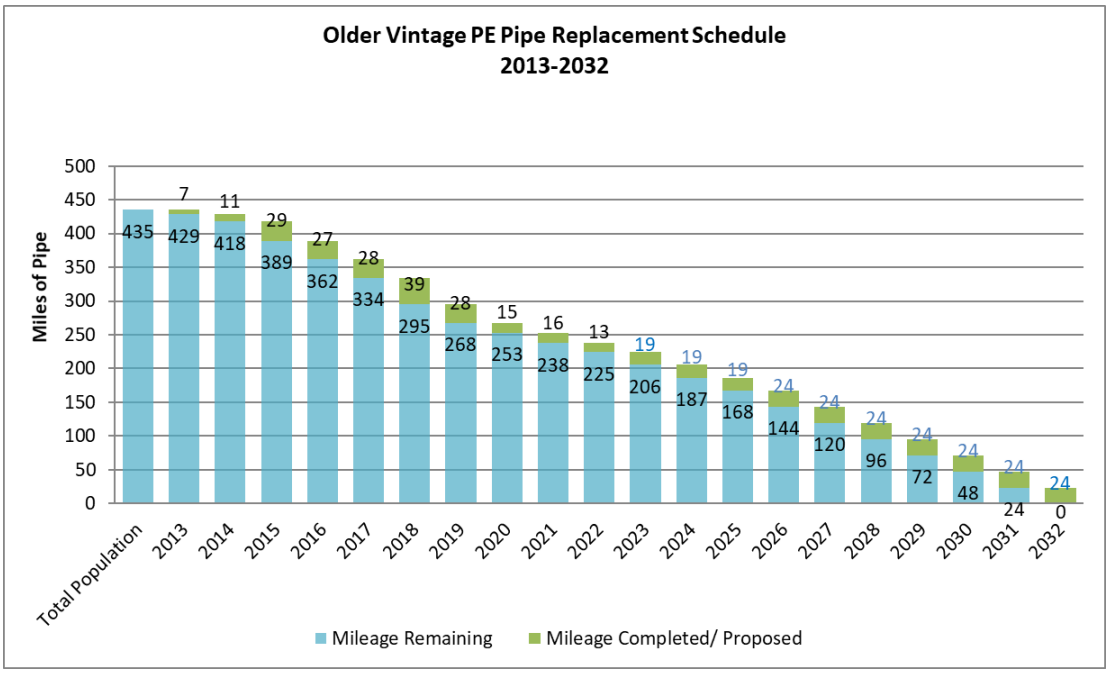
Figure 3: Growth in new, large electric load requests by customers 2017–2023.



While PSE expects a decline in costs related to natural gas new construction in 2025 and 2026, the investments required to provide system and environmental safety and reliability are increasing. Through the PHMSA Mega Rule, PSE will begin capital and operation and maintenance investments to strength test existing pipeline facilities or replace gas transmission pipe and stations in order to

reconfirm the maximum allowable operating pressure. PSE's commitment to eliminate methane emissions from operations is reinforced by the PIPEs Act that treats methane as an environmental safety concern. PSE operates in a "find and fix" mode for new leaks, and in 2024 it is expected the definition of a "leak" will change, increasing the number of leaks PSE is required to eliminate on an ongoing basis. Additionally, PSE continues to invest in advanced leak detection equipment and procedures to find leaks faster and is deploying recompression in lieu of venting or flaring during pipeline construction to keep all molecules of gas in the pipelines. PSE's Pipeline Replacement Plan, filed in June 2023, addresses PSE's highest risks on the system including Older Vintage Polyethylene ("PE") Pipe. As illustrated in Figure 4, in 2026 and beyond, PSE plans to increase the annual mileage to be replaced from 19 miles to 24 miles to fulfill its obligation to a 20-year plan for replacing all leak-prone pipe in the Gas Delivery System.

Figure 4: Investment in Pipeline Replacement Program (blue numbers are planned miles of pipe per latest Pipeline Replacement Program plan filed June 2023).



In sum, the Commission's approval of the proposed Delivery System investments in this case will allow PSE to maintain committed resources to planning, designing, and constructing electric infrastructure to improve system reliability and prepare for accelerating load growth, driven in part by the clean energy transformation and growing customer adoption of electric vehicles. Approval of these proposed investments will also enable PSE to respond to increasing pipeline safety regulations while continuing to replace and improve operation of pipeline facilities to reduce methane release and support alternative fuels. Without such approval, PSE will have no choice but to reduce discretionary planned work, most likely in grid modernization programs for improved reliability and optimized distributed energy resource integration.

Q. Is PSE pursuing funding options from other sources that could offset the overall rate request in this case, including for Delivery System investments?

A. Yes. As addressed in John Mannetti's testimony, Exh. JM-1T, PSE is pursuing public funding opportunities available through state and federal programs to accelerate PSE's efforts to reduce carbon emissions and reduce costs associated with the transition to clean energy.

Q. How could the multiyear rate plan investments change with initiatives not yet complete per the 2022 GRC Settlement?

A. Delivery System infrastructure investments are made within the communities that PSE serves, and as a result are heavily influenced by factors external to PSE's control that emerge through community engagement, project permitting, public opposition, legal challenges, or broader circumstances. As discussed by Roque Bamba in Exh. RBB-1T, successful program delivery requires flexibility to adjust for this variability and projects are actively monitored and managed to provide desired overall program-wide benefits. In instances where projects or programs are significantly delayed, PSE reprioritizes and accelerates other projects or programs to ensure desired outcomes are achieved, which commonly results in changes to specific projects during an implementation period. For example, a delay in projects involving overhead line construction due to external factors such as lengthy negotiation for procurement of easements or permitting delays may be offset by completing additional underground cable replacement

projects within existing right-of-way to still deliver the intended overall reliability benefit within a given period.

As discussed by Joshua Jacobs in Jacobs, Exh. JJJ-1T, and John Mannetti in Mannetti, Exh. JM-1T, PSE is working on several key initiatives that will inform the pathway forward for clean energy transformation and produce new information to guide improvements to programmatic approaches. Based upon learnings of these programs, such as the Targeted Electrification Pilot and Decarbonization Study that will define a Targeted Electrification Strategy, Delivery System Planning strategies may be updated which could impact the makeup of future project portfolios.

B. Investments Made to Maintain Customer and Public Safety

Q. Please describe PSE's planned investments to maintain customer and public safety between January 1, 2025 and the end of the rate plan.

A. Customer, employee, and public safety are PSE's highest priority. Within this category, the highest priority work on the Delivery System is emergency repair, which is the repair and/or replacement of failed or compromised infrastructure, such as replacing a pole that has been damaged or has inspection results indicating imminent failure could occur. Additionally, public improvement work, performed in response to requests by municipalities to relocate facilities as specified in jurisdictional franchise agreements, is also included in this category and must be completed in a timely manner to resolve conflicts with

transportation improvements. This work includes county and state control zone mitigation, which moves poles and infrastructure further away from lanes of vehicular travel for increased safety of motorists. The final category is planned maintenance on the electric and gas Delivery Systems, proactively repairing or replacing infrastructure that is in poor health based on inspections or diagnostics. Programs included in customer and public safety investment categories are listed in Table 6.

Table 6: Programs included in customer and public safety investment categories.

Category	Program
Emergency Repair	Emergency Repair
Public Improvement	Public Improvement
Electric Maintenance	Substation Reliability
	Pole Inspection and Remediation
	Mobile Substations
Gas Maintenance	PRP Older Vintage PE Pipe Mitigation
	PRP Buried Meter Set Mitigation
	PRP Sewer Cross Bore
	PRP No Record Facility Remediation
	Distribution Integrity Management
	Enhanced Methane Emissions Reduction
	Transmission Integrity Management

Q. What are the key or noteworthy projects or programs under this category?

A. As noted above, emergency repairs are the highest priority for PSE to resolve immediate and imminent safety concerns and return infrastructure to sound function for the health of the system.

Additionally, the Electric Maintenance program focuses on inspections, diagnostics, and planned preventive maintenance to proactively repair and/or replace infrastructure in poor health. A key Electric Maintenance program is the Pole Inspection and Remediation program. The program addresses pole health, extends pole life, and addresses poor condition assets before they fail and cause an outage.

Similarly, the Gas Maintenance and Integrity program focuses on identifying pipeline safety risk and integrity management concerns in both the distribution and transmission systems. The program also focuses on meeting increasing regulatory requirements related to pipeline safety. Risk programs are identified through Integrity Management Plans and the highest risk items are in the Pipeline Replacement Plan. A key program is the Older Vintage PE Pipe Mitigation program that removes risk prone pipe, proactively preventing leaks on the system.

Q. How much is PSE's proposed investment in customer and public safety over the rate period?

A. Between January 1, 2025 and December 31, 2026, PSE will make investments to complete anticipated work to maintain customer and public safety as shown in Table 7 below.

Table 7: Forecasted investments in customer and public safety, by category, from January 1, 2025 through December 31, 2026.

Electric Programs	Capital Investment ($ Millions)
Emergency repair	164.0
Programmatic Maintenance	118.9
Public Improvement	133.5
Gas Programs	**Capital Investment ($ Millions)**
Emergency repair	56.6
Programmatic Maintenance	207.2
Public Improvement	62.4
Common Programs	**Capital Investment ($ Millions)**
Public Improvement	3.6

A comprehensive discussion of investments for customer and public safety is provided in the second exhibit to this testimony, Exh. DJL-3.

C. Investments Made to Meet Customer Growth and Service Needs

Q. Please describe the investments to meet customer growth and service needs between January 1, 2025 and the end of the rate plan.

A. Customer growth and service need investments are generally responses to requests from customers, builders, and contractors for new service connections to

homes and businesses. Additional investments in the Delivery System are often needed to support this increased load, so mains and feeders reaching their capacity limit are upgraded to provide adequate service, pressure, and voltage, to all customers. Programs included in customer growth and service needs investment categories are listed in Table 8.

Table 8: Programs included in customer growth and service needs investment categories.

Category	Program
Customer Requests	Customer Requests
Capacity	Targeted Capacity
	DER Circuit Enablement

Q. What are the key or noteworthy projects or programs under this category?

A. The Targeted Capacity program is critical in supporting growing distribution capacity needs that are accelerating due to increased electric vehicle charging, transition to greater use of electricity for space and water heating due to changes in energy codes, and continued development in the region.

The DER Circuit Enablement program is critical in addressing constraints on the electric system to enable renewable generation to be accommodated on and provide benefit to the local energy Delivery System, supporting achievement of clean energy goals under CETA.

Q. How much is PSE's proposed investment in customer growth and service needs over the rate period?

A. Between January 1, 2025 and December 31, 2026, PSE will make investments to serve anticipated customer growth and service needs as shown Table 9 below.

Table 9: Forecasted investments in customer growth and service needs, by category, from January 1, 2025 through December 31, 2026.

Electric Programs	Capital Investment ($ Millions)
Customer Requests	148.9
Capacity	45.4
DER Enablement	30.4
Gas Programs	**Capital Investment ($ Millions)**
Customer Requests	52.1

A comprehensive discussion of investments to meet customer growth and service needs is provided in the third exhibit to this testimony, Exh. DJL-4.

D. Investments Made to Improve Reliability and Automate the Grid

Q. Please describe investments made to maintain reliability and automate the grid between January 1, 2025 and the end of the rate plan.

A. As customers become more dependent on electricity and have growing expectations for service reliability, investments that reduce likelihood of outages and/or deploy smart technology for quicker restoration following service disruptions are a key component of planned investments for the energy delivery system. As summarized in Table 10 below, there are eight overarching

investment categories with seventeen specific programs that make up the reliability and automation investments.

Table 10: Programs included in investments to improve reliability and automate the grid.

Category	Programs
Automation	Distribution Automation
	Reclosers
	Transmission Automation
	Substation SCADA
Cable Remediation	Cable Remediation
Circuit Modernization	Targeted Reliability
	Underground Conversion
Electric System Upgrades	Fusesavers
	Resilience Enhancement Expanded
	Resilience Enhancement – Copper Conductor
	Service Transformer Upgrade
	Root Cause Analysis
	Central Bellevue District
Submarine Cable	Submarine Cable
Voltage Reduction	Voltage Reduction
Microgrid & Energy Storage Pilots	Microgrid & Energy Storage Pilots
ADMS Advanced Apps	ADMS Advanced Apps

Q. What are the key or noteworthy projects or programs under this category?

A. The Automation and Circuit Modernization programs are especially critical in driving reliability benefits for customers. Automation programs focus on deployment of smart technology to dramatically reduce the length of outages through improved visibility to operations and remote control via SCADA. The

distribution automation program, sometimes called DA FLISR (fault location, isolation, and service restoration), takes remote control and visibility one step further by automatically restoring power to customers in non-damaged sections of the grid using programmed logic.

The Circuit Modernization program focuses on increasing grid resiliency by implementing solutions to harden the grid and minimize outages through tactics such as upgrading overhead distribution lines with covered conductor "tree wire" or converting lines from overhead to underground.

Targeted Reliability projects often become significant in scope when major upgrades are made to backbone infrastructure to improve reliability to an area served by multiple distribution circuits. Between January 1, 2025 and December 31, 2026, there are two major backbone infrastructure reliability projects expected to be placed in service, although they have not yet entered the project execution phase. The Seabeck Area Reliability Project, located in western Kitsap County, will install a new distribution feeder and convert an existing overhead distribution feeder to underground feeder for approximately five miles, providing benefits of improved reliability and capacity for approximately 4,700 customers in the area. The Greenwater Tap Reliability Project will install a new substation, beginning a phased approach to resolving reliability and power quality issues for customers served by a 26-mile long older-generation radial 55 kV transmission line. These major backbone infrastructure projects are described in detail in Exh.

DJL-7. Major projects already in implementation by Project Delivery are discussed by Roque Bamba in Exh. RBB-1T.

Q. How much is PSE's proposed investment to improve reliability and automate the grid?

A. Between January 1, 2025 and December 31, 2026, PSE will make investments to complete planned work to improve reliability and automate the grid as summarized in Table 11.

Table 11. Planned investments to improve reliability and automate the grid, by category, from January 1, 2025 through December 31, 2026.

Electric Programs	Capital Investment ($ Millions)
Automation	134.1
Cable Remediation	77.3
Circuit Modernization	125.4
Electric System Upgrades	60.4
Submarine Cable Mitigation	15.00
Voltage Reduction	12.6
Microgrid & Energy Storage Pilots	1.4
ADMS Advanced Apps	4.2
Major Backbone Infrastructure	19.6

A comprehensive discussion of these investments to improve reliability and automate the grid is provided in the fourth exhibit to this testimony, Exh. DJL-5. Major backbone infrastructure projects are described in detail in Exh. DJL-7.

E. Investments Made to Improve Reliability and Monitor the Pipeline System

Q. Please describe the investments to improve pipeline reliability and monitor the gas pipeline system between January 1, 2025 and the end of the rate plan.

A. Pipeline reliability and monitoring investments enable the gas Delivery System to operate safely and supply customers with the energy they require. To provide a firm level of service to customers year-round and on a peak hour design day, pipeline reliability investments reinforce high and intermediate pressure natural gas system components. Monitoring investments support pipeline reliability by enabling faster identification of operational issues, real time monitoring and response, and replacement of antiquated monitoring equipment. Table 12 lists programs that improve reliability and the ability to monitor the pipeline system.

Table 12: Programs to improve reliability and monitor the pipeline system.

Category	Program
Pipeline Reliability, Monitoring, and Alternate Fuels Readiness	Digital Monitoring
	Pipeline System Reliability
	Alternate Fuels Readiness

Q. What are the key or noteworthy projects or programs under this category?

A. The Digital Monitoring program includes projects to replace remote telemetry units that do not meet current federal requirements related to cybersecurity and have been identified as a risk by TSA. Additional programs replace analog paper-based chart recorders with electronic recording devices to provide near

real time information on the status of the system, improving response time and reducing labor required to retrieve and process paper records on a recurring basis.

The Pipeline System Reliability program allows PSE to deliver natural gas to its firm customers on a design day, identifying and implementing reinforcements to the system that reduce operational risks and operations and maintenance costs associated with implementing Cold Weather Actions, or manual interventions on system operation to ensure customer loads are satisfied under peak operating conditions.

The Alternate Fuels Readiness program informs development of measures to allow system capability to safely accept alternate fuels including clean hydrogen blends and larger amounts of renewable natural gas. The program focuses on demonstration projects and pilots in test environments to inform a safe incremental approach to workforce operational readiness and customer acceptance of clean alternate fuels.

Q. How much is PSE's proposed investment to Improve Reliability and Monitor the Pipeline System?

A. Between January 1, 2025 and December 31, 2026, PSE will make the investments summarized in Table 13 to improve reliability and monitoring of the pipeline system.

Table 13: Planned investments to improve reliability and monitor the pipeline system, by category, from January 1, 2025 through December 31, 2026.

Gas Programs	Capital Additions ($ Millions)
Digital Monitoring	5.4
Pipeline System Reliability	29.7
Alternate Fuels Readiness	3.0

A comprehensive discussion of the investments to improve pipeline reliability, improve monitoring of the gas pipeline system and prepare for safe delivery of alternate fuels is provided in the fifth exhibit to this testimony, Exh. DJL-6.

IV. OPERATIONS AND MAINTENANCE EXPENSE SUPPORT AND PERFORMANCE OBJECTIVES

Q. Please describe the operations and maintenance work associated with the energy Delivery System.

A. Most of the operations and maintenance ("O&M") expense is associated with labor cost and benefits for personnel and service providers that maintain and operate the Delivery System in a safe and reliable manner. These activities include emergency response for outages, odor calls, leaks, vegetation management, metering, property and easement maintenance, pipeline integrity mitigation, quality control, repair of damaged or leaking infrastructure, and patrols, inspections, and survey work.

Q. How does capital investment affect O&M spending?

A. In certain instances, capital investment has a direct effect on PSE's O&M expense as certain capital investments generate an associated O&M expense related to construction ("OMRC"). As prescribed by FERC accounting practices under the Uniform System of Accounts, when certain construction activities take place, there is an associated O&M component. For example, when replacing a pole, transferring the existing conductor from the pole being removed to the new pole is OMRC. The replacement of the pole is capital, but unless a foot or more of the conductor is replaced, the labor to move the conductor is an O&M expense. The largest contributor to the total amount of OMRC on electric system investments is labor associated with the transfer of conductor. There is very little OMRC associated with gas pipeline investments.

Some investments increase PSE's O&M expense indirectly. For example, when PSE installs new assets where there were previously none, the result will be an increase in ongoing O&M expenses since the newly installed assets will need to be inspected and maintained. For pipelines this is required by regulation. Another example is when new customers are added, there is an increase in O&M for meter maintenance.

Some investments save O&M expenses. For example, infrastructure that replaces existing failure prone assets (e.g., as part of aging infrastructure replacement programs) may result in a reduction in ongoing maintenance costs in the near term for that part of the system (e.g., fewer leaks requiring monitoring or fewer

unplanned power outages). Another example is where infrastructure is relocated from overhead to underground, tree trimming, pole inspection, and maintenance expenses are saved. A further example is where investments are made in control and monitoring equipment to enable outage detection with fewer manual field visits, reducing the need for "truck rolls" which saves O&M. A final example is when pipeline capacity is increased to eliminate or reduce the need for manual field augmentation during peak conditions called "cold weather actions." This also saves O&M by eliminating dispatch of personnel to manually control valves and regulators in the system, or inject compressed natural gas to maintain gas pressure in the Delivery System.

Q. Does the Delivery System plan incur O&M expenses?

A. Yes. The planned capital investments, integrity management, and repair activities related to electric and gas Delivery System infrastructure require approximately $27 million in OMRC and $40 million in O&M to implement from January 1, 2025 through December 31, 2026.

Q. Is there additional value to implementing the Delivery System plan?

A. Yes. The value of grid modernization and pipeline modernization investments is driven primarily by avoided costs and other tangible valuable benefits such as avoiding outages that the utility and customers pay for in indirect ways.

Q. Are there other drivers of O&M costs associated with the Delivery System?

A. Yes. In addition to the condition and performance of Delivery System assets, which is a direct result of the level of investment determined through the Delivery System Planning processes discussed in this testimony, there are several other parameters impacting O&M costs associated with the Delivery System. Some of these key influences on O&M costs are growth of the Delivery System, integration of distributed energy resources, increasing regulations for pipeline safety, and reduced methane emissions.

Q. How does growth of the Delivery System impact O&M costs?

A. The addition of assets, such as more miles of gas pipeline main or more electric distribution circuit miles, means more inspection and maintenance such as leak surveys or patrols or more trees to trim on a cyclical basis. Growth in miles of maintained infrastructure over the last ten years has been 6.3 percent for pipeline infrastructure and 17 percent for electric infrastructure. The addition of new customers results in more services to inspect, increased potential for odor calls requiring emergency response, and greater likelihood of outages to handle during storms. Over the last ten years, the net total of PSE customers has increased by over 130,000 electric customers and 92,000 gas customers.

Q. How does integration of distributed energy resources to support clean energy transformation impact O&M costs?

A. The addition of distributed energy resources requires interconnection studies, and increasing requests for interconnections require additional labor and resources to meet required timelines for response. In 2023 the quantity of requests for interconnection studies for distributed energy resource systems ranging between 100 kW and 500 kW increased by 750 percent. Increasing operational complexity is also resulting from distributed energy resource growth on the Delivery System. Operating and dispatching distributed energy resources in a manner that benefits carrying capacity of the Delivery System is expected to require more system operators, more staff to create and maintain procedures and training, and new electric distribution operational and maintenance practices.

Q. How do regulations for pipeline safety and reduced methane emissions impact O&M costs?

A. The PHMSA Mega Rule, implemented in three phases, modifies the definition of gas transmission, potentially increasing the miles of PSE pipeline categorized as transmission and requiring re-confirmation of pipeline properties such that maximum allowable operation pressure is based on records that are traceable, verifiable, and complete. The PIPES Act shortens leak repair timelines and requires changes to operation and maintenance practices that contribute to methane emissions, resulting in increased labor associated with integrity management programs.

Q. What is PSE doing to manage these increasing O&M expenses?

A. Joshua Kensok in Exh. JAK-1CT, discusses how PSE manages the level of overall O&M expenses for PSE, matching expenses with customer growth. From a day-to-day standpoint, some examples of how PSE manages these expenses are through targeting reliability and pipeline safety plans that reduce unplanned outages and leaks, ensuring robust negotiations relative to contractual obligations, labor, materials, and permit fees, and through programs that proactively avoid costs.

V. PROPOSED RELIABILITY, RESILIENCY, AND SAFETY PERFORMANCE METRICS

Q. Is PSE proposing any metrics to evaluate the Company's performance in reliability, resiliency, and safety?

A. Yes, PSE is proposing the metrics presented in Table 14.

Q. Is PSE proposing additions or modifications to metrics used to evaluate performance of reliability, resiliency, and safety over the duration of the multiyear rate plan?

A. Yes. PSE is proposing modifications to the calculation methodology of two metrics, SQI #3 – SAIDI and SQI #4 – SAIFI, for improved efficacy in evaluating benefits of electric Delivery System reliability programs. Additionally, PSE proposes to add a metric for Electric System Resilience to

indicate the percentage of customers served by an electric circuit with automated restoration capability.

The performance metrics supported by my testimony are summarized in Table 14 with proposed revisions noted. The table is followed by a discussion of rationale for the proposed modifications.

Table 14: Delivery System performance metrics proposed for duration of the multiyear rate plan.

Metric	Metric Definition	Metric Calculation	Proposed Revision
SQI #3 - SAIDI Excluding IEEE-Defined Major Events Adjusted to Exclude Catastrophic Days (SAIDISQI-3)	Annual average duration of sustained interruptions per customer for interruptions on outages five minutes or longer excluding major event and catastrophic days.	Sum of the number of customer minutes interruptions on outages five minutes or longer excluding IEEE 1366 TMED Exclusion Major Event Days adjusted for IEEE 1366 catastrophic event days divided by the average annual electric customer count.	Modify exclusion criteria to remove scheduled outages, prohibited access duration and Public Safety Power Shutoffs
SQI #4 NEW - SAIFI Excluding IEEE-Defined Major Events Adjusted to Exclude Catastrophic Days (New SAIFISQI-4)	Annual average frequency of sustained interruptions per customer for interruptions on outages five minutes or longer excluding major event and catastrophic days.	Sum of the number of customer interruptions on outages five minutes or longer excluding IEEE 1366 TMED Exclusion Major Event Days adjusted for IEEE 1366 catastrophic event days divided by the average annual electric customer count.	Modify exclusion criteria to remove scheduled outages and Public Safety Power Shutoffs
SQI #7 - Average Gas Safety Response Time	Annual gas safety response time performance. Average 55 minutes or less from customer call to arrival of field technician.	Sum of all natural gas emergency response times divided by the annual number of natural gas emergency calls received.	No changes

SQI #11 - Average Electric Safety Response Time	Annual electric safety response time. Average 55 minutes or less from customer call to arrival of field technician.	Sum of all response times divided by the annual number of electric safety incidents.	No changes
Electric System Resilience	Percentage of customers served by an electric circuit with automated redundancy.	Sum of customers served by an electric circuit with distribution automation divided by the total number of customers multiplied by 100.	New

Q. Please describe how you propose to modify the calculations of SQI #3 – SAIDI and SQI #4 – SAIFI.

A. PSE is requesting modification of SQI #3 – SAIDI and SQI #4 – SAIFI to exclude the duration and frequency of pre-scheduled outages for planned construction, certain outage events that are impacted or mandated by external entities, and future Public Safety Power Shutoffs.

Q. Why is it appropriate to change the calculation of SQI #3 – SAIDI and SQI #4 – SAIFI in the context of this rate plan?

A. By making this change, SQI #3 – SAIDI and SQI #4 – SAIFI will better measure true reliability performance during non-extreme unplanned events, not resilience during extreme events when PSE's ability to respond is encumbered and impacts of growing investments in system reliability and capacity to support clean energy transformation. This change will also help to alleviate conflicting objectives of achieving reliability performance targets while also maintaining the safety of

crews, customers, and the public in the course of responding to outage events, making planned improvements to the system, and mitigating risks associated with high wildfire threat conditions. PSE appreciates that SQI #3 – SAIDI does not have a penalty associated with it and the annual reliability report provides the opportunity to explain oddities that influence perception of PSE's performance. However, good metrics measure what can be controlled and inspire improvement through decisions and actions. SQI #3 – SAIDI and SQI #4 – SAIFI currently include outages and durations that skew what PSE is accomplishing while following a roadmap for reaching desired performance targets and preparing the Delivery System for growing loads of electrification in support of the clean energy transformation, requiring increased planned work on the system**.**

Q. How does PSE's proposal compare with other utilities?

A. PSE has made significant investments in reliability through traditional Delivery System enhancements. However, PSE's SAIDI performance, as currently measured, continues to be higher than local peers and the inclusion of scheduled outage and forced outage durations contribute to this. Benchmarking performed by Guidehouse in 2023 compared PSE's reliability reporting practices to those of 15 other utilities in the northwest and western regions of the United States, and reviewed the national landscape of reliability reporting through a comparison to reliability reporting requirements in eight states outside of Washington that spanned the Midwest and east coast, plus conducted a review of reporting practices at seven additional utilities outside the Northwest. This benchmarking

revealed utilities with top quartile reliability exclude planned interruptions and some peer utilities in the region exclude planned/scheduled outages from SAIDI and SAIFI reporting. Exclusion of such interruptions provides a more-effective reliability measurement for evaluating outcome of PSE's investments in reliability. The benchmarking research performed by Guidehouse is presented in Exh. DJL-9.

If PSE excluded scheduled outages, SAIDI performance would be closer to peers, as scheduled outages have constituted six to eight percent of PSE's SAIDI in the last five years. PSE anticipates scheduled outages will continue to increase as PSE's investments toward reliable clean energy increase, and while PSE will continue to plan and construct projects in a way that minimizes need for planned outages, excluding scheduled outages from SQI #3 – SAIDI and SQI #4 – SAIFI determination will mitigate a barrier to achieving this work at the pace required.

Also revealed by third-party benchmarking was that some utilities such as Pacific Power remove forced outage durations mandated by public authorities that are associated with ensuring safety. Interestingly, access restrictions are recognized and excluded from PSE's 120-hour service guarantee during major events, but not considered in other reliability related metrics. PSE experiences several events each year for which timely restoration is hampered by an external entity such as when the Washington State Department of Transportation ("WSDOT") closes highway access to where a repair needs to be made. This could be due to flooding, avalanche danger, landslide, traffic and/or railroad

accidents, or emergency restoration of non-PSE infrastructure or natural resources. For example, in 2020, WSDOT closed Highway 2 due to heavy snow for several days preventing repair of damage in the Skykomish area. Sometimes these types of situations occur during major events and are excluded when the T_{MED}[5] threshold is exceeded, but often times these are local events that do not reach the T_{MED} exclusion. PSE is not proposing to exclude outages that are hindered by natural limitations such as trees across a road, but focus on where external authorities mandate inaccessibility.

Additionally, as PSE's territory becomes more and more impacted by wildfire risk, entities such as fire personnel and Washington State Department of Natural Resources ("DNR"), will require outages for first responders to access wildfires and impacted areas safely. For example, in 2022, PSE was asked by DNR to de-energize a transmission line to allow for safe clearing of trees during an active wildfire response. PSE believes exclusion of outage durations in support of safety requests by first responders or local authorities is reasonable and promotes a focus on safety above meeting a metric.

Finally, as PSE prepares for the use of Public Safety Power Shutoffs, PSE proposes to exclude outage durations of Public Safety Power Shutoffs so safety remains PSE's top priority.

[5] TMED means the threshold value used to determine a major event day. TMED is determined for each utility pursuant to the IEEE Guide for Electric Power Distribution Reliability Indices 1366-2012.

By excluding these types of outages and durations, PSE's calculation of SQI #3 – SAIDI and SQI #4 – SAIFI comes in line with peer utilities and provides a more effective reliability measurement of the outcome of PSE's Delivery System investments.

Q. Please describe the new Electric System Resilience performance metric PSE is proposing.

A. The proposed Electric System Resilience performance metric will measure the percentage of customers served by an electric circuit with automated redundancy, commonly referred to as "self-healing grid," where automation is used to locate a fault, isolate the impacted area, and re-route power to restore service, all without requiring input from a human operator.

Q. How do you propose that this metric be calculated?

A. This metric is proposed to be calculated as a percentage of all PSE electric customers who are served by an electric circuit with automated redundancy, reported on a calendar year-end basis.

Q. Why is this metric appropriate to evaluate PSE's performance during this rate plan?

A. With increasing electrification of energy end uses, including transportation, accelerated by clean energy transformation, reliability of the electric Delivery System is becoming increasingly more important to customers. System

automation eliminates and reduces impacts of unplanned system interruptions, and also offers the capability to reduce impacts of planned outages, such as Public Safety Power Shutoffs, through greater sectionalizing of the Delivery System, enabling smaller and less-impactful outages in only areas where they are needed to address specific wildfire threat conditions. Measuring the percent of customers served by a circuit with automated redundancy provides an overall indicator of progress on resiliency enhancing investments through automation that are foundational to not only resiliency and reliability, but also to enablement of distributed energy resources and microgrid applications to enhance performance of the Delivery System.

Q. Please describe comparable metrics used by other utilities.

A. In contrast to well-established metrics for Delivery System reliability, there is currently a lack of standardized, attribute-based system resilience metrics in use by utilities related to generation, transmission, and distribution systems. This is discussed in a recent publication by PNNL,[6] which contrasts established performance-based metrics with developing attribute-based metrics for use in informing system resiliency evaluation and planning. As a starting point for attribute-based metrics that can be evaluated on a consistent and continuous basis, independent of disruption conditions upon which performance-based metrics are calculated, PSE is proposing to track percentage of customers served

[6] K. Kazimierczuk, M. B. DeMenno, R. O'Neil, B. Pierre, "Resilient Electric Grid: Defining, Measuring, and Integrating Resilience into Electric Sector Policy and Planning," Pacific Northwest National Laboratories, Bosque Advisors, and Sandia National Laboratories, September 2023.

by an electric circuit with automated redundancy. This metric is an indicator of system adaptiveness, or the ability to adapt to a shock to normal operating conditions, as well as system recoverability, or the ability to recover quickly from a potentially disruptive event. This metric will serve as an indicator of progress on programmatic approaches to advancing system automation.

VI. STORM DEFERRAL

Q. Please describe PSE's IEEE qualifying storm events between November 19, 2021 and December 31, 2022.

A. PSE experienced eight IEEE qualifying storm events between November 19, 2021 and December 31, 2022. Details regarding the extent and type of event, system and customer impacts, and qualifying triggers, are described in my seventh exhibit, Exh. DJL-8.

VII. CONCLUSION

Q. Does this conclude your prefiled direct testimony?

A. Yes, it does.