PUGET SOUND ENERGY

2022 ANNUAL REPORT

OF ENERGY CONSERVATION ACHIEVEMENTS

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Executive Summary

Puget Sound Energy's (PSE's or The Company's) Customer Energy Management (CEM) department presents this Report of 2022 Conservation Accomplishments (Annual Report or Report), satisfying WAC 480-109-120(3). This Report details 2022 initiatives, activities, and adaptive management steps, taken to meet the expectations of PSE customers and fulfill the savings goals of energy efficiency programs funded by the Electric and Natural Gas Conservation Riders.

Throughout 2022, the COVID-19 global pandemic economic repercussions continued to be a key consideration influencing numerous elements of program performance. Readers will note the extensive adaptive management that program staff applied to address a wide variety of pandemic-related issues, including skilled labor shortages, product shortfalls, supply chain issues, and additional significant impacts to customers.

A. 2022 Results

Table 0-1 Energy Efficiency 2022 Savings and Cost-Effectiveness Results

2022	Savings	Expenditures	Total Resource Cost	Utility Cost
Electric Actuals (MWh)	244,343 *(27.9 aMW)*	$99,157,281	1.98	2.29
Percent of Goal	*81.8%*	*80.3%*		
Goal/Budget	298,672 *(34.1 aMW)*	$123,416,791		
Natural Gas Actuals (Therm)	4,670,011	$24,507,227	1.21	1.74
Percent of Goal	*73.9%*	*98.4%*		
Goal/Budget	6,318,213	$24,904,543		
Savings are stated in terms of first-year figures, at the customer meter, without line loss.				

1. Key 2022 Results Drivers

Program reviews in Chapter 1 extensively discuss the key drivers of programs' savings and expenditure results. Supporting teams, such as the Verification team, Energy Efficient Communities (EEC), and Energy Advisors are discussed in Chapter 2 and provide important contributions to the Portfolio's savings and adaptive management efforts. PSE provides high-level summaries below.

a. *Ongoing Barriers to Achieving Energy Efficiency Savings*

In the third year since the onset of the pandemic, programs in 2022 began to see improvements in customer participation; however, many continue to be deeply constrained by the pandemic's lingering economic effects.

One of the most significant challenges facing customers is inflation. Higher prices for raw materials, shipping, and other expenses have led to increased project costs, making existing incentives seem less favorable for overall efficient project affordability.

Another challenge facing businesses is rising interest rates. As economies begin to recover from the pandemic, central banks are raising interest rates to keep inflation in check. This can make it more expensive for businesses to borrow money, which can limit their ability to invest in new projects or expand their operations.

Supply chain disruptions also continue to affect the ability to obtain efficient equipment. The pandemic has caused significant impacts to global supply chains, making it difficult for businesses to get the products they need to operate. In 2022, PSE saw signs of some supply chains regaining stability and product availability. PSE expects this positive trend will continue.

Skilled labor shortages continue to be a significant challenge for businesses. The pandemic has led to a shift in the labor market, with many workers leaving their jobs or transitioning to new industries. This has made it difficult for businesses to find qualified workers, particularly in industries that require the specialized skills required to install efficient equipment.

Code changes in the service territory at the city, state, and federal levels continue to raise baseline equipment standards, reducing efficient opportunities and measure savings. Code changes have also started to shift customers away from natural gas equipment and toward electric. The increasing push toward electrification in general will continue to erode natural gas savings.

In 2022, PSE staff worked diligently to continuously adjust programs to mitigate the effects of the above issues through adaptations such as limited time offers, targeted marketing, increased distributor outreach, larger incentives, and personalized commercial customer training.

b. *Savings*

In this section, PSE highlights key contributors to 2022 electric and natural gas savings in both the Residential Energy Management (REM) and Business Energy Management (BEM) sectors. Individual and comprehensive program reviews are provided in Chapter 1.

i. Contributors to Higher-Than-Expected Savings

- The Residential Midstream HVAC and Water Heat program exceeded its electric goal by 11 percent, or almost 2,000 MWh.
- The Large Power User Schedule 449 program exceeded its electric goal by 56 percent, or more than 4,000 MWh.

- The Commercial/Industrial Retrofit program exceeded its natural gas savings goal by 41 percent, or almost 250,000 therms.
- The Commercial Midstream HVAC and Water Heat program exceeded its natural gas savings goal by 44 percent, or over 200,000 therms.

The Residential Midstream HVAC and Water Heat program exceeded electric savings, primarily due to enhanced contractor engagement to determine bottlenecks and work with distributors to address issues, work on best practices, and discuss barriers and misconceptions.

The Large Power User Schedule 449 was able to exceed its electric goal by creating a second, competitive phase RFP to utilize unused funding. Three additional projects from this open-ended submission period helped achieve higher-than-expected savings.

The Commercial/Industrial Retrofit program exceeded natural gas savings targets for 2022. This was largely due to the development of one very large steam plant decentralization project.

The Commercial Midstream HVAC and Water Heat program exceeded its natural gas savings goal. This is due, in large part, to general commercial market improvement and business owner motivation to rush natural gas projects through before commercial code eliminates natural gas water heating technology as an option.

ii. Drivers of Lower-Than-Expected Savings

- CEM's largest program in the portfolio, Commercial/Industrial Retrofit, fell short of its electric savings goal by 24 percent, which accounted for almost 18,000 MWh.
- The Commercial/Industrial New Construction program was 57 percent short of its goal, or almost 17,000 MWh.
- The Multifamily Retrofit program fell short of its electric and natural gas savings goals by 45 percent and 67 percent, respectively, or over 4,000 MWh and almost 25,000 therms.
- The Home Energy Reports natural gas program finished under its goal by 46 percent, or over 1.2 million therms.
- The Multifamily New Construction program fell short of its electric and natural gas goals by 30 percent and 62 percent, respectively, accounting for almost 1,400 MWh and over 214,000 therms.
- The Commercial Foodservice program fell short of its natural gas goal by 61 percent, or over 177,000 therms.

An overwhelming majority of programs experienced lower-than-expected electric and natural gas savings in 2022. Customers faced numerous barriers to participation that affected project costs and ability to implement projects as discussed above.

The Commercial/Industrial Retrofit and New Construction programs ended 2022 with lower-than-expected electric savings. Fewer projects and low electric customer participation, coupled with tight labor markets, hampered business owners' ability to utilize incentives.

The Multifamily Retrofit program struggled with both electric and natural gas savings. Supply chain issues and customer reluctance to participate in the high-inflation environment were primary factors.

The Home Energy Reports program finished significantly under its natural gas savings goal due to an evaluation that observed lower-than-expected results.

The Multifamily New Construction program dealt with lower-than-anticipated participation due to higher code baselines. However, some of this savings shortfall is offset by reporting savings for heat pumps and water heaters in the midstream program.

The economic disruptions of the past several years have greatly impacted the Commercial Foodservice program. The hospitality industry continues to operate on thin margins due to labor markets, gas prices, and food costs, while also dealing with continued supply chain disruptions for efficient products.

C. *Expenditures*

The majority of 2022 electric and natural gas expenditures finished the year under budget, with a few key exceptions. Exhibit 1, Supplement 1: *2022 Actual Expenditures Compared to Anticipated Spends*, provides a program-level comparison of costs incurred by budget category. The Electric portfolio finished under budget, while the Natural Gas portfolio finished close to budget. Electric savings variances were roughly commensurate with expenditure variances while natural gas savings had a greater percent variance below anticipated than expenditure did.

Nearly all savings programs that varied from their anticipated expenditures also realized a commensurate increase (or reduction) in their planned savings, with the notable exception of Home Energy Reports where planned expenses were still incurred even though evaluated savings were lower than expected. Throughout 2022, program staff continuously improved efficiencies and proactively managed expenses, resulting in lower-than-expected ancillary costs, such as the Marketing, Materials, and Miscellaneous categories.

Many costs were below their anticipated spending levels, due largely to circumstances described in the savings section above. Some programs experienced project delays in 2022 and anticipate projects moving into 2023, which could result in increased spending levels in the last half of the biennium.

Very few programs ended 2022 over budget. Of those that did, most reported proportional over-target savings. It is important to note that the Efficiency Boost program ended close to 100 percent budget, but any savings are attributed to other programs in the portfolio. This is due to the program's increased rebate amounts for various measures within the Single Family Space Heat, Water Heat, Weatherization, Appliance, and Smart Thermostat programs. This improved access to efficiency for moderate-income customers who may not qualify for low-income programs.

d. *Pilots and Pilot-Analogous Initiatives*

The Efficient Program Guide pilot was launched in October 2020 to help PSE residential customers choose energy efficient products. After careful consideration and deliberation, PSE decided not to continue the program past the end of 2022 due to the low number of return visits, marketing emails not prompting customers, and recording no statistically significant savings.

The Home Energy Display (HED) pilot, also known as the Single Family AMI pilot, was launched in December 2021 to assess if an in-home energy display, along with a supporting portal, can modify customer behavior enough to produce measurable energy savings.

The Small and Medium Business Virtual Commissioning pilot transitioned to a full program in early 2022. Due to this transition, 80 percent of the savings appear in the BEM area, while 20 percent are in the Commercial Pilots savings area.

PSE also engaged in numerous activities that were new and creative in nature, but they counted toward the penalty target. These are referred to as pilot-analogous initiatives and are detailed in the program discussions.

e. *Portfolio Support*

The work performed by Energy Efficiency's Program Support teams as well as Marketing, EEC, Events, and Energy Advisors contributed to conservation savings achievements in 2022. These organizations managed to continuously adapt to changing markets and pivot between virtual and in-person tactics in response to continued economic difficulties and impacts to customer segments.

The Communities Team has actively promoted energy efficiency and sustainability programs to various organizations and audiences through presentations, events, partnerships, and outreach activities. It has also created county profiles, identified completed projects for case studies, supported a Smart Thermostat promotion, engaged with small businesses, and followed up with recent program participants to propose further opportunities.

The Market Integration Team continued a robust energy efficiency messaging campaign across PSE's service area. In 2022, the team launched two featured campaigns: Earth Month in April and Energy Awareness Month in October and the remainder of Q4. Both campaigns generated impressive results, including 400,000 customer emails sent, over 500,000 social media impressions, and nearly 7,000 Energy Efficiency Pledges for April's Earth Month Campaign. Moreover, there were 10,200,000 total impressions and 58,000 unique page views for Q4/Energy Awareness Month. In April, PSE also launched a quarterly energy efficiency awareness customer survey to measure message receptivity. The results indicated that awareness among residential customers increased from a baseline of 49% to 53% in July and remained at 52% in October.

f. *Customer Experience*

In 2022, customers continued to feel the economic pressures associated with the pandemic and its recovery. In an effort to improve customer experience when engaging with CEM, and to increase savings acquisition, PSE implemented numerous strategies including:

- PSE engaged Named Communities (as defined in the Clean Energy Implementation Plan[1]) with tailored marketing and outreach efforts to improve engagement and encourage savings in neighborhoods that might participate at traditionally lower rates.
- PSE increased the rebate amounts for several programs to incentivize customers to participate and take advantage of the benefits of these programs.
- PSE enhanced its communications and marketing efforts by producing materials in multiple languages to better reach diverse customer segments and improve overall customer experience.
- PSE developed a Clean Buildings Accelerator program to help business customers understand and comply with Clean Buildings Law, making it easier for them to navigate the regulatory landscape and achieve savings.

g. *2022 Adaptation through Continuous Improvement*

In 2022, program staff adaptively managed offerings, customer engagements, and marketing tactics as the pandemic continued to affect program uptake. Improvements and adaptations undertaken to increase savings amidst the ongoing effects of the pandemic can be seen above in the Ongoing Barriers to Achieving Energy Efficiency Savings section.

The following list highlights some of the key improvements and adaptations Energy Efficiency implemented in 2022.

- Low Income Weatherization (LIW) program: In addition to geo-targeted marketing, PSE also increased many measure incentives by 30%, allowing implementation agencies to use other funding sources more flexibly for this no-cost customer offering.
- Increased incentives: PSE added incentives for many programs to drive additional participation.
- Mobile Home New Construction program: PSE added a natural gas measure to reach all available customers, expanding the program's reach and offering greater energy savings.
- Multi-Family New Construction program: PSE incorporated a central heat pump water heater incentive to encourage more developers to incorporate energy efficient technology in their buildings.

[1] PSE Clean Energy Implementation. "Chapter 3: Highly Impacted Communities and Vulnerable Populations, and Customer Benefit Indicators (CBI)." 1 Feb 2022, https://irp.cdnwebsite.com/dc0dca78/files/uploaded/2022_0201_Chapter3.pdf.

- Collaboration with electric utilities: PSE collaborated with surrounding electric utilities to provide incentives on dual-fuel projects, making it easier for customers to install more efficient and cost-effective energy solutions.
- Clean Buildings Accelerator program: PSE developed presentations, emails, and optimized its website to help customers comply with the state's Clean Buildings law. The company also leveraged the Chamber of Commerce and co-branded with other utilities that have Clean Buildings Accelerator programs, making it easier for customers to access information and resources.
- Business lighting new construction: PSE streamlined the business lighting workbook using the Building Area Method to reduce the application burden, making it easier for businesses to participate in the program and access energy savings.
- Commercial Strategic Energy Management (CSEM) program: PSE increased site walk-throughs to identify efficiency measures, allowing the company to offer additional incentives and improve customer satisfaction.
- Schedule 258 program: PSE offered a second competitive phase to utilize as much customer funding as possible, making it easier for customers to access incentives and participate in the program.

h. *Equity Focus*

CEM advanced its efforts in 2022 to more equitably design and deliver programs in 2022 by focusing on bringing its programs and incentives to Named Communities in alignment with the goals from the Clean Energy Transformation Act. During the year, the Market Research team improved a dashboard for CEM staff to assess participation in programs by customers located in highly impacted communities and within geographically defined areas where vulnerable populations are highly represented. Program staff are beginning to leverage this data to adapt offerings and to make it easier for these individuals to participate. Additionally, CEM hired a full-time product manager of equity. This individual is accelerating the department's journey to increase equitable program design and delivery. The following list highlights some of the efforts the CEM team implemented to bring an equity focus to its programs:

- The Low Income Weatherization Program leveraged email and postcard campaigns to specifically reach customers who could benefit from weatherization services, as identified in PSE's low-income needs assessment in 2020.
- The Residential Space Heat Program conducted a digital marketing campaign tailored to reach named communities.
- The Residential Water Heat Program improved its website by providing more information on how to participate in the program and the criteria for qualification.
- The Residential Appliances Program increased incentives for income-qualified customers as part of the Efficiency Boost offering, helping them afford energy-efficient appliances that will reduce their energy bills.

- The Smart Thermostat Program increased rebates for income-qualified customers as part of the Efficiency Boost offering, and specifically targeted lower-income households, seniors, and customers in older housing.
- The Efficiency Boost program transcreated its income qualification form into Spanish to make it more accessible to Spanish-speaking communities.
- The Home Energy Report Program started sending reports to 40,000 low-income customers, providing them with personalized energy-saving tips and advice.
- The Multi-Family New Construction Program implemented 50% higher incentives for affordable housing projects.
- The Multifamily Retrofit program implemented higher incentives for moderate income properties.
- Finally, the Communities Group conducted in-language presentations and collaborated with local community-based organizations to ensure that these programs and initiatives are accessible to all communities, regardless of their language or cultural background.

2. Compliance

In addition to PSE's reporting and planning compliance filings, Customer Energy Management's key compliance reporting vehicle is Exhibit 7: *Requirement Compliance Checklist*. Each requirement type (according to docket number) is highlighted in a different color in the Exhibit for easier reference.

Exhibit 7 contains the comprehensive list of satisfied requirements.

The below list outlines the primary conservation-related requirement documents[2] that govern Energy Efficiency's operations:

- RCW 19.285 and WAC 480-109;
- Exhibit F, the 2002 Stipulation Agreement, Docket UG-011571;[3]
- The 2010 Electric Settlement Agreement, Docket UE-100177; and
- Order 01, Attachment A of Dockets UE-210822 and UG-210823.

[2] PSE also discusses Settlements and Orders related to the 2008 Merger Agreement, the 2017 General Rate Case Agreement, and the 2018 Macquarie Settlement in specific program reviews.

[3] The electric Stipulation Agreement, Docket UE-011570, was vacated by Order 05 in Docket UE-100177.

I. Customer Programs

This chapter is intended to provide an overview of all PSE's customer conservation programs, presented in order of their Conservation Schedule with a brief description of the program and its specific results and achievements for the 2022 program year. As applicable, each program overview will also highlight adaptive management, pilot-like initiatives, attention to equity focuses, and key variance drivers.

A. Residential Energy Management

The following discussion addresses results and accomplishments in the REM sector.

1. Low Income Weatherization

Schedules E/G 201

The Low Income Weatherization (LIW) program assists low-income residential customers to improve the energy efficiency of single family residences, multifamily structures and manufactured/ mobile homes.

In 2022, the goal of PSE's LIW program was to continue to lessen the energy-cost burden of lower-income customers by improving the energy efficiency of their residences and educating these consumers on routine ways to reduce their energy use and costs. Program efforts built on the existing model and continued to focus on partnerships with assistance agencies and leveraged PSE programs such as bill-payment assistance.

Key stakeholders include: low-income gas and electric customers; county and municipal low-income weatherization agencies in the PSE service area; Washington State Department of Commerce (Department of Commerce or Commerce); and participating weatherization contractors and suppliers.

a. *Low-Income Weatherization Funding*

For those projects receiving PSE funding combined with other state and federal funding, income eligibility is determined in accordance with Department of Commerce policies and procedures.

Residential LIW provides funding of many cost-effective home weatherization measures for low-income customers receiving gas and/or electric heat from PSE. Some measures that do not meet standard cost-effectiveness tests may also be approved. Measures funded may include conservation measures that are cost effective consistent with the Department of Commerce's Weatherization Manual and those measures identified through the priority matrix in the Weatherization Manual.

In addition, this program provides funding for energy-related repairs and energy education. An energy-related repair is a repair that is necessary (1) to install a weatherization measure properly, (2) to protect the health and/or safety of the occupants, (3) to address an existing problem that weatherization could aggravate or (4) to protect the integrity of the installed measure.

Examples include but are not limited to:

- repairing roof leaks;
- electrical inspections and repairs;
- mold/mildew remediation;
- rodent, insect and pest extermination;
- bath and kitchen ventilation upgrades; and
- furnace or water heater repairs or replacement.

i. Sources of Funding

Sources of LIW funding include, but are not limited to, the Conservation Rider, Company funds (Shareholder), BPA credits, or other federal or state government programs.

Other ad-hoc funding may include, but is not limited to:

Special Contract Funding

Per stipulations outlined in the special contract between Microsoft and PSE and approved by the Commission — established as a part of the Settlement Agreement in Docket UE-161123 — PSE started to accrue dollars that the LIW program will manage for energy efficiency projects, emerging technology, distributed generation, or repairs necessary to install energy-efficiency measures.

Macquarie Transfer Settlement Commitment #46

On March 7, 2019, the Washington Utilities and Transportation Commission issued a Final Order approving and adopting without condition a full multiparty settlement, of which commitment #46 states:

"46. Puget Holdings shall make a one-time contribution from shareholder funds in the amount of $2 million to the Low-Income Weatherization Program to be disbursed over a five-year period."

ii. 2022 Ad Hoc Funding Disposition

In 2022, the LIW program met all funding requirements. See below for Ad Hoc funding 2022 accomplishments:

Special Contract Funding

PSE accumulated approximately $90,000 in 2022 to be applied to future CEM projects, bringing the combined total, including 2019-21 funds, to approximately $330,000. At the end of 2022, PSE, through a contribution agreement with the Washington State Housing Finance Commission, applied most of the accumulated funds to financial assistance for the Lummi Indian Business Council in the amount of up to $300,000. The assistance was to install solar panels and related renewable energy equipment on facilities of the Lummi Nation for the purpose of serving members of that community.

Macquarie Transfer Settlement Commitment #46

By the end of 2022, the program had spent a combined total of just over $626,000, which includes all spending between 2019 and 2022.

b. *2022 Program Accomplishments*

In 2022, the LIW program fell short of electric spending targets by 23 percent and exceeded natural gas targets by 33 percent. Likewise, electric savings were below target by 31 percent, and natural gas savings were above target by 34 percent. The electric program, while starting to recover from the pandemic, still experienced delays and production impacts. A sizeable natural gas project was completed in 2022, which contributed to the program's ability to exceed spending and savings targets. The LIW program served a total of 1,084 housing units in 2022. Separated into housing sector types, 217 were single family homes, 646 were multi-family homes, and 221 were manufactured home residences.

c. *Adaptive Management*

The LIW program also demonstrated continuous improvement through the development of an action plan in response to the Low Income Needs Assessment (LINA) Phase 2 report that was released in December 2021. For context, PSE partnered with internal and external stakeholders to develop the Phase 2 report, which was the qualitative complement to a LINA Phase 1 report that was released October 2020.

From the LINA action plan, PSE consulted with The Energy Project (TEP) and implementing agencies to identify the top deliverables for 2022: 1) targeting marketing + high-touch efforts; 2) updating program incentives and measure costs to keep pace with inflation; and 3) working with commerce to address workforce shortages for the State Weatherization Assistance Program (WAP). See below for 2022 status and accomplishments associated with each deliverable:

iii. Targeting Marketing + High Touch Efforts

In 2022, marketing tactics for the Home Weatherization Assistance program included paid social media advertising, email campaigns, print advertising including fliers, ads in the PSE's customer newsletter (The Voice), and postcards mailed to homes. A portion of the marketing budget was also spent on the transcreation of the PSE website and printed materials for non-English speakers. PSE focused email campaigns and a postcard campaign to target high-risk or vulnerable customers based on income level, Named Communities status, and high energy burden customers. The program was also featured at many in-person and virtual events, and it was highlighted during the Spanish Assistance Campaign.

iv. Update Program Incentives and Measure Costs

In 2022, absent updated Commerce measure costs, PSE applied inflation multipliers to measure costs as a basis to keep agency incentives at pace with inflation. In addition to updating measure costs and incentives for the 2023 program, PSE made some measures available to agencies in 2022 to provide more immediate relief from the pressures of inflation.

v. Work with Commerce to Address Workforce Shortages

In 2022, Commerce focused its efforts on a statewide agency working group, consisting of agency representatives and The Energy Project.

d. *Pilot-Like Initiatives*

See Special Contract, 2022 update, above.

e. *Equity Focus*

By design, the LIW program is focused on a specific segment of PSE customers: those who meet specific income criteria. In addition to income qualification, to further target program marketing, PSE focused email campaigns and a postcard campaign to target high-risk or vulnerable customers based on other criteria including Named Communities status and high energy burden. For more detail see Adaptive management above (c), Targeted Marketing + high-touch efforts.

f. *Key Variance Drivers*

In 2022, the LIW electric program finished the year under target. The primary drivers for electric variances were production impacts from pandemic-related circumstances, including supply chain interruptions and workforce shortages. Of note, however, the electric program did see an uptick of multi-family production in the fourth quarter.

While PSE further targeted Named Communities in its marketing and outreach tactics, the program's marketing spend was lower than budgeted for 2022. This is because the program had to weigh its goal to reach income-eligible customers in Named Communities with the 1) reality of the pandemic's impact; 2) initial distribution of federal infrastructure funds to agencies, resulting in a balancing of priorities with utility and state funds; and 3) limited agency capacity in general — which could increase agency waiting lists and result in poor customer experience.

g. *Measure Highlights*

Table I-1 provides a high-level summary of LIW measures installed in 2022. The figures represent unique dwelling units (e.g., homes, apartments, manufactured homes, etc.), and do not always correlate to the total number of measures installed. For instance, for each "LED Lamp" category indicated, there could be substantially more than one LED lamp installed. Indicated values also include measures approved through the agencies' application of the SIR test in certain instances.

Table I-1: Low Income Weatherization Measure Highlights

Measure Type	Measure	Electric	Natural Gas
Controls	Thermostat - ELV	3	
	Thermostat - ESS		1
	Boiler (SIR)		2

HVAC	Ductless Heat Pump	180	
	Ductless Heat Pump (SIR)	1	
	Energy Recovery Ventilator (SIR)	12	
	ES Whole House Ventilation	195	
	Furnace >95%		34
	Heat Pump	33	
	Integrated Space and Water Heat		2
Water Heat	Gas Water Heater		5
	Tankless Water Heater		6
	Water Heater Pipe Insulation	109	38
Weatherization	Air Sealing	338	
	Duct Sealing	25	65
	Insulation - Attic	115	75
	Insulation - Duct	6	59
	Insulation - Floor	158	52
	Insulation - SOGI (SIR)	2	
	Insulation - Wall	18	43
	Insulation (SIR)	1	1
	Structure Sealing	159	83
	Windows	10	6

2. Single-Family Existing

Schedules E/G 214

Single Family Existing (SFE) programs implement cost-effective, targeted, residential energy savings using a menu of prescriptive and calculated efficiency measure incentives, including rebates for single-family existing structures. Existing single family structures are defined as residential dwellings that include: structures with four or fewer units that are attached by a contiguous roofline; manufactured or factory-built homes permanently affixed to a concrete foundation; and manufactured or factory-built homes that are transportable. Single-family existing residences exclude structures that are currently under construction. Prescriptive rebates are intended to facilitate participation by customers, contractors, manufacturers, distributors, retailers, developers, and trade allies. They also provide administrative efficiencies for PSE in meeting energy efficiency goals.

Note: Multifamily campuses that have a mixture of existing residential building types, including buildings with four attached residential units or fewer, are served under the Multi-Family Retrofit Program; schedules E217 & G217.

a. *Retail Engagements*

In 2022, program staff focused on driving customer awareness through collaborative efforts with local retailers. Many Single-Family Existing measures are already available directly to customers through local retailers, making partnerships with retailers a crucial pathway to customer engagement. The following discussions highlight some of the key 2022 retail-based engagement initiatives.

i. Field Visits

PSE's field services provider filed more than 1,800 reports for retail store visits in 2022. During these visits, field representatives placed point-of-purchase signage, confirmed product pricing and PSE rebate accuracy, touched base with store managers and employees, and answered customer questions.

ii. Trainings

In 2022, PSE's field services provider conducted over 500 retail trainings, reaching over 600 store associates. Field representatives educated retail staff on PSE's rebate programs for lighting, smart thermostats, appliances, and electric hybrid water heaters.

iii. Events

PSE held two in-store events during Q4 2022. Event staff set up a table at the front of the Bothell Home Depot and Issaquah Home Depot. The purpose of the events was to educate customers and store associates on PSE's rebates for lighting, smart thermostats, appliances, and electric hybrid water heaters available in retail stores. The event included prize raffles to encourage customer and store associate participation. The smart thermostat limited-time offer, which was available during the event dates, was featured as well.

b. *Program Reviews*

The following discussions provide 2022 recaps for the individual programs that comprise the Single Family Existing (SFE) suite of offerings.

i. Retail Lighting

PSE offers incentives to purchase energy efficient lighting measures through instant rebates and limited time offers. The rebated lighting products can be found in brick-and-mortar retail stores, as well as the PSE Marketplace online store.

2022 Program Accomplishments

In addition to partnering with manufacturers to rebate high-quality LED fixtures for customers, the PSE Marketplace also expanded the program's reach online. The marketplace was leveraged to offer instant rebates on lighting. In 2022, PSE sent targeted emails promoting string lights, indoor fixtures, outdoors fixtures, and T8 fixtures to electric customers. The increased awareness helped drive program participation and boost sales. Additionally, PSE partnered with Costco to do several endcaps throughout 2022 featuring string lights and an outdoor fixture. The higher visibility of the products in stores led to increased sales.

Adaptive Management

PSE conducted shelf surveys in a sampling of retail locations within the service territory to stay informed of the impact to LED market share from Washington State's House Bill 1444, the Federal Department of Energy ruling, and consequent PSE program revisions. In order to help meet savings targets, PSE raised the rebate for outdoor fixtures as a limited-time offer running in September through the end of 2022.

Key Variance Drivers

The Retail Lighting program completed 2022 under savings target and on budget, primarily due to the reduced rebate program offerings. LED fixtures have a limited target customer base, as they require installation. This suggests a narrower customer segment of homeowners with do-it-yourself (DIY) propensities. Additionally, fixtures are specific to design aesthetics, so a rebate is not a key influence on purchase decision. Fixtures also have higher starting retail prices, so a larger rebate is needed to entice sales. In November, a billing error for 2022 field services invoices was discovered. Payment on all Q4 2022 invoices for this vendor were paused while a thorough analysis was conducted to determine the correct credit amount to PSE. This caused field services expenses expected for Q4 2022 to be processed in 2023.

Equity Focus

The Retail Lighting program makes instant discounts on lighting available in a wide variety of stores that serve all customer groups and geographies within the PSE service area. The PSE Marketplace, an online shopping platform, offers instant lighting rebates to all residential customers with internet access.

ii. Downstream Space Heat

The Space Heat program delivers incentives and drives installations of home heating systems, including, but not limited to: integrated space and hydronic heating systems, natural gas furnaces, boilers, and heat pumps. The program includes delivery for customers purchasing products through contractors.

2022 Program Accomplishments

In 2022, the downstream space heat program increased contractor and customer engagement by presenting at Ask an Expert virtual events; developing partnerships with Energy Smart Eastside and Energize! King County heat pump programs; and by rolling out contractor training for new HSPF2 testing procedures. These efforts improved awareness and understanding of the PSE heat pump program, established PSE as a community partner for hybrid heating initiatives, and prepared stakeholders for industry-wide changes in 2023.

Adaptive Management

In Q4, the space heat program optimized program requirements, verification, and processing of ducted mini-splits serving whole-home. This effort increased rebates for qualified customers and increased savings for qualifying systems. Additionally, this program prepared contractors with industry heat pump testing requirements in relation to rebate requirements by preparing reference materials and online trainings.

Equity Focus

In 2022, the downstream space heat program allocated $50k specifically for digital marketing for Named Communities, promoting Space Heat and Efficiency Boost rebates in Q3 and Q4. The program also added Efficiency Boost information and calls to action on standard rebate webpages and customer collateral to increase awareness and participation.

Key Variance Drivers

The downstream single-family space heat program did not meet expected program savings goals; 8% below kWh target and 27% below therm target. Lower savings values are estimated to be due to yearlong inflation, additionally, therm space heat savings values may be reduced due to negative customer sentiment surrounding natural gas as seen in response to gas space heat marketing efforts.

iii. Water Heat

The Water Heating program delivers incentives and drives installations of water heating systems, including, but not limited to:

- electric hybrid heat pump water heaters (HPWHs)
- ENERGY STAR natural gas storage water heaters
- ENERGY STAR natural gas tankless water heaters

2022 Program Accomplishments

PSE, along with partner utilities, launched a validated coupon program that changed the retail instant discount rebate with an in-store coupon for HPWHs. This increases the customer awareness of getting a PSE rebate, while also allowing greater certainty that customers are using the appropriate channels for their rebate. For natural gas water heat, PSE updated webpages to include a sample invoice resource for customers to reference in order to make applications more successful.

Adaptive Management

PSE performed several adaptive changes to the program in 2022. In response to retailer concerns about contractor leakage that led retailers to ask partners for a solution, PSE and regional partners implemented a validated coupon to replace unvalidated instant discounts. This ensured that retailers stayed within the program, providing customers with continued access to a critical channel for DIY installations. The coupon was also an opportunity to act on contractor feedback regarding the retail channel by adding some validation to the process, while adding minimal barriers to getting a rebate. Additionally, PSE updated the program website to provide more targeted information on qualification and educational sources, leveraging Northwest Energy Efficiency Alliance (NEEA)-developed webpages on HPWHs.

Pilot-Like Initiatives

Regional partners performed a limited-time offer (LTO) on retail HPWHs, increasing the incentive from $500 to $650 in order to test the price sensitivity of customers given the rising costs of products. This LTO showed mixed results that coincided with the implementation of the validated coupon program model. Rebated water heater numbers were not as high as expected for the first two months of Q4, but with December seeing a 43 percent increase from the same month in 2021. Due to invoicing concerns in Q4 resulting in a pause in invoices associated with the retail field services vendor, including retail water heat invoices that impact savings, these results will be reflected in 2023.

Equity Focus

In 2022, PSE worked to improve access to income-qualified customers through higher Efficiency Boost rebates for gas and electric water with updated program webpages to provide more information to customers on how to qualify and participate. Program-specific webpages were also updated to include more connections to the Efficiency Boost program, providing more opportunities for customers to find and self-identify their qualification for the program. Awareness improvements increased natural gas water heat Efficiency Boost participation by 200 percent in the second half of the year.

Key Variance Drivers

The single-family water heat program finished 2022 at 37 percent under budget, 40 percent under savings targets for electric, and 23 percent below budget for gas. Savings were greatly impacted by high inflation throughout the year and price increases of an average of 34 percent for HPWHs in retail stores, while incentives remained the same. PSE attempted to mitigate this variance with a Q4 LTO, but as discussed before, results were mixed.

iv. Home Appliances

In 2022, this program offered incentives on ENERGY STAR front loading clothes washers for customers.

2022 Program Accomplishments

2022 Home Appliance program accomplishments include the introduction of higher rebates through the Efficiency Boost program for front loading clothes washers. This doubled the amount of the standard rebate, offering income-qualified customers more opportunity to upgrade their appliances.

Adaptive Management

In 2022, PSE focused efforts on ENERGY STAR front loading clothes washers to maximize savings and cost effectiveness. This allowed PSE to continue offering washer rebates to customers at a higher rebate, while maintaining a cost effective program. Additionally, PSE focused program messaging on high sales periods associated with appliances, such as Memorial Day, Labor Day, the Fourth of July, and Black Friday.

Pilot-Like Initiatives

Throughout the year, PSE increased messaging and awareness of income-qualified rebates for washers. This was an iterative process of introducing new, more prominent webpage messaging, as well as different secondary messaging in emails and other marketing efforts. This resulted in 280 percent more successful Efficiency Boost applications in the second half of 2022 compared to the first half. Additionally, PSE added more appliance related tips to customers' digital experience when logged in to their account on pse.com. This added ways to help inform customers on energy saving behaviors with appliances. Appliance-related tips saw a 168 percent increase in 2022 compared to 2021's engagement, suggesting that customers will still seek out PSE education on saving on appliances if rebates are reduced.

Equity Focus

PSE began making incremental steps toward an equity focus by offering increased incentives on front loading clothes washers for income-qualified customers under the Efficiency Boost program and made information regarding this offering easier to find on program webpages. Efficiency Boost participation for front loading washers increased 280 percent in Q3 and Q4 from Q1 and Q2.

v. Smart Thermostats

PSE offers rebates for ENERGY STAR-certified smart thermostats and PSE-qualified line voltage connected thermostats. Customers must heat their homes with a PSE fuel source to be eligible to participate in the program.

2022 Program Accomplishments

In 2022, Smart Thermostat program accomplishments included PSE transitioning the processing of Smart Thermostat rebates to its internal rebate processing team, improving the program's customer service and increasing payment options available to customers. To

encourage customer adoption of the technology, PSE successfully negotiated lower pricing with four thermostat manufacturers on the PSE Marketplace and increased its rebate to minimize the cost of the equipment. PSE also increased focused outreach activities in Named Communities and partnered with local community organizations to improve customer program awareness. The program was incorporated into PSE's Efficiency Boost offerings, a program created by PSE to provide moderate-income customers with higher incentives on energy efficient products.

Adaptive Management

In 2022, PSE transitioned the processing of Smart Thermostat rebates to its internal rebate processing team. The transition enabled PSE to better control the customer service experience, as well as add the option for customers to receive their rebate as a credit on the bill. A midstream component was also added to enable contractors to offer instant smart thermostat rebates to customers. Additionally, paper application forms were made available for applicants who were uncomfortable with utilizing the digital application platform. The line voltage connected thermostat qualifications expanded to include in-floor heating models as part of the program. Finally, program materials were printed in English as well as Spanish during limited-time offer promotions to expand the reach of the program.

Pilot-Like Initiatives

PSE negotiated special pricing with ecobee, Emerson, Nest, and Mysa to conduct limited-time offers in 2022. The sales were limited time offers that combined a special manufacturer discount with an increased PSE instant rebate on the PSE marketplace, allowing customers the opportunity to purchase a smart or line voltage connected thermostat for little to no cost. The increased PSE rebate was available on any qualified thermostat wherever sold for customers who opted to purchase from a retailer other than the PSE Marketplace. Many customers took advantage of the limited-time offer discounts. The 2022 rebate redemption levels were on par with those instant incentives offered online with manufacturer Nest in prior years.

Equity Focus

PSE began making steps toward creating a more equitable distribution of Smart Thermostats rebates in 2022. The program integrated Efficiency Boost rebates into the program implementation model, allowing customers with low-to-moderate income to access higher rebates on smart thermostats purchased at any time of the year, regardless of the model or manufacturer. The limited-time offer campaigns were also designed with higher rebates on higher-end thermostat models to make them as accessible to customers as lower-end models with fewer features. Marketing was targeted toward customers with lower incomes, seniors, and older housing demographics. Outreach and education efforts were also increased at local food banks and Community Based Organizations, particularly during the Mysa and Nest limited-time offer campaigns, where customers could purchase thermostats for as low as one dollar. Finally, promotional campaign materials were transcreated into Spanish for the Mysa, Nest, and ecobee campaigns.

Key Variance Drivers

The Smart Thermostat program met both electric and natural gas savings targets for 2022. This success was largely due to promoting instant rebates to customers via the PSE Marketplace and limited-time offers negotiated with manufacturers.

vi. Weatherization

The Single Family Existing Residential Weatherization Program provides rebates for the "shell" of existing residential structures, including windows, insulation, air sealing, whole house ventilation, and duct sealing. There are a wide variety of weatherization offerings, some directed specifically to mobile homes or moderate-income customers, while others focus on site-built residences.

2022 Program Accomplishments

In 2022 the PSE Weatherization program implemented sweeping process and customer journey updates to increase participation and streamline the customer journey. Weatherization was spotlighted at PSE's Ask an Expert community event, launched a first-of-its-kind limited-time offer, prioritized Efficiency Boost qualified customer participation, introduced new technology into its rebate offerings, and exceeded savings goals.

Adaptive Management

After observing decreased participation and a high volume of missing information for windows rebate applications, PSE investigated and reported on various solutions to improve the windows rebate customer journey: reducing customer frustration and increasing the number of windows rebates that are approved. PSE created and updated customer-facing collateral by providing sample documentation for customers to reference when submitting windows rebate applications and by revamping the downloadable windows rebate form, making it concise and better organized to reduce missing information. The windows webpage was rebuilt to clarify information and requirements, including a FAQ section with additional resources for customer education. PSE also developed and launched a windows marketing campaign and saw a 19 percent increase in program participation. These efforts have reduced windows-related customer issues by an estimated 95 percent and have stabilized and increased windows rebates participation and savings.

Pilot-Like Initiatives

In Q4 of 2022, the Weatherization program presented a limited-time offer, increasing all weatherization rebate amounts for single-family, manufactured homes, and Efficiency Boost customers by 50 percent. The participation during the limited time offer will be used to investigate the impacts of increasing weatherization rebate amounts, particularly for manufactured homes and Efficiency Boost customers. The Weatherization program also researched and implemented a new Advanced Duct Sealing rebate at the end of 2022, to launch in 2023, for single-family homes. This new measure allows customers opting for pressurized internal particle duct sealing to now qualify for a rebate. PSE plans to evaluate savings and update the measure accordingly with expected increased savings values by 2024.

Equity Focus

The Weatherization program webpage was updated to include callouts and links to Efficiency Boost rebate offerings to promote visibility and participation. PSE also combined the three single-family, manufactured homes, and Efficiency Boost windows rebate application forms to simplify the application process. PSE sent recruiting emails to weatherization Trade Allies encouraging them to register as Efficiency Boost rebate providers and saw a 40 percent increase in participating contractors. The Weatherization program implemented secondary Efficiency Boost messaging on marketing campaigns, again to maximize visibility and participation. In Q4 of 2022, the Weatherization program participated in the Thunderbirds sponsorship/activation, which is in geographical alignment with Named Communities. These activations promoted rebate programs, limited-time offers, and Efficiency Boost offerings.

Key Variance Drivers

The Weatherization program exceeded savings goals in 2022: 11 percent above the kWh target, and 8% above the therm target. At a time when multiple programs saw lower-than-expected participation, this program mitigated savings barriers with continuous improvements to both customer-facing materials and internal processing practices, while implementing innovative participation drivers and prioritizing equity initiatives.

vii. Home Energy Reports

Home Energy Reports (HER) are customized reports sent to participating residential electric and gas customers to help them better understand their home energy consumption, motivate them to conserve, and provide targeted calls to action tailored to help each customer save money and improve energy efficiency. In addition, these communications actively promote the usage of online self-service tools to help further educate customers about their energy usage.

2022 Program Accomplishments

The Home Energy Reports program successfully delivered 1,524,351 print reports and 3,695,573 email reports in 2022. PSE's Customer Engagement Tracker survey revealed that 89 percent of customers read the reports, including 94 percent of participants from the first HER pilot group that started in 2008. Nearly half of customers (45 percent) repored being motivated to take an energy savings action by reading the reports.

Adaptive Management

In 2022 PSE added a total of 175,000 report recipients across three waves, (Multi-family, Gas Only, and Low-to-Moderate income). The multi-family wave is digital only; recipients do not receive printed reports. PSE is exploring whether electronic-only report delivery care yields similar savings result to recipients who also receive periodic print reports.

Equity Focus

As stated above, PSE deployed a new wave of reports to a recipient group of 40,000 customers identified as low-to-moderate income. After report ramp up, for education and

awareness, the program's vendor has started showing estimated savings values for this group in November and December 2022.

Key Variance Drivers

Home Energy Report gas forecast decreased significantly (-1.2M therms) due to evaluations for 2020 and 2021 that showed lower savings than expected. These evaluations were completed after program goals were set in the 2022-2023 Biennial Conservation Plan (BCP).

viii. Efficiency Boost

2022 Program Accomplishments

In 2022, over 200 moderate-income customers took advantage of Efficiency Boost rebates. This is more than double the number of customers that received these rebates in 2021. Thermostats and appliances were added as measure categories to Efficiency Boost in 2022. These additions provided more opportunities for moderate-income customers to participate in PSE's programs. Additionally, two key collateral pieces — the program one-pager and Income Qualification form — were both transcreated into Spanish and featured on the website.

Adaptive Management

In 2022, the Efficiency Boost website was improved to include new messaging with a clearer call to action. Additionally, transcreated collateral was included on the website in order to help the program reach a broader audience. On top of the Efficiency Boost website improvements, Efficiency Boost information was better incorporated into other program websites, collateral, and rebate forms. Also in 2022, a new Efficiency Boost Marketplace was being developed. This will allow moderate-income customers to purchase thermostats for as little as one dollar. This marketplace launched in January 2023.

Equity Focus

The Efficiency Boost one-pager and Income Qualification form were transcreated, allowing Efficiency Boost to be marketed to a wider and more diverse audience. Additionally, Efficiency Boost continues to target general marketing (emails, social media advertisements) to ZIP Codes with a high percentage of moderate-income customers.

Key Variance Drivers

Overall, participation in Efficiency Boost rebates was significantly higher due primarily to: increased marketing, reductions in barriers to participation, and the addition of new measures (thermostats and appliances).

ix. Residential Midstream HVAC and Water Heat

The Residential Midstream HVAC and Water Heat program provides rebates to distributors and contractors for high-efficiency heat pumps, ductless heat pumps, and heat pump water heaters. These rebates were previously included with the downstream space and water heat

programs and are intended to increase sales by engaging distributors and contractors to reduce first costs and increase high-efficiency stocking practices.

2022 Program Accomplishments

In 2022, the program continued to experience growth with expanded distributor participation across technologies. Two large distributors expanded their participation into heat pumps where they had previously only participated in the HPWH program. In addition, manufacturer partners helped the program reach key decision makers at participating distributors, working toward growing participation for those distributors. These targeted distributor engagement and field services tactics contributed to PSE exceeding its savings goals for this program.

Program staff hosted a HPWH workshop in collaboration with the NEEA, the Plumber Heating and Cooling Contractors Association, Local Union 26, Comfort Ready Home, AO Smith, Bradford White, and Rheem. Over 100 attendees representing over 70 contractor stakeholders — including sales specialists, managers, owners, plumbers, and technicians — were able to earn continuing education units while they learned more about heat pump water heaters, regional program rebates and received valuable face time with manufacturer representatives, distributors, and midstream program staff. Additionally, the workshop provided insights on how to sell HPWH's and dispelled myths on venting and space requirements. Manufacturers indicated the attendance was record-setting and attendees requested that utilities make it an annual event.

Adaptive Management

In the early half of the year, stocking was low across the region for HVAC and water heating equipment caused by repercussions of the COVID-19 pandemic, supply chain issues, shipping delays, and component shortages. The new construction market was also impacted by the concrete labor strike in Seattle. This caused delays for HVAC and water heating installations for much of the summer. In addition, the program was impacted by the 2018 Washington State Energy Code that caused an increase in demand for NEEA Tier 3 HPWHs in new construction, which restrained availability in some cases for retrofit and replacement applications. NEEA Tier 4 HPWHs were also less available in the market for the majority of the year. This was due, in part, to the late Q4 launch of the AO Smith NEEA Tier 4 water heater. Inflation further impacted HPWH sales with repetitive price increases causing some HPWHs to double in price.

In this challenging climate, the program focused on three primary engagement areas: strategic distributor visits identifying who had stock and when; developing relationships with key partners to proactively address barriers and reduce administrative bottlenecks; and facilitating engagement with the contractors via joint distributor/manufacturer training on sales best practices, common barriers, and technology misperceptions.

In these discussions with distributors in 2022, the Program determined that contractor engagement was an area that required more focus. With distributor support, the planning for these efforts began in 2022, and in 2023, staff will be pivoting to include contractor engagement in outreach for residential HVAC and heat pump water heaters.

Pilot-Like Initiatives

The Program piloted a new tool to assist distributors in identifying underperforming contractors to target and promote participation in the program. This initiative provided select distributors with a list of all contractors that submitted rebate claims in prior years by total number of submissions. Outreach then worked with the distributors to create a process for following up with underperforming contractors to better understand barriers to submitting claims and to provide education and support whenever possible. This helped distributors better understand the program participation hurdles their low performing contractors faced and provided them with a targeted group of contractors for their outreach efforts. This tool will be rolled out in 2023 to the remaining distributors in the program. Aligning distributors' sales goals with program goals is an effective way to overcome program barriers.

Equity Focus

PSE's residential midstream program provides discounted high-efficiency equipment at over 55 distributor branches throughout the PSE service territory, serving a wide variety of customer groups and geographies. Equity topics were added to corporate level branch discussions in mid-year, as program staff tried to identify ways to improve equity in the midstream delivery model. In-language collateral was explored but ultimately discarded due to distributor feedback as unnecessary. Via 2022 distributor and contractor engagement efforts, PSE identified that contractor targeting activities — and learning how contractors are connected to specific demographics and what motivates them — is needed to fully understand how the midstream program serves highly impacted communities and vulnerable populations.

Key Variance Drivers

Despite the challenges noted above, and due to successful adaptive program management focusing on distributor and contractor engagement tactics, the program exceeded savings goals by 11 percent and came in 18 percent under spending budgets. Spending did not track directly with savings, due to the reduced new construction HPWH incentive and a previously identified spending forecasting error using HVAC tonnage instead of per unit calculations.

The program continued to gather national and regional intel on potential market changes and pressures tied to the Inflation Reduction Act including: delayed sales for customers wishing to hold out for IRA incentives, accelerated sales to secure equipment, pressures on price, and stocking impacts.

c. *Single Family Existing Measure Highlights*

PSE presents measures, grouped by types reported in 2022, in **Error! Reference source not found.**.

Table I-2: Single Family Program Measures by Type

Single Family Existing Program Measure Counts					
Program Measure Type		**Measure**	**Electric**	**Dual**	**Natural Gas**
Retail Lighting		Fixtures and Lamps	139,500		
Space Heat					
	Heat Pump	Ductless Heat Pump	1,910		
		Air Source Heat Pump	820		
	Boiler	HVAC Boiler			
	Combined	Integrated Space and Water Heat			
	Furnace	Gas Furnace			
Water Heat		Heat Pump Water Heater	470		
		Natural Gas Water Heater			940
Home Appliances		Dryers	800		
		Clothes Washer	1,590	2,010	
Web-Enabled Thermostats		Web-Enabled Thermostat	6,700		10,650

Single Family Existing Program Measure Counts, *continued*					
Program Measure Type		**Measure**	**Electric**	**Dual**	**Natural Gas**
Residential Showerheads		Thermostatic Restrictor	30		
Weatherization					
	Sealing	Insulation and Duct Sealing	170		1,000
		Air Sealing*	670,160		2,272,630
		Duct Sealing	60		190
	Insulation	Attic Insulation*	186,340		1,009,600
		Floor Insulation*	250,650		1,153,310
		Wall Insulation*	19,300		195,260
	Window	Single Pane to U30*	38,200		156,870
		Double Pane/Metal Frame to U30*	11,450		710
		Single/Double to U22 Triple Pane*	3,620		12,060
Home Energy Reports			2,112,220		1,792,810
Midstream HVAC and WH					
	Heat Pump	Ductless Heat Pump	4,760		
		Air Source Heat Pump	2,190		
	Water Heat	Heat Pump Water Heater	1,640		
* numbers are sq. ft. based					

3. Single Family New Construction

Schedules E/G 215

The following discussion applies to new construction, both “stick-built” single family homes and manufactured homes. The New Construction program acquires cost-effective energy savings from single-family new construction (single, duplex, and townhomes) and manufactured home new construction. The goal of each program is to increase the installation of energy efficient measures into new electric and natural gas-heated buildings constructed in the PSE service territory.

In the new construction marketplace, high-efficiency measures need to be specified and installed during design and construction. Otherwise, it may be many years before energy efficient changes to the buildings take place. Rebates and incentives are offered to eligible natural gas and electric PSE new construction developers, contractors, trade allies, and customers (cumulatively, the program refers to these as “partners”). The program also works with these partners to market energy efficient equipment to their customers. The programs encourage the purchase and installation of energy efficient products for their construction projects.

This program provides financial incentives to the above audience for both natural gas and electric residential and commercial meters. PSE provides a single “point of contact” to development teams for all energy efficient measures and/or upgrades. This allows PSE to maximize the energy savings opportunity in each development and reduce multi-program confusion for the customer.

For all of the conservation measures installed, CEM receives measure installation data directly from builders, developers, showrooms, and distributors. It is therefore possible to precisely track measure details.

a. *2022 Program Accomplishments*

The Single Family New Construction (SFNC) program continued to utilize NEEA’s Next Step Homes Performance Path program in 2022. Performance Path follows the Regional Technical Forum’s (RTF) approved standard modelling protocol, which provides a simplified method for estimating reliable whole-home savings through energy modeling.

PSE incentivized 65 Performance Path projects in 2022, compared to 22 in 2021. Participation in 2022 increased compared to 2021.

The Manufactured Home New Construction (MHNC) program continued to offer two tiers of rebates in 2022: one for ENERGY STAR manufactured homes, and one for the more efficient ENERGY STAR with NEEM+ home. In 2022, field service efforts continued to see success. PSE rebated 61 ENERGY STAR manufactured homes, and 6 ENERGY STAR with NEEM+ manufactured homes in 2022. This is an increase from 2021 indicating more retailers promoting the rebates.

b. *Adaptive Management*

The SFNC program had a change in payment structure and removed the 10 percent above code requirement, since PSE is now incentivizing heat pumps and water heaters through the Residential Midstream HVAC and Water Heat program.

The MHNC program added a gas savings measure to support all customers.

c. *Equity Focus*

The MHNC program helps increase service to lower-income customers and prevent lost opportunities in the sector.

d. *Key Variance Drivers*

The MHNC program was close to target in both spending and savings. The program anticipated more uptake in 2022 due to more retailer engagement through field services and this was largely realized.

e. *Measure Highlights*

PSE provides a general overview of prescriptive measure categories reported in the 2022 Single Family and Manufactured Home New Construction programs in Table I-3 and Table I-4.

Table I-3: Single Family New Construction 2022 Measure Summary

Single Family New Construction Measure Counts			
Measure Type	**Measure**	**Electric**	**Natural Gas**
SFNC	Built Green - 3 Star or Equiv. - 10% above WSEC	5	18
	Built Green - 4 Star or Equiv. - 20% above WSEC	5	22
	Built Green - 5 Star or Equiv. - 30% above WSEC	14	1

Table I-4: Manufactured Home New Construction 2022 Measure Summary

Manufactured Home New Construction Measure Counts		
Measure Type	**Measure**	**Count**
Manufactured Home	Incentive – Sales – NEEM 1.1 & 2.0	70
	MHNC: NEEM 1.1 Rated - Energy Star	40
	MHNC: NEEM 2.0 Rated - Energy Star	3
	MHNC: Sales Incentive - NEEM 1.1 Rated - Energy Star	30
	MHNC: Sales Incentive - NEEM 2.0 Rated - Energy Star	4

4. Multifamily Retrofit

Schedules E/G 217

The objective of the Multifamily Retrofit program is to increase the installation of cost-effective, energy-efficient measures into existing multifamily buildings with five or more attached residential dwelling units located in PSE's electric and natural gas service areas.

The team works with property owners, managers, trade ally contractors, tenants, and condominium Homeowner Associations (HOAs) to encourage program participation. The program also serves multifamily campuses that have a mixture of building types, including buildings with fewer than five units. Multifamily structures and campuses typically have opportunities for upgrades in the units, common areas, and building envelope.

Measures may include: windows, insulation, and air sealing enhancements; appliances, interior and exterior lighting, and HVAC upgrades; O&M improvements; behavioral modification; and calculated commercial upgrades such as central boilers, HVAC controls, and solar pool heaters. This program targets installation of energy efficient measures occurring during planned retrofit and replace upon failure. PSE updates its current measures list and incentives as needed.

The program continually researches and develops new and innovative means to achieve cost-effective energy savings. Examples may include behavioral-based programs such as web-enabled thermostats and Strategic Energy Management (SEM).

Web-enabled thermostats empower customers with both knowledge and control of their heating costs through a simple user interface accessed on their smartphone. SEM provides a holistic approach to multifamily property portfolios by engaging managers, maintenance staff, and residents to achieve energy cost savings through behavioral changes, operational improvements, facility maintenance, and attention to utility accounting.

Through effective customer education and implementation, PSE is continually exploring the impacts of how new technologies and energy management plans can contribute to the quantification of behavioral based energy savings.

a. *2022 Program Accomplishments*

The Multifamily Retrofit program served over 18,000 dwelling units in 2022, of which 90% participated in PSE's Direct Install offer. While this represents a large share of the overall participation, Direct Install contributed roughly 41 percent of total electric savings for the year. Windows contributed 33 percent followed by 14 percent from lighting projects and 4 percent from Air Sealing. The program worked to combat the effects of inflation through marketing and outreach efforts but ultimately fell short of the program targets for electric and gas, 55 percent and 33 percent respectively. The program team also collaborated with moderate-income (see equity focus) property owners and managers to take advantage of the increased incentives for this customer segment. The overall economy presented many challenges in 2022, including supply chain issues and inflation that appear to have slowed energy efficiency upgrades. However, one promising sign was a jump in ductless heat pump installations by both condo owners and apartment owners.

b. *Adaptive Management*

To help drive savings in 2022, the Multifamily Retrofit program standardized incentive increases that were previously only offered on a limited term for windows, insulation, and air sealing. This was done to offset rising labor and material costs as inflation affected the economy. PSE worked closely with regional Housing Authorities to offer new measures for in-unit TLED replacement. Working closely with low-income housing agencies continued to be an important component of the Multifamily Retrofit program, and it is worth noting that over 50 percent of the electric savings in 2022 was at Moderate Income sites.

c. *Pilot-Like Initiatives*

In an effort to maximize savings opportunities, program staff partnered with an electrical contractor to conduct direct install projects. While the electrical contractor replaced in-unit TLED's, bathroom fans, and/or line voltage thermostats, the program field team installed thermostatic tub starts and thermostatic shower adapters at some sites. Working in tandem reduced the disruption to the residents but was not without challenges since the electrical work takes significantly more time.

d. *Equity Focus*

The Multifamily Retrofit program has long been focused on customers with lower propensity to participate. PSE recently defined geographic areas called Named Communities to meet equity goals described in the Clean Energy Implementation Plan. Having defined Census block groups is powerful for marketing and outreach purposes, however, asking Multifamily stakeholders to review a map of Census blocks poses a burden for participating in elevated incentives. Therefore, in an effort to simply the process, the Multifamily Retrofit program conducted an analysis of real estate data that indicates the majority of affordable rent housing tends to be owned by single-proprietor owners rather than large-portfolio owners. The data also indicates the sites owned by single proprietors tend to be older and built before 1986. The program used this analysis and market data to define Moderate-Income as sites that meet any one of the following criteria: built before 1986, within Tribal communities, offering rent assistance, or listed as rent subsidized. These data points are easily known or found online, which enables contractors and property owners to quickly know whether a site qualifies for increased incentives. Using these criteria indicates the Multifamily Retrofit program served nearly 10,000 Moderate-Income customers in 2022, or 55 percent of all customers served.

e. *Key Variance Drivers*

As indicated earlier, the Multifamily Retrofit program fell well short of the savings targets for both electric and gas. The program saw fewer and smaller sized weatherization projects than in years past. There were numerous and prolonged impacts from rent moratoriums that lasted into 2022 and rising inflation costs, which seemingly caused property owners to cut back on energy efficiency upgrades. The adaptive measures the program implemented did increase the expected cost per savings, but, as mentioned, the majority of these increased rebates helped Moderate-Income properties.

f. *Measure Highlights*

Table I-5 provides a general overview of measure categories reported in the Multifamily Retrofit program in 2022.

Some measures, indicated by asterisks, are indicated in terms of square feet installed (e.g., insulation), dwelling units treated, or number of buildings.

Table I-5: Multifamily Retrofit 2022 Measures

Multifamily Retrofit Measure Counts			
Measure Type	**Measure**	**Electric**	**Natural Gas**
Air Sealing	Dwellings	367	
Lighting	LED Common Area (sites)	18	
	TLED Lamp	2,689	
HVAC	Gas Furnace		2
Heat Pump	Ductless Heat Pump	30	
Space & Water	Combined Space & Water Heat		4
Insulation	Attic Insulation*	301,155	286,028
	Floor Insulation*	35,892	
	Wall Insulation*	53,477	2,301
Power Strips	Advanced Power Strips	1,425	
Thermostat	Elect. Line Voltage Thermostat	26,173	
	Smart Line Voltage Thermostat	3,305	
	Smart Thermostat	1	
Ventilation	Mechanical Ventilation	231	
Water	Tub Spout	108	
	Residential Use Showerhead Restrictor	510	11
	Tankless Water Heater		2
Windows	Double Pane*	96,504	1,368
	Triple Pane*	656	

*denotes sq. ft. based measurement

5. Multifamily New Construction

Schedules E/G 218

The Multifamily New Construction (MFNC) program provides comprehensive whole-building savings with incentives based on per kWh or per therm rate. Staff closely coordinate with developers, architects, and engineers early in design process to influence efficient solutions for

market rate and affordable MFNC projects. The MFNC program provides increased incentives for affordable housing construction projects that have an overall average occupant income of 60 percent Area Median Income (AMI) or less. This aligns with the WA State Housing Finance Commission's Low Income Housing Tax Credit.

MFNC packages financial incentives under one grant that is structured to work in accordance with current BEM programs.

a. *2022 Program Accomplishments*

In 2022, PSE onboarded a new vendor (Willdan) for MFNC, and it successfully transitioned projects and project contacts from the prior vendor to Willdan. Willdan's MFNC approach includes a real-time energy modeling tool — Net Energy Optimizer (NEO) — that affords MFNC customers a more comprehensive and flexible offering.

The MFNC program achieved just over 3 million kwh in electric savings and 18,000 therms of gas savings in 2022. While these were below goal — 70 percent for electric and 38 percent for gas — they also represented a significant improvement over 2021 program savings. This indicates that the program may be regaining momentum after the COVID-19 slowdown.

b. *Adaptive Management*

Willdan's NEO model goes through regular updates, during which new measures and offerings can be incorporated into the model. One big ticket item that Willdan focused on for 2022 was central heat pump water heaters (HPWH). Willdan developed a savings methodology for central HPWH by coordinating with other modeling firms in the area. As of December 2022, Willdan is now able to offer this measure as a supplement to NEO. This is an improvement over the status quo, since previously MFNC projects would have to work with a PSE energy management engineer (EME) in order to do a custom analysis on central HPWH. Now, MFNC projects can work directly with Willdan on this calculation, allowing for more streamlined conversations around the incentives.

c. *Pilot-Like Initiatives*

In addition to PSE's MFNC program, Willdan also runs Snohomish County PUD's (SnoPUD) new construction program. Willdan will discuss gas-saving opportunities with SnoPUD new construction projects that use PSE natural gas. Those projects would be eligible to receive both a SnoPUD and PSE incentive.

d. *Equity Focus*

PSE continues to offer 50 percent higher incentives for affordable housing projects, as defined by the Washington State Housing Finance Commission's Low Income Housing Tax Credit (LIHTC) rules. In 2022, Willdan was added to the Approved Roster of Energy Modeling Consultants for projects that are seeking the LIHTC. Projects can achieve points toward their LIHTC application by using a modeler from this list to inform building design. This potentially lowers costs for projects that are applying for LIHTC, since they can use PSE's vendor for both PSE's MFNC incentives, and for LIHTC application points.

e. ***Key Variance Drivers***

The high baseline set by Washington State Energy Code (WSEC) continues to push the MFNC program to find deeper savings.

f. ***Measure Highlights***

MFNC incentives are packaged under one grant that is structured to work in accordance with current BEM programs. As such, a summary of each component measure is not provided for the MFNC program.

B. Business Energy Management

The following program discussions address specific results and accomplishments in the BEM Sector. Process and tactical improvements that enhance the customer's energy efficiency experience and prudently utilize Conservation Rider funding are outlined within the discussion.

The discussion flow aligns with CEM's Exhibit 1: *Savings and Budgets*.

1. Commercial/Industrial (C/I) Retrofit

Schedules E/G 250

PSE works with commercial and industrial customers to provide incentives for cost-effective energy efficiency upgrades to lighting, equipment, building shell, industrial process, and select O&M improvements. These services are provided on the customer's behalf and, where specified by the customer, will be developed in conjunction with design engineers, contractors, and/or vendors.

PSE conducts site assessments to identify savings opportunities, verify existing equipment and system operations, and to make recommendations to customers. PSE also reviews third-party savings estimates and analyses, and, when required, performs in-house analyses to validate energy savings. PSE works with financial decision makers at customers' facilities to ensure customers are aware of cost-savings opportunities, including review of energy saving projections that can help obtain favorable financing rates.

Commercial/industrial retrofit projects commonly include: lighting system upgrades, HVAC equipment upgrades, HVAC controls improvements, commercial refrigeration measures, and industrial process modifications. Additionally, incentives for building commissioning (O&M) improvements are provided through multiple building commissioning programs.

Upon the customer's decision to proceed with a project, PSE issues a standardized Conservation Grant Agreement and Grant Attachment that establishes terms and conditions for participation in PSE's Custom Grant program and also explains how the measure will be verified. After the agreement is signed by both parties, the customer is given notice to proceed with the energy efficiency project.

Following completion of the project, PSE verifies the installation and energy savings via an on-site inspection; review of equipment operation and trend log data where necessary; and collection of project invoicing and specifications of installed equipment.

a. *C/I Retrofit: Custom Grants (Non-Lighting)*

PSE provides discussions of notable C/I Retrofit program accomplishments in the following sections.

i. 2022 Program Accomplishments

In an effort to increase program uptake, PSE evaluated and increased custom grant incentives to $.45/kWh and $7/therm starting in January 2023.

Program staff spent a significant amount of time refining marketing collateral, creating case studies, and optimizing marketing efforts in order to improve program messaging and outreach.

PSE also paid out the first Monitoring-based commissioning base incentive in 2022. As a result of this commissioning program implementation, indications are that customers will achieve the maximum performance incentive available.

Due to customer budget approval cycles, the Telecommunications Energy Management Program has several grant agreements in place, but it did not deliver savings in 2022.

ii. Adaptive Management

PSE evaluated and implemented increased incentive rates to go into effect on January 1, 2023.

In order to address pandemic-related supply chain and labor supply issues, PSE elected to honor the increased incentive rates offered through the Elevate Your Efficiency Challenge for existing projects that were not completed during the original limited-time offer timeframe.

PSE regularly cross-promoted commissioning and equipment retrofits as companion offerings to assist customers in meeting Clean Buildings compliance requirements.

Due to increased program demand, PSE is in the process of expanding the savings and budget targets for the Telecommunications Energy Management Program for 2023 and beyond.

In 2022, PSE modified its Variable Refrigerant Flow (VRF) measure incentive and expanded qualifying space types to include retail spaces. The modification accounts for changes in code requirements and offers more flexibility when establishing the baseline system. The modified measure offering is available in 2023.

iii. Key Variance Drivers

As mentioned above, retrofit gas savings significantly exceeded the 2022 savings and budget target. The driver for this overage was one very large steam plant decentralization efficiency project on Joint Base Lewis-McChord.

The Telecommunications Energy Management Program was begun after the customers of focus had already established their 2022 capital budgets, and thus, were not in a position to take on any additional costs. As a result, no savings were claimed for this program in 2022, but it will be carried forward into 2023.

b. *Business Lighting Incentive Program*

The Business Lighting Incentive (BLi) Program — which includes Tenant Improvements (BLti), New Construction (lighting only) BLnc, Street Lighting (BLsli), and Business Lighting Express (BLx) — serves customers as a part of the Commercial/Industrial Retrofit Conservation Schedule 250. To simplify the customer experience, PSE offers a "Simple" application that allows for projects with five measures or fewer and a "Standard" application for projects with five or more measures when applying for a Business Lighting Incentive grant. This program addresses customers' needs by providing custom calculated incentives for lighting and lighting controls measures.

i. 2022 Program Accomplishments

The Business Lighting Incentive program and its sub-programs completed over 489 projects in 2022 with an average project size of 74,000 kWh in savings. The BLti and BLnc sub-programs were launched in Q1 of 2022 and closed six projects (included in the 489 total BLI projects) by the end of Q4 in 2022. To increase participation in the program, a new incentive for exterior lighting controls was offered. An updated application was presented to customers in December in preparation for 2023.

ii. Adaptive Management

The Business Lighting team consistently monitored lighting market trends throughout the year. A significant trend in 2022 that continued from 2021 was the continued slowdown in the lighting retrofit market. The team met with analysts to look at suspected LED technology saturation in the PSE territory. Studies and market surveys will continue into 2023. In July 2022, the Business Lighting team launched a new Project Perk: Contractor Performance Incentive (CPI). The CPI is a supplemental incentive of $0.01 per kWh of the final project savings that is paid to the company responsible for completing the Business Lighting Incentive application. Due to its great success, the CPI will continue through the end of 2023.

iii. Key Variance Drivers

The Business Lighting Incentive program fell short of savings and direct benefit to customer incentive goals in 2022. The primary factors were: a slowdown in the US economy; supply chain issues; the PSE Horticultural Lighting retrofit project savings were transferred to the PSE Commercial New Construction program; and the LED lighting market potentially reaching saturation within the PSE territory.

c. *Industrial Programs*

In addition to Commercial/Industrial Retrofit Custom Grant offerings, PSE has developed and implemented a set of offerings targeted at Industrial customers. Measure-specific incentives are provided through these programs.

The Industrial Energy Management program serves customers as a part of the Commercial/Industrial Retrofit Conservation Schedule 250. A targeted offering was developed to better serve Industrial customers by consolidating and expanding PSE's offerings available to these customers.

The Industrial Energy Management program provides a comprehensive set of offerings, focused on tuning up industrial systems and reducing energy usage. Offerings include traditional custom capital projects, Industrial Systems Optimization (ISO), Strategic Energy Management (SEM), and the Comprehensive Small Industrial offering, which provides custom grants targeted at small industrial sector customers.

i. 2022 Program Accomplishments

PSE's IEM programs made steady growth in total number of projects, as well as in size, in 2022. There are several offerings within the IEM program, including: Industrial Systems Optimization Program (ISOP), Industrial Strategic Energy Management (ISEM), Custom/Capital Project Development (Capital), and Comprehensive Small Industrial (CSI). PSE launched two new ISEM manufacturing cohorts in early 2022. In addition, the existing ISEM cohorts for both waste water treatment and manufacturing customers continued throughout 2022. PSE was also able to achieve either completion or significant progress in several ISOP and large capital projects.

ii. Adaptive Management

In 2022, PSE program staff dedicated significant effort to targeted marketing and outreach to increase the number of applications submitted and improve connections with industrial customers, industry partners such as industrial equipment vendors, and maintenance service companies.

Program staff also updated the industrial program webpage throughout 2022 to create a user-friendly experience. Now, customers can find all the required documentation online, along with program guides, Q&As, case studies, and an email address for IEM program staff for questions and project applications.

iii. Pilot-Like Initiatives

Program staff worked on a new pilot program, ISOP+. The program provides bundled incentives to ISOP customers for implementing O&M and capital project at same time.

iv. Key Variance Drivers

The IEM program fell short of savings and direct benefit to customer incentive goals in 2022. This was due to the delay of a few large capital projects, primarily as a result of the COVID-19 pandemic and subsequent slowdown in the supply chain.

d. *Clean Buildings Accelerator*

The Clean Buildings Accelerator (CBA) program is designed to help building owners comply with Washington State House Bill 1257, the Clean Buildings Law. The Accelerator provides strategic energy management services through a four-month program. It is targeted toward

lower-resourced and smaller organizations, including public organizations, non-profits, and/or customers that have less experience with energy efficiency programs.

i. 2022 Program Accomplishments

The CBA has supported over 50 customers in five different cohorts in 2022 on its path to compliance, targeting energy savings between 2 and 7 percent or more per building. The first cohort has completed the full 16-month Accelerator cycle and will now continue their energy saving journey by joining a diverse array of PSE's incentive and energy management programs.

Customer feedback has included that the program is a solid, accurate resource that saved a lot of time and stress in creating the necessary plans and programs for compliance. PSE keeps the interaction with each customer personalized and builds strong relationships over the 16-month engagement. The Accelerator is serving as an excellent touchpoint and springboard to provide excellent customer service, while also bringing more projects into PSE's other efficiency programs.

PSE has shared the Accelerator program design with other utilities in Washington State, many of whom have since adopted the Accelerator program as their own.

ii. Adaptive Management

The Clean Buildings Accelerator program engaged in the following adaptive management strategies in 2022:

- Despite the significant impact it will have on PSE's customers, the Clean Buildings Law remains largely unknown, and there is a lack of understanding of the urgency of the situation. Recruiting customers for the CBA program has proven to be a challenge. To raise awareness, the CBA team sent letters to 6,400 building owners last summer informing them of their potential compliance requirements under the new law and introducing them to PSE's no-cost Accelerator program. Additionally, there was a big focus on awareness using multiple mediums in addition to customer-facing website optimization, direct email campaigns, presenting at conferences, using chambers of commerce, simplifying language, co-branding with other CBA programs, working to engage other utilities, and third parties. As a result of these efforts, awareness has significantly increased among PSE's customers, leading to a growing number enrolling in the program.
- PSE continues to work on developing strategies to smoothly and efficiently transition CBA customers to other efficiency programs like CSEM, Controls, P4P, and Custom. For example, PSE highlights one of its efficiency programs at each Elevation Seminar. PSE's CBA team also meets regularly with the CSEM team to review customer readiness to graduate from CBA to CSEM.
- As the Accelerator program has spread to neighboring utilities, PSE also revised the application process. Initially, a customer had to sign an application form with each participating utility to approve data sharing. This was changed to allow for a single

application form where customers can release data for all applicable utilities at one time.

iii. Key Variance Drivers

The CBA program spent only 65 percent of the proposed budget due to fewer cohort participants than expected. The energy savings forecast at the beginning of the year was far above the actual savings. This was realized early on, and the target was lowered in February 2022.

Several factors contributed to overestimating the energy saving target:

- Smaller cohorts than anticipated. To give each customer the help they need, the cohorts were kept smaller than initially planned (20 participants down to 8-12 participants).
- Fewer buildings scanned than estimated. During the program, customers can do an energy scan of up to three buildings. Beforehand, it was estimated that 10 buildings per customer could be done during CBA. However, customers indicated that more than three buildings is too time-consuming. Therefore, fewer savings opportunities were achieved than predicted.
- Lack of awareness by customers. However, PSE is seeing a gradual increase.

The primary purpose of the CBA is to educate customers on how to comply with the law. For that reason, PSE is shifting its promotion of the CBA program from being an incentives program to a more informative and educational program. The largest value of the CBA is that it will bring projects to PSE's other incentive and energy management programs, as customers learn how their buildings are performing and where they need to implement measures in order to achieve compliance.

e. *Virtual Commissioning Contractor Services*

In 2020, PSE contracted with Power TakeOff to launch the SMB AMI Virtual Commissioning Pilot. In May 2022, PSE transitioned this from a pilot to a full program due to early success and a promising savings forecast. The goal of this program is to engage directly with customers and then, using 15-minute interval data, identify opportunities to modify schedules, set points, and more in order to save energy.

In 2022, Power TakeOff submitted invoices totaling over 3,000,000 kWh/year in gross savings. Since the original contract had a ceiling of 3,000,000 kWh, PSE and Power TakeOff are currently working through a change order process to add an additional 4,000,000 kWh to the contract for 2023.

In addition to the 4,000,000 kWh getting added to the contract, PSE is also adding Schedule 26EC data to the daily data feed to achieve more energy savings. The program previously only included Schedules 24EC, 25EC, and 31GC interval data.

i. 2022 Program Accomplishments

In 2022, this program accumulated over 2,800,000 kWh/yr in energy savings, while generating at least 40 referrals for other programs or other energy-related opportunities.

ii. Adaptive Management

Since the savings target for the contract period was surpassed in November 2022, PSE has been negotiating a contract change order that will allow for additional savings for projects completed at the end of 2022 and through 2023. PSE is adding Schedule 26EC data to the interval data feed to achieve more energy savings. Power TakeOff energy advisors will be trained at a basic level about other commissioning programs if a site is more suited to an in-depth commissioning approach rather than basic recommendations.

iii. Pilot-Like Initiatives

PSE is determining the feasibility and efficacy of targeting specific ZIP Codes with this program to serve underserved communities.

iv. Key Variance Drivers

Businesses closures and continued after effects of COVID-19 have impacted savings at some sites. Also, some sites are simply not persisting with their savings as anticipated for various reasons, which has required additional intervention from the Power TakeOff energy advisors and may result in less savings than expected.

f. *Project Figures*

PSE provides the following Commercial/Industrial Retrofit tables to give readers a sense of programs' custom grant activity and scale of custom projects. A project may consist of a single structure or multiple structures.

Table I-6 provides a representative number of Commercial/Industrial Retrofit projects completed in 2022.

Table I-6: Commercial/Industrial Retrofit Projects

Commercial/Industrial Retrofit Custom Grants	Number of Custom Grant Projects		
Program	**Electric**	**Natural Gas**	**Dual**
Commercial & Industrial Retrofit	47	26	13
Business Lighting Grants/Express	562	0	0
Industrial Energy Management	12	0	2
Clean Buildings Accelerator	12	5	10
Total Project Count	**650**	**31**	**25**

2. Commercial/Industrial New Construction

Schedules E/G 251

PSE works with designers and developers of any large or small new Commercial/Industrial (C/I) facilities or major remodels to propose cost-effective, energy-efficient upgrades that exceed energy codes or standard practice where minimum efficiency requirements are not prescribed by code. Four paths may be followed to qualify for assistance and/or funding for New Construction energy efficiency measures. New Construction Post-occupancy Commissioning is also offered in addition to the building paths.

a. *Building Paths*

The first path is similar to the retrofit program where component Measures are evaluated individually and funding is based upon cost-effectiveness. Under this approach, customers may receive up to 100 percent of the incremental cost over a code-compliant baseline. There is a streamlined process for lighting projects that have lighting power density values listed in the applicable code.

The second path is a whole-building approach that utilizes building energy simulation to demonstrate improvement over energy code requirements. PSE will work with designers to incorporate measures that produce at least 10 percent overall savings beyond applicable energy code, including local jurisdiction amendments. Given the time required for planning and construction, these projects typically take several years to complete.

The third path is an energy use intensity (EUI) performance method that uses metered building usage data during a performance period to determine savings compared to an industry standard baseline EUI. Baseline EUI metrics were developed by the Washington State Department of Commerce for different building types in Western Washington. Customers submit their proposed building type and square footage so PSE can determine the baseline EUI metric and electric and natural gas usage. Once construction is complete and the building is occupied, a 12-month performance period begins during which the customer can demonstrate good building design and operation. The total usage for the performance period is used to determine the project savings and final grant amount. The building must use at least 10 percent less than the baseline EUI metric to qualify for a grant.

The fourth path includes Prescriptive Basis incentives for Measures that are eligible for rebates under Schedule E/G 262, Business Rebates. The incentive amount for a Measure is the same as that which is available under Schedule E/G 262, but energy savings may be calculated based on actual Site-Specific conditions and Code Baseline adjustments if necessary.

Customers assume full responsibility for utilizing their design teams and contractors to provide information to PSE for evaluation of grant funding. Projects must be approved for funding prior to installation/implementation to be eligible.

b. *2022 Program Accomplishments*

In 2022, the C/I New Construction team implemented a base payment for the EUI Performance Method. Instead of paying the full incentive after the performance period, an incentive is given at the end of construction. This base incentive assumes the project will save 5 percent due to the installation of high efficiency equipment. All additional savings beyond 5 percent will be measured using metered data after the performance period. The base incentive decreases barriers to participate in the program by paying a portion of the incentive directly after construction is complete. The customer does not have to wait the full performance period, which can last up to 1.5 years, to receive a payment.

The C/I New Construction program also streamlined the lighting component program option. Projects that only exceed code in their lighting systems can now apply for a lighting only incentive through PSE's Business Lighting Workbook. A new construction lighting option has been added to the existing workbook in order to streamline the process for both customers and PSE staff. Most customers are familiar with the workbook layout and requirements, which can now be applied to new construction projects. The workbook incorporates code required lighting allowances to determine the baseline, and customers can provide details of the proposed lighting system in order to determine project savings.

In 2022, C/I New Construction also continued to work with the Multifamily New Construction team on increasing program outreach and Early Design Assist (EDA) meetings. C/I New Construction and Multifamily New Construction onboarded a new vendor to provide EDA meetings for both commercial and multifamily customers. The EDA meetings provide customers with real-time energy modeling to help them make informed decisions regarding their energy usage. While the vendor's focus has been the multifamily program, it has also provided an EDA for a commercial customer and provided outreach for the commercial program.

c. *Adaptive Management*

In 2022, program staff continued to focus on creating a culture of collaboration and transparency with customers participating in the new construction program, and they actively sought feedback from customers and the design community on the grant process. Staff also continued to seek feedback from energy management engineers (EMEs) to update program guidelines.

With this feedback in mind, program staff continued to streamline the new construction lighting process using the Business Lighting Workbook. It became apparent that larger projects were becoming cumbersome for both the customers and EMEs; therefore, the Building Area Method was incorporated into the Business Lighting Workbook to streamline the savings calculations for 2023.

Program staff also updated the C/I New Construction webpage throughout 2022 to create a more self-service option for customers who were familiar with the program. Now all required documentation for each program path can be found online along with program guides to help customers understand each option.

d. *Pilot-like Initiatives*

Program staff continued to work on marketing and recruiting customers to participate in the Early Design Assistance (EDA) meetings in 2022. This program incentivizes developers to consider their buildings energy consumption holistically and early in the design process and provides estimated incentives for their design choices. This option gives customers access to energy modeling for both large and small new construction projects, regardless of project funding levels.

e. *Key Variance Drivers*

The C/I New Construction program completed 2022 with significantly lower than expected electric and gas savings. The decrease in electric savings was mainly due to one project that experienced permitting and construction delays. This project accounts for 15 million kWh in savings. Many other projects, both electric and gas, experienced supply chain issues which delayed construction into 2023. A few projects were outright cancelled due to economic concerns. There were also fewer overall project submissions in 2020 and 2021 due to COVID-19. Due to long construction times, projects that were submitted two or three years ago will typically close in the current biennium. Therefore, the C/I New Construction program is still seeing the impacts of fewer project submissions due to COVID-19.

f. *Project Figures*

The C/I New Construction representative number of projects completed in 2022 are shown in Table I-7.

Table I-7: Commercial/Industrial New Construction Projects

Commercial New Construction	Number of Custom Grant Projects		
Program	**Electric**	**Natural Gas**	**Dual**
Commercial/Industrial New Construction	30	3	5

3. Energy Performance Incentive Programs

Schedules E/G 253

Energy Performance Incentive Programs, previously named Commercial Strategic Energy Management, includes whole-building, performance based programs that achieve cost-effective electric and natural gas savings through energy management practices. This section was renamed during 2022 in order to accommodate the addition of the Pay for Performance (P4P) Program to the Schedule 253 offerings.

The following discussions provide 2022 recaps for two programs that comprise the Energy Performance Incentive offerings: Customer Strategic Energy Management and P4P.

a. *Commercial Strategic Energy Management*

PSE offers Commercial Strategic Energy Management Services (CSEM) to any Commercial customer, school district, and public-sector government agency with a minimum portfolio baseload to meet cost-effective thresholds. The CSEM program targets larger customers with multiple facilities such that the cost of implementation can be recovered through savings achieved. Schedule 448, 449, 458, and 459 customers may utilize their Schedule 258 funding allocation for CSEM Services. While the CSEM program is specific to commercial customers, PSE has offered Strategic Energy Management options for Multi-Family customers and Industrial customers through other program offerings.

Customers qualify for the CSEM program based on their annual PSE energy purchases. A typical customer baseline for maximum program funding is 20,000,000 kWh for electric-only or 2,700,000 therms for gas-only service from PSE. Funding levels are prorated based on the amount of staff a customer would need to allocate in order to achieve cost-effective savings from CSEM efforts. At a minimum, the customer needs to use 1,000,000 kWh or 135,000 therms, or the equivalent to participate in the program.

A CSEM customer employs, contracts, or designates existing staff to implement CSEM responsibilities, including accounting for resource consumption, assessing facilities, recommending actions, monitoring progress, calculating savings, and communicating program information to organization stakeholders.

Monetary grants include a "start-up" grant for completion of deliverables associated with building the program foundation. The start-up deliverables include identifying an Energy Manager, setting up an energy-accounting database, writing a company resource management plan, and completing facility action plans. Once start-up deliverables are complete, the customer may qualify for "performance grants" based on achieving energy savings associated with CSEM practices and “target grants” for meeting or exceeding pre-established energy-reduction targets.

The CSEM agreement is valid for three years. Over this time, PSE anticipates a 10-12 percent reduction in overall energy use. Savings are calculated using industry standard practices and energy accounting methodologies. Reported annual savings are a variance from a fixed baseline. PSE may elect to renew a customer's CSEM agreement in three-year increments to provide continued support and additional performance incentives.

PSE’s CSEM support program is comprised of a menu of services, which can be tailored to meet the specific needs of the customer. Typical CSEM services include, but are not limited to, the following assistance and support:

Program Start Up

- Designing and implementing a CSEM program.
- Developing baselines, policies and guidelines, and facility action plans.

Technical Assistance

- On-site walk-through audits to train customer staff to identify waste and opportunities for improved efficiency.
- Analysis and reporting of savings relative to established baseline.

Education & Training

- Training in fundamental concepts for designated Energy Managers and support personnel such as custodial, maintenance, and facilities staff.
- Educational materials for classroom or building occupant use including checklists, fact-sheets, and calculators.
- Training stipend to support professional development in Building Operation or Energy Management.

Energy Data Services

- Review of existing databases for inclusion of all facilities, accounts, meters, and overall data integrity.
- Energy Interval Services for internet view of facility gas interval meter data.

Cash Incentives

- ”Start-up” incentive intended to share the cost of program start-up that is paid upon satisfactory completion of deliverables.
- Performance grants for customers who achieve energy savings after completing their deliverables.
- Target grants for customers who achieve a pre-established targeted amount of energy savings after completing their deliverables.

The CSEM program has also assisted customers in establishing ENERGY STAR® Benchmarks for their facilities using EPA’s Portfolio Manager. PSE will continue to help customers to identify potential targets, improve energy efficiency to meet award qualifications, coordinate the application and inspection process, and submit material to EPA for ENERGY STAR awards.

Additionally, access to energy accounting software has allowed PSE CSEM customers to facilitate greenhouse gas accounting and other climate change and sustainability initiatives. The value of this service routinely exceeds those stated in the CSEM program scope of work.

PSE continues to explore ways to make the CSEM program cost-effective for smaller customers. PSE efforts will continue to work with CSEM consultants, customers, and other support agencies to develop this market.

i. Adaptive Management

In the beginning of 2022, one issue the team identified was that there would likely be a shortfall in the amount of electric savings in the program pipeline due to low recruitment throughout COVID-19. The CSEM team developed goals to ensure there would be enough potential savings to claim from the total customer base. The team set a goal to recruit five large customers (20,000,000+ kWh portfolio consumption) or 10 medium customers (10,000,000 - 20,000,000 kWh portfolio consumption). In Q2 of 2022, the team onboarded an account executive to focus on recruiting new customers into the program. As a result, the team was able to recruit 17 new customers — six large customers and 11 medium sized, which was a tremendous success for the team.

There has been a considerable turnover of energy managers who implement SEM-related work in their facilities throughout the past year. The team has been increasing its efforts to conduct site walkthroughs with customers to identify measures that customers can implement in their facilities. The goal of the site walkthroughs has been to provide energy managers with the skills necessary for conducting site walkthroughs in other facilities to generate a list of energy conservation measures to implement. PSE has seen a significant amount of interest from customers for this support.

ii. Pilot-Like Initiatives

Another issue the program faced with was customer facilities running HVAC systems with 100 percent or maximum outside air, particularly in school districts. Due to COVID-19, the WA State DOH recommended that facilities be run with maximum outside air and building flushes before and after occupancy. This meant that HVAC systems were running at higher capacities to heat the larger volume of outside air coming into the building. This has dramatically impacted gas savings generated in the program, with many customers' gas consumption increasing relative to baseline periods.

To combat this, the team decided to contract Energy 350 to work with five customers to provide high engagement and focused SEM support with the hope of generating more gas savings in those customer facilities. So far, this program has not seen a huge amount of interest from customers, with the main barrier being that energy managers do not have enough bandwidth/capacity to utilize this support.

iii. Key Variance Drivers

The CSEM program did not meet its electric and gas savings targets for 2022, and, as a result, only managed to utilize 80 percent of the budget for both electric and gas. Part of the issue with meeting savings targets came from the circumstances described above, but the other driver has been large turnover within the CSEM team. Over the past 12 months, three-fifths of the CSEM team members has been comprised of new staff and currently the team has two Energy Management Engineer positions that need to be backfilled. The team is confident it will make up the difference in electric savings for the biennium, but gas savings will be more difficult to recuperate due to facilities operating with increased volumes of outside air.

iv. Project Figures

Table I-8 below shows the number of CSEM program projects.

Table I-8: Number of CSEM Projects

Project Count Per Program			
	Electric	**Gas**	**Dual**
CSEM	10	2	8

b. *Pay for Performance*

The P4P Program completed transition from a Schedule 249 pilot into Schedule 253 as a standard program in January of the 2022 program year. The P4P program helps customers achieve energy savings from deep retrofits and behavioral activities in commercial buildings using an M&V process that evaluates savings based on a whole-building approach methodology (IPMVP Option C). To qualify, buildings need to be a minimum of 50,000 sq. ft. and projected to achieve at least 15 percent energy savings from a minimum of two energy efficiency measures. The program supports and is complimentary to, Washington State House Bill 1257, enacted in 2019, for customers working toward compliance with the Clean Buildings Law, particularly with the early adoption incentive program.

i. 2022 Program Accomplishments

In addition to servicing the nine existing active contracts from 2021, four new P4P projects were contracted in 2022, and three additional sites are under review at the end of 2022. For the first time, P4P signed on gas sites. Two of the four new contracts are gas only and one is dual fuel. In 2021 an Adaptive Management decision was made to reduce the minimum site savings required by gas only customers to 10 percent. This was implemented to improve recruitment opportunities for gas customers, however, the two customers who signed up this year were able to qualify above the original 15 percent threshold.

Generally, P4P appears to be the program of choice for certain customers and contractors. Half of the active sites come from just two organizations that have chosen to use the program for multiple project sites.

At least two of the four grants started in 2022 were motivated by the Clean Buildings Law.

ii. Adaptive Management

In 2022, the Clean Buildings Law expanded to include a new tier of buildings between 20,000-50,000 sq/ft. To study feasibility of reducing building size as a qualifying threshold, the P4P program actively recruited buildings in the new tier. Analysis has shown that some smaller buildings with deeper retrofits can provide the same overall quantity of savings, if

not more, than larger buildings that are reaching their minimum savings thresholds with shallower retrofits.

Incentive levels were changed to match and keep in-sync with C/I Retrofit programs.

iii. Key Variance Drivers

Electric savings budget goals were met for 2022, and the gas savings goal was exceeded. For 2022, the gas budget was 1,500 therms. However, the single gas site of 2022 claimed over 7,000 therms, exceeding the budget by over 450%.

Several projects were hampered in their capital improvements schedule by supply chain problems. To adapt, one customer chose to change their project scope, reducing savings. Two others slipped their schedules.

iv. Project Figures

Table I-12 below shows the number of P4P program projects.

Table I-9: Pay for Performance Project Count

Stage of Project as of EOY 2022	*Count*
Under Review for Grant	*3*
Signed Grant - Capital Projects In-Progress	*4*
Signed Grant - Capital Projects Completed, First Performance Year	*6*
Signed Grant - Second-Performance Year	*3*

4. Large Power User/Self Directed

Schedules E/G 258

This program solicits electric energy efficiency upgrades through a Request for Proposal (RFP) process. C/I customers receiving electric service under Schedule 46, 49, 448, 449, 458, or 459 receive a funding allocation based on their electric usage and are responsible for proposing cost-effective project(s) to utilize their allocation.

The Large Power User/Self-Directed (LPU) program operates in a four-year cycle, with two phases in each cycle. The current program cycle spans from January 1, 2023, to December 31, 2026. The above-noted RFP process is the first phase, and it is classified as the non-competitive phase. Customers are given until April of the third year of the cycle to propose projects that utilize their incentive allocations under the non-competitive phase. Customers who do not designate projects that fully utilize their allocation by April of the third year forfeit their remaining balance to a competitive phase, in which remaining funds are available to all program participants via competitive bid.

Proposals are evaluated by PSE engineering staff for technical soundness, cost-effectiveness and compliance with energy code and tariff requirements. Customers sign a standard PSE Conservation Grant Agreement, defining project cost, PSE incentive amount, and verification requirements prior to installation of project Measures.

In the Competitive Phase, eligible customers respond to a new RFP in order to obtain remaining incentive funding that was unclaimed during the non-competitive phase. In this phase, eligible customers may have access to funds beyond their original allocation. The competitive phase RFP is issued in May of the third year of the cycle. PSE ranks proposals received based on cost-effectiveness and other criteria specified in the RFP. Funding is awarded in order of project ranking, until either all competitive phase funds are allocated, or all qualified proposals are funded, whichever happens first. Any remaining money is transferred to the general CEM program budget at the end of the program cycle.

a. *2022 Program Accomplishments*

With 2022 being the final year of the previous program cycle, the number of projects completed followed the typical pattern of being the highest of the four years in the cycle.

b. *Adaptive Management*

Despite having an unprecedented second competitive phase RFP period from September through November 2021, there was still significant remaining funding at the close of that submission period. A decision was made to have a final, open-ended project submission period, which was announced in April 2022. This open-ended submission period produced an additional three projects totaling over 900,000 kWh/yr that otherwise would not have been captured in this program cycle.

c. *Project Figures*

Table I-10 shows the distribution of projects by customer rate schedule.

Table I-10: Large Power User/Self-Directed Number of Projects

Project Count Per Program	
Program	**Electric**
High Voltage 449	19
High Voltage Non - 449	15

5. Commercial Rebates

Schedules E/G 262

PSE offers prescriptive incentives for select, commonly applied measures to commercial and industrial customers. These rebates have been developed for measures in which energy savings can be standardized over a wide variety of applications, and, where a competitive market pricing structure exists, to ensure cost-effectiveness.

PSE program staff develops program design, monitors program performance, results, and trends. Programs are coordinated closely with the electric and gas Commercial Retrofit program. Staff review program refinements and cost-effectiveness with Engineering Staff, the Evaluation Team, and the Manager of BEM as necessary on an ongoing and adaptive basis. Incentive measures, marketing and the fulfillment process may be modified, as needed, to respond to developments in technology, market conditions, customer acceptance, and/or changes in supplier/contractor delivery and pricing.

These programs offer prescriptive rebates to qualifying commercial and business customers:

- Commercial Midstream Lighting – Lighting to Go
- Commercial Foodservice Equipment
  (includes Commercial Midstream Foodservice Equipment*)
- Lodging Rebates,
- Downstream Commercial HVAC,
- Commercial Midstream HVAC and Water Heat Rebates*,
- Commercial Midstream Foodservice Equipment*, and
- Small Business Direct Install (SBDI) Program*
  (includes: lighting, refrigeration, basic HVAC and water saving for small businesses, small lodging and small agriculture customers).

*PSE contracts with industry experts to implement these measures, tailored to the unique needs of target markets.

a. *Commercial Midstream Customer Engagements*

Midstream Programs spent 2022 adapting to ever-changing market conditions while accomplishing a variety of goals and taking on new initiatives, such as planning how to more equitably distribute program benefits. In addition to navigating code changes, providing consistent distributor training and program awareness, and dispersing program signage, analyses were used to improve engagement and create innovative ways to deliver energy savings.

In-person events were slow to regain traction in 2022. Given the longevity of this pandemic and its impact on field services engagement, each program team considered opportunities to provide virtual events in 2022.

The PSE Midstream Commercial Foodservice Program, Lighting Program, and HVAC and Water Heating Program continued to provide a tangible connection between distributors, contractors, customers, and the entire suite of rebate programs offered by PSE. Products incentivized in wholesale locations included commercial foodservice, commercial lighting, commercial-sized HVAC and water heating, as well as residential-sized HVAC and water heating for commercial and residential end-use installations. Overall, outreach (or engagement) resulted in 3,112 personal touch points with industry partners over the course of the year.

In 2022, PSE successfully implemented field services for midstream programs in 172 locations, including corporate headquarters, online-only locations, and traditional brick and mortar distributors. From awareness of campaigns to the daily maintenance of signage, the field services team provided a connection between PSE, the rebate programs, contractors, and the PSE customer.

Table I-11: Commercial Midstream Customer Engagements

Location Type	# of Locations	Total Number of 2022 Touch Points	Touch Points per Location	Avg. Touch Points per Month
Brick and Mortar	172	871	4	72
Corporate & Branch Efforts	NA	1,080	NA	90
Calls, Emails, & Virtual Meetings Only*	NA	1,161	NA	96

*This category includes partners that may not have a physical storefront in Washington, like out-of-state chains and distributors representing multiple companies. These partners often require more effort to engage in relationship building due to the lack of opportunity for live conversation.

The Program considers each staff interaction as a chance to train and reinforce messaging. After formal trainings have taken place, it is often in these more casual interactions that industry partners ask questions, troubleshoot issues, and build meaningful partnerships that are sustained throughout the year.

b. *Program Reviews*

The following discussions provide 2022 recaps for the individual programs that comprise the Commercial Rebates suite of offerings.

i. Commercial Midstream Lighting to Go

PSE's Lighting to Go program provides instant point-of-sale rebate savings to lighting contractors and commercial customers who purchase qualified equipment from approved distributors for use in commercial customers' businesses. The Lighting to Go program covers LED replacement lamp measures including: Tubular LED (TLED) measures, CFL replacements, HID replacements, and exterior LED fixtures.

2022 Program Accomplishments

PSE's Lighting to Go program partnered with Snohomish County PUD and Seattle City Light in 2022. The collaboration of three utilities to offer the same measures and incentives has been well received by the participating Lighting to Go distributors. The program team has worked diligently to ensure both online and brick-and-mortar partners adopted the program in its new form. The program continued to grow the number of participating distributors by adding 10 new partners including five online-only partners, three brick-and-mortar partners, and two franchise partners that added an additional five brick and mortar branches. At the end of 2022, there were a total 85 individual partners.

Table I-12: Commercial Midstream Lighting To Go Customer Engagements

Location Type	# of Locations	Total Number of 2022 Touch Points	Touch Points per Location	Avg. Touch Points per Month
Brick and Mortar	74	404	5	34
Corporate	10	148	15	12
Online Only	12	137	11	11

The Lighting to Go program and the commercial lighting industry benefitted from segments of the workplace returning to physical buildings and offices, however the effects of the COVID-19 pandemic continued. PSE distributors struggled with staffing shortages and supply chain issues.

Adaptive Management

The program's distributors expressed concerns with having to utilize stock from several different manufacturers to overcome supply chain shortages to continue to fill orders. Several distributors experienced delays in processing submissions due to staffing shortages and lack of talent. The program team found communication with several partners difficult. The communication issue with distributors is attributed to lack of staff and staff having to do multiple jobs that are normally outside of their job description

Quarterly meetings with the participating distributors determined the need to define the definition of a project and increase fixture quantity limits. Program staff worked with Business Lighting program staff to come to a consensus by defining the term "project" and increasing fixture quantity limits to 30. This was well received by all distributors.

As a result of market feedback, the Program worked with all regional stakeholders to add two new exterior fixture categories into existing measure groups, including architectural flood and spot fixtures and fuel pump canopies.

Equity Focus

In 2022, PSE regularly engaged with distributors to discuss their goals and marketing plans as it related to more equitable distribution of lighting rebates to customers who may not as readily participate. In 2023, program staff will continue these efforts.

Key Variance Drivers

The Lighting to Go program continued to experience a slowdown in submissions due to distributor staffing issues and supply chain issues. Through the above-mentioned tactics, the program was able to achieve 87 percent of its targets.

ii. Commercial Foodservice

PSE continued to offer cost-effective prescriptive Downstream and Midstream Foodservice rebate incentives to over 8,000 foodservice customers in 2022, focusing on equitable participation opportunity across the region.

The program's structure centered on providing access to all PSE foodservice customers by partnering with as many equipment sales locations as possible within, and outside of, PSE's service territory in order to influence their purchasing decisions and offer instant pass-through rebates to them. In 2022, the Midstream program focused on onboarding additional national partnerships as well as some technology-specific partners. As the Midstream portion of the Foodservice Rebate Program continued to grow, Downstream rebate participation naturally lessened over the course of the year as more customers found their access to rebates via PSE's concerted Midstream efforts. For that reason, the below content focuses on Midstream efforts, with the understanding that PSE's Downstream option for customers remains and ensures that customers who shopped outside of the Midstream distributor network still have access to rebates. It is not a separate program delivery or effort.

The Commercial Laundry program, which has historically been grouped into this section for the last three biennia, was sunset at the end of 2021 and not continued into the 2022-2023

biennium. (This reference is mainly to note that there is no information to report in this section where it would normally be included).

2022 Program Accomplishments

The second full implementation year in which PSE offered its newer Midstream delivery model was 2022, and it continued to improve and be a successful option for this customer segment. In planning 2022 field services and outreach strategy for this program, PSE built upon learnings from 2021, and it was determined that field work could be improved greatly in order to enhance and maximize relationships with partners. The Program embarked on restructuring that portion of the model to successfully transition to an account management approach, with one dedicated field representative for all of PSE's local foodservice dealers, instead of utilizing multiple staff assigned by region. PSE also implemented a national Trade Ally Manager who focused exclusively on national partnerships. This allowed for deeper engagements, richer product and market understanding, greater insights, and more timely support. These deeper engagements are reflected in a record number of field reports, record savings for 2022, and an increased participation from national accounts. One particularly successful engagement was with Bargreen Ellingson, a national foodservice equipment dealer. With the new account management approach, PSE fully onboarded and trained three WA branches and formed a corporate relationship across the nation.

Table I-13: Commercial Foodservice Customer Engagements

Location Type	# of Locations	Total Number of 2022 Touch Points	Touch Points per Location	Avg. Touch Points per Month
Brick and Mortar	20	626	31	52

The 626 field reports that detail 2022 outreach engagement efforts are a 31 percent increase over 2021 (and 97 percent increase over 2020, to show ongoing growth perspective).

At a more local level, the program tracked down the owner of a location that was found to be shuttered in December of 2021, and — based on their game-changing encounter with program staff in January of 2022 — has since reopened and built their entire business strategy around the PSE instant rebates program. That strategy has resulted in over 30 gas units being rebated within six months through just this one location. These are impressive numbers for the foodservice program's history.

The program consistently improved as a result of the account management shift. For example, rebate submissions were more timely and up-to-date given the improved dealer touchpoints to manage inquiries, review projects, and to help with the online submission portal. This allowed the team to focus more on the various tactics listed below and made it easier to forecast program goals and process rebates for quick payment.

Adaptive Management

The foodservice industry continues to struggle to adapt to a new post COVID-19 norm, having undergone thousands of Puget area restaurant closures and decreased buying power. Recent research done by the National Restaurant Association ranks Washington State as the 47th slowest in restaurant recovery in the US. PSE's Foodservice Rebate Program continued to find ways to help customers navigate their stunted ability to participate in investment-requiring programs in ways they may have been able to pre-pandemic (see LTO details in Pilot-like Initiatives).

On the equipment side, the COVID-19 aftershock of supply chain shortages continued through 2022. This dissipated significantly by December, leaving only a few smaller food service equipment providers facing the same challenges they did throughout the earlier part of the year — selling whatever they could get in stock without regard to manufacturer, model, or efficiency. These dealers were similarly the slowest to recover from staffing shortages experienced during 2022, though it was noted that all dealers continued to experience high degrees of turnover in the industry.

The program adapted to these market challenges in many ways, including the account management approach mentioned, and by maintaining and enhancing digital tools, as well as employing new tools and resources such as the ZIP Code lookup tool (see Pilot-Like Initiatives). Other key successes were achieved through increased coordination efforts that enabled the program to assist equipment partners in finding eligible products through alternate vendors when they would otherwise have been unable to find efficient stock to sell.

Program staff continued to monitor the market through direct interaction and feedback from equipment dealers. This included informing dealers of the Washington State appliance efficiency standards that impacted fryers, steamers, and dishwashers. With approval from the Conservation Resource Advisory Group, PSE continued incentives for these appliances based on market realities that inefficient products remained readily available.

Marketing efforts were also ramped up for the program in comparison to past years. Numerous marketing tactics were employed throughout the year, including a consistent cadence of email campaigns each accompanied by the program's first attempt at strategic testing of paid social media ads. These efforts garnered over 1 million customer impressions over social media engines. This drove traffic to the website significantly, increasing 2022 page views by almost 150 percent over the previous year.

Pilot-like Initiatives

The Commercial Foodservice Program has unique opportunities from the work the implementation partner conducted to enhance and expand at the national level. In offering the same standardizing program and process nationally regardless of utility, dealers, distributors, and manufacturers recognize an opportunity for them to implement these rebates into their business and financial plans across a broader footprint. This is in contrast to the typical reticence that dealers, distributors, and manufacturers experience when navigating volumes of differing utility programs. This naturally increases participation from partners who would not have otherwise considered PSE's program due to this complexity.

For that reason, in partnership with the third-party implementer for the program, PSE launched the Instant Rebates brand to match all other commercial foodservice programs it implements. This allows PSE to participate in an established national foodservice effort, increase participation from national market actors and chain restaurants, and help nationally recognize PSE's program.

To increase both awareness and customer participation, the CFS Program also implemented a limited-time offer (LTO) that increased both rebates and dealer spiffs (sales performance incentives) for all measures in the program for three months. The additional funds were a success at the right time as the supply chain was more able to match increased demand. The LTO allowed dealers to increase sales by reducing prices on their most sold equipment. Average units per month increased by 136 percent, average therm savings per month increased by 194 percent and average kWh savings per month increased by 28 percent. A key example of the LTO impact was one of PSE's newer local partners selling nearly 700 deep fat fryers, projecting >$1Million in customer rebates to come through early 2023. Without the LTO, they would not have been able to accomplish this feat. Due to the great success of the LTO, the program was able to increase rebates for 2023 on most of the equipment.

A historical challenge for the program has been based on the difficulty dealers, who sell across the Pacific Northwest and beyond, encounter in successfully navigating PSE's confusing electric and natural gas service area. To increase confidence offering significantly large instant rebates to PSE customers, program staff developed a special PSE ZIP Code list to launch an online ZIP Code tool for use by dealers. This tool allowed dealers to avoid confusing maps and charts and look up on-the-spot if a ZIP code was 100 percent PSE-covered, allowing them to comfortably offer the customer their rebate in-the-moment. For ZIP codes <100 percent covered by PSE, the dealers are instructed by the tool to contact PSE's hotline to confirm eligibility. This helped to reduce ineligible claims and streamline customer qualification questions across all participating dealers. The team continues to receive positive feedback from this tool and ineligible claims have decreased by 40 percent.

Equity Focus

A majority of restaurant customers face barriers to improving energy efficiency, such as lack of upfront capital, often being renters, uncertainty as to the longevity of their business, and reduced awareness of energy efficiency. Additionally, there is a high proportion of customers who are multilingual and/or are distrustful of utilities due to lived experience in different cultural landscapes.

Due to COVID-19, door-to-door outreach, industry expo, and conference tabling continued to be put on hold in 2022. However, regional and segmental presentations as well as midstream rebate delivery through local, regional, and national equipment distributors and manufacturers continued.

To help mitigate the impacts of COVID-19, the program maintained a Google Ad Search marketing campaign. Web traffic to PSE's Foodservice program webpage and all of the various resources found there consistently increased throughout 2022, with the Foodservice

rebate application increasing in downloads by 119 percent year over year, often being the most downloaded form within the CEM Business Customer webpages.

Key Variance Drivers

The CFS industry continued to be heavily disrupted in 2022 by long-term impacts from the COVID-19 pandemic, particularly so in the PNW. Profits continued to be at their lowest, while foodservice unemployment rates, gas prices, and food costs continued to be at their highest. Additionally, 2022 continued to see significant disruption in the manufacturing and supply chains causing difficulty for foodservice businesses who had access to capital to spend on efficiency improvements. Surveys of the industry point to rosier outlooks heading into the upcoming year, but 2022 presented many continued challenges for these customers. PSE closely monitored industry-related surveys, studies, and publications in order to adapt with and best serve these troubled customers. Ultimately, these impacts hindered many from participating in the program despite some of the best program efforts to-date.

The program worked hard to counteract these negative impacts as best as possible by engaging in the adaptive management techniques already mentioned, resulting in the program greatly exceeding its electric savings target (by nearly 250 percent), and reaching approximately 50 percent of its natural gas savings goal.

iii. Lodging Rebates

PSE's Lodging Rebates are designed to help hotel and motel customers afford the significant cost associated with making changes to their greatest energy burden — heating and cooling. This encompasses specific technologies found within guest rooms including Packaged Terminal Heat Pumps and Occupancy-Based Thermostat Controls.

This program is offered through a downstream model and rebates are set at an "up to" amount based on the individual cost of the equipment.

2022 Program Accomplishments

The Lodging Program leaned heavily into its marketing presence in 2022 in hopes of leading customers to a program built to help them complete an often costly upgrade. Every single qualifying PSE Lodging customer received some sort of marketing communication from the program in 2022. Marketing tactics included paid social media ad campaigns, email campaigns, digital ads on search engines, and print advertising including fliers and postcards mailed to customers. Marketing was targeted to small and medium businesses that were most likely to utilize lodging rebates based on PSE's propensity model. These efforts improved awareness, educated customers on the benefits of upgrading equipment, and increased participation in the program. PSE saw an increase in visits to the website and form downloads each time an email or paid social campaign was deployed.

By the end of the year, PSE lodging facilities completed their projects with the program. Six of these customers did whole-building installations of both of the program's measures at their facility and received PSE rebates. This is the ideal customer experience, and staff were happy to help guide customers through the decisions that helped them understand how to

make it possible for their locations. Word spread easily and the program continued to maintain a healthy volume of customer inquiries and interactions throughout the final quarters of 2022, laying the pipeline for future 2023 projects.

Adaptive Management

After reintroducing these customer rebates back into the portfolio in 2021, 2022 began with an alternative rebate-setting strategy that reduced incentives and also resulted in complicating customers' understanding of what they might get from PSE for their participation. As the beginning months of the year progressed it was clear to program staff that the new 2022 incentives were not adequately set to drive customer behavior or market transformation, and it was determined that the industry would better benefit from incentive-setting intended to motivate whole-building upgrades with limited customer out-of-pocket investment. These increased rebate dollars were also accompanied by strategic marketing and outreach efforts highlighting the changes. These efforts included emails, digital campaigns, a postcard mailer, and in-the-field customer conversations in order to get the word out and drive customers to the website to learn how to participate.

Pilot-Like Initiatives

In an effort to streamline program participation for a relatively arduous process, the program's website(s) was (were) enhanced and improved to better instruct customers around the various steps of their submission's activity (which includes pre-approval and significant pre- and post-installation requirements). This provided more information available to customers earlier and throughout their process to better set their expectations for long-term project timelines. Feedback was gathered throughout the year in order to continue to improve on the process.

Equity Focus

Within PSE's 1,000 lodging customers who may qualify for the program (customers must use PSE electricity) there is a large subset comprised of small- to medium-sized lodging facilities. Many of these facilities lack upfront capital and have both reduced awareness of energy efficiency and limited technical understanding of some of PSE's slightly more complex requirements. Additionally, there is a high proportion of customers who are multilingual and/or are distrustful of utilities due to lived experience in different cultural landscapes.

An incentive increase assisted these customers in more successful larger-scale projects. This was effective reaching small lodging customers.

Key Variance Drivers

This program was officially added to PSE's 2022-2023 BCP with ambitious savings targets based around various assumptions tied to the original 2021 incentive structure. The initially reduced 2022 incentive highly impacted initial program participation during the beginning of the year, as did pandemic-related equipment supply issues throughout the year, inhibiting full realization of planned market success. In addition, many projects that began in 2022 are still expected to complete installation in 2023 due to the slow recovery in accessing facility-

wide volumes of equipment. For these reasons, the program reached 74 percent of its savings goal utilizing 62 percent of its incentive budget.

iv. Commercial HVAC

The Downstream Commercial HVAC program provides rebates on Advance Rooftop Controllers (ARC), Commercial Connected thermostats, and ductless heat pumps. Commercial HVAC retrofit rebates are designed to help PSE's small and medium commercial customers reduce their energy usage without the requirement to upgrade costly rooftop equipment. The program is an ideal next step for small commercial customers who have participated in the SBDI or Business Lighting Grants programs.

2022 Program Accomplishments

The commercial HVAC rebates program increased the visibility of available incentives through new marketing tactics such as targeted emails, search engine marketing, and event participation.

This program was instrumental in developing a process for SBDI customers to receive information about the commercial HVAC rebates as a next step in their energy efficiency journey subsequent to participation in SBDI. This will set up a nice pipeline of projects moving forward.

Equity Focus

Much of the marketing emails sent were targeted to smaller businesses with historically lower participation rates.

Key Variance Drivers

The program fell short of savings targets primarily due to staff turnover. Onboarding staff created a slower uptake in submissions, and turnover in the 4th quarter slowed program momentum.

v. Commercial Midstream HVAC & Water Heat

Commercial Midstream HVAC and Water Heat is designed to influence the market by providing incentives at the distributor level for HVAC and water heat equipment, encouraging those distributors to stock high efficiency equipment that is readily available upon unplanned equipment failures. The Commercial Midstream HVAC and Water Heat program has two delivery mechanisms: a flexible delivery for large commercial HVAC and natural gas water heating equipment in which the distributor is not required to pass the incentive onto the contractor and there is generally one commercial branch office per distributor; and a mandatory contractor pass-through delivery for residential sized heat pumps, ductless heat pumps and electric heat pump water heaters for commercial and residential end use customers. There are over 55 participating branches that serve the small commercial and residential market with the smaller equipment.

Contractors installing below 5.4 ton air source heat pumps, or below 120-gallon HPWH's in commercial customer facilities often purchase from the same branch staff as residential installations and therefore the data provided in the Residential Midstream HVAC and Water

Heat program earlier within this report applies to small commercial customers as well. Aside from discussion on commercial electric heat pump water heaters, the below section pertains mostly to the large commercial equipment including: air-cooled air conditioners; water-cooled and evaporative-cooled air conditions; air-cooled heat pumps (greater than 5.4 tons); water-cooled heat pumps; condensing natural gas storage and tankless domestic water heaters; and condensing natural gas domestic hot water boilers.

2022 Program Accomplishments

In 2022 the Program increased in-person visits, participated in distributor trainings along with manufacturer representative firms, increased outreach efforts across the program, assisted distributors with implementing new growth strategies, and focused on low participating distributors.

Program staff continued to identify champions in the Commercial HVAC and Water Heating Program at the distributor level and worked with them to expand their influence within each organization. This enabled the outreach team to proactively address barriers to participation and improve administrative bottlenecks as well as develop corporate sales strategies that drove participation. Some examples of these efforts include: providing distributor-facing resources like market share reports; improving existing processes to ensure short payment turnaround times and consistent and strong customer satisfaction for all market actors; expanding staffing to better support trade ally management and increase program participation for the regional program; and implementing a distributor awards tactic for top-performing distributors with the goal of increasing program engagement.

Gains were observed in the commercial gas water heating product categories in response to the commercial code working toward eliminating gas water heating technology and some market recovery in the later part of 2022. Replacement is still allowable by code and those with aging equipment are taking advantage of the opportunity to replace large inefficient systems while they still have that option.

The following field services are specific to HVAC and water heating products for both large and small equipment types intended for commercial end use:

Table I-14: Commercial Midstream HVAC & Water Heat Customer Engagements

Location Type	# of Locations	Total Number of 2022 Touch Points	Touch Points per Location	Avg. Touch Points per Month
Corporate & Branch Efforts	NA	1,080	NA	90
Calls, Emails, & Virtual Meetings Only*	NA	1,161	NA	96

Adaptive Management

In the early half of the year stocking was low across the region for commercial HVAC and heat pump water heating equipment caused by repercussions of the COVID-19 pandemic, supply chain issues, shipping delays, and component shortages. In addition, the new construction market was greatly impacted by the concrete labor strike in Seattle. This caused delays for HVAC and water heating installations for much of the summer. In addition, updated code and enforcement began for Washington State's Labor & Industries (L&I) law, which mandates only certified plumbers may install heat pump water heaters.

In response to these challenges, the Program employed a variety of adaptive management strategies. Maintaining program contact was of primary importance especially when the distributors did not have a lot of qualifying stock on hand. To address this challenge, Commercial HVAC and Water Heating participating distributors were regularly contacted throughout 2022. When the Program received information that stock had arrived, the team activated to visit the branch or perform virtual outreach to maintain a connection between the distributor and the Program. When connections were made, the Program provided tools to overcome implementation barriers such as readily identifying eligible projects with customized Qualified Products Lists and an updated regional ZIP Code lookup tool.

The program continued to gather national and regional intel on potential market changes and pressures tied to the Inflation Reduction Act including: delayed sales for customers wishing to hold out for IRA incentives, accelerated sales to secure equipment, pressures on price, and stocking impacts.

Pilot-like Initiatives

In an attempt to increase year-end submissions and overall participation, the Program implemented a limited time offer Visa gift card competition at the branch level resulting in record submissions for October and November.

To address overall low commercial HPWH adoption, as well as low residential retrofit HPWH installations, program staff conducted a 'HPWH Road Show' which entailed meeting with eight HPWH distributors with manufacturer representatives prior to the HPWH contractor event (hosted by regional utilities in October 2022 and highlighted in the residential midstream section of this report). The effort provided opportunities to learn about challenges from each distributor and strategize on ways to increase commercial and residential HPWH sales. Heat Pump Water heaters are still an emerging technology in the commercial sector and there are misconceptions in the marketplace, specifically the commercial plumbing sector, about the recovery rates especially if they have high hot water use. This will be a 2023 focus area where PSE will continue to engage and educate distributors and gain updated market insights to better understand the barriers and solutions.

Equity Focus

Equity topics were added to corporate level branch discussions mid-year as program staff tried to identify ways to improve equity in the midstream delivery model. In-language collateral was explored but ultimately discarded due to distributor feedback as unnecessary. Via 2022 distributor and contractor engagement efforts, PSE identified that contractor

targeting activities and learning how contractors are connected to specific demographics and what motivates them is needed to fully understand how the midstream program serves highly impacted communities and vulnerable populations. In 2023 these efforts will continue.

Key Variance Drivers

Commercial HVAC and electric water heat achieved only 42 percent of its forecasted savings goal due largely in part to residual post-pandemic stocking issues including: computer chip shortages, container ship port delays, trucking shortages, staffing shortages with suppliers and manufacturers, component availability related to China's lockdown, as well as the regional issues identified above. In addition, PSE's 2022 commercial HVAC target, estimated in Fall 2021, was banking on continued recovery in the commercial HVAC market and the typical 'hockey stick' trends resulting in higher savings during Q4. Instead, submissions in Q4 were lower than expected and the recovery was not as robust as anticipated. Conversely, gas water heating exceeded the savings and spending goals by 45% which is thought to be spurred by general commercial market recovery and local businesses rushing projects through before commercial code eliminates gas water heating technology as an option.

vi. Small Business Direct Install

The SBDI program is designed to encourage small business customers to complete energy efficiency upgrades in their facilities and buildings through lighting, refrigeration, and HVAC retrofits. The program focuses on providing business energy assessments to identify basic and complex retrofit opportunities and facilitate participation in PSE's other commercial rebate programs, with special attention to specific segment needs, such as hospitality, grocery and agriculture. Because this customer group tends to engage with residential customers as well, residential rebate programs are often discussed during the business's energy assessment maximizing this in person point of contact.

2022 Program Accomplishments

SBDI completed over 1,400 customer projects in 2022. The number of available customers has become smaller, but the program has continued to search out opportunities to serve PSE customers who are eligible to participate.

Adaptive Management

The largest hurdle 2022 brought to the program was inflation, both of materials and labor rates. Subcontractors sought more profitable jobs outside of the program and were battling shrinking profit margins as they had to increase employee wages to retain workers and push employee productivity.

PSE worked with a vendor to increase the incentive levels on linear lighting measures to counter these cost increases and flowed them down to the subcontractors as well as their internal employees. This allowed the vendor and other subcontractors to retain licensed qualified electricians and continue to deliver the program with excellent customer service.

The program also welcomed a new subcontractor by offering them a labor-only option where the vendor supplied the materials for installation, reducing this small electrician's cash outlay

when working on the SBDI program. This new subcontractor was able to complete 20 customer jobs in 2022.

Pilot-Like Initiatives

Program staff are currently investigating the possibility of leveraging PSE engineering support to target and look for SBDI opportunity in small grocery stores. To try and find new paths for the program in the future, Program staff will continue to investigate these types of customers in 2023 in an effort to uncover custom projects savings that may apply to small grocers and possibly other small businesses with a focus on non-lighting work.

The SBDI program is continually looking into making HVAC, water heating retrofits, and rooftop controls a cheap to no-cost option so that the program can start to offer non-lighting measures to customers. Not only will this open the program up to new opportunities, but it will also allow PSE to return to previous program participants and reach deeper energy savings for them.

Equity Focus

The SBDI program is designed with equity in mind and serves diverse small business customers — many of whom face barriers to participation such as limited staff resources to put toward energy considerations and renting their space.

The program also partnered with two implementers to further examine ways to reach customers with limited English proficiency by communicating with them in their preferred languages. This effort is discussed in the EEC section of this report.

In 2022 the program installed projects in 86 different cities in PSE and Snohomish County PUD territories, compared to 80 cities in 2021. Over 70 locations served were owned by customers for whom English is their second language (slightly over 5 percent).

Key Variance Drivers

There were two key factors that led to slowdown in production for the SBDI program for 2022. One was the availability of lighting retrofits. This was the 10th year of operating the SBDI program in PSE's territory. Lighting was 99.8 percent of the program's savings delivery in 2022. PSE has found that the larger projects have already been served either through the SBDI or Business Lighting programs and are LED throughout. PSE has seen that remaining customers tend to be smaller spaces and are more spread out throughout the territory.

The second factor contributing to the delivery variance is the robust labor market and the shortage of qualified lighting technicians.

c. *Measure Highlights*

PSE presents a high-level view of the Commercial Rebates projects managed in 2022 in Table I-15.

It is interesting to note that in this organization, more than one measure type may be installed in a single project.

Table I-15: Number of Commercial Rebate Projects Managed in 2022

Business Rebates	Number of Projects		
Program Project Classification	**Electric**	**Natural Gas**	**Dual**
Commercial Kitchen/Laundry	100	195	16
Commercial HVAC	15	0	13
Commercial Lodging	25	0	0
Commercial Midstream (NEW)	236	430	0
Commercial Midstream Foodservice	178	85	13
Small Business Direct Install	2,170	0	0
Business Lighting Markdown	3,070	0	0
Total Project Count	**5,530**	**500**	**10**

C. Pilots

Schedules E/G 249

Pilot programs and demonstration projects may be undertaken to determine whether certain strategies and Measures are cost-effective in the long run. Pilots are employed to test cost-effective ways to demonstrate market opportunities for energy efficiency. Pilots may include tests of Measure cost and performance, customer acceptance, and delivery methods. In compliance with condition (7) (d), pilots will only claim energy savings that achieve energy savings sufficient to demonstrate cost-effectiveness by passing the TRC test.

PSE discusses pilots that have uncertain savings potentials in this section. PSE discusses programs or measure offerings that could be considered analogous to pilots — but have a reasonable expectation of savings achievement — in the applicable REM and BEM program sections above.

1. Retail Choice Engine

The Efficient Product Guide (EPG) was launched in October 2020 and is designed to help PSE residential customers choose an energy efficient product. The online platform provides an "energy score" along with pricing and customer ratings that are designed to help customers:

- Find information quickly and easily about what appliances best meet their unique needs,
- Compare energy efficient products side-by-side, and make confident and informed decisions.

The EPG was piloted in a test group of approximately 120,000 residential customers in order to evaluate the efficacy of market-based savings approach, (i.e., customers choose a more efficient product than they would have without the platform.)

Between January and December 2022, customers visited the EPG over 10,000 times, resulting in almost 6,000 engaged actions.

After careful consideration and deliberation, and given the independent evaluation's findings of no statistically significant savings, PSE has decided not to continue the program past the end of 2022. While surveyed customers expressed general positive sentiment about the usability of the online guide, independent return visits not prompted by marketing emails for research by customers were low.

2. Single Family AMI/Home Energy Display

The Single Family AMI pilot, also known as the HED pilot, launched in December 2021. The goal of the pilot is to confirm that an in-home energy display along with a supporting portal, which encourages and supports customer engagement, can modify customer behavior enough to produce energy savings.

Customers must meet the following characteristic in order to participate in the HED Pilot:

- residential electric or dual fuel customers
- single-family homes (excluding renters)
- their home has had a PSE AMI electric meter for at least 12 months

Pilot participants purchase a rebated Rainforest EMU-2 in-home display unit that syncs with their AMI meter for a real-time energy usage display.

As part of the pilot, an online portal is available to a subset of participants. The portal has tips and challenges for customers to complete to encourage them to utilize their device and take actions to reduce their energy usage.

The intention is that all participants have displays as a baseline; the comparison will be between those with just the displays and those who have the display and access to the portal. In order to get a clear sense of the potential of the pilot, getting participants to engage in the pilot is critical. In 2022, PSE designed a targeted recruitment roll out strategy and successfully recruited

enough pilot participants by April — one month ahead of schedule — for the pilot to have a sufficient sampling size for evaluation.

This pilot is PSE's first endpoint device project where customers are using real-time AMI data to assess their energy use. By the end of 2022, 2,297 customers were enrolled and participating in the pilot.

D. Regional Programs

This section provides an overview summary of programs that do not fit into the REM or BEM Sectors, are of a more regional nature (consisting of sites, installations, or facilities outside of PSE's service area), or are not directly managed by CEM Management program staff.

1. Northwest Energy Efficiency Alliance

Schedule E254

NEEA is a non-profit organization working to maximize energy efficiency to meet the future energy needs of the Northwest. NEEA is supported by, and works in collaboration with, the Bonneville Power Administration, PSE, and more than 100 Northwest utilities on behalf of 12 million electric customers.

PSE and its customers benefit from NEEA's market transformation work to accelerate the market adoption of energy efficient products, services and practices, and to fill the energy efficiency pipeline with emerging technologies. NEEA works upstream to expand the market for energy efficiency and complements utility programs. NEEA's regional advantage allows PSE and other Northwest utilities to leverage the market power of the entire region to realize economies of scale.

PSE staff represent customers and energy efficiency programs on several NEEA committees, including the following:

- Products Coordinating Committee;
- Integrated Systems Coordinating Committee;
- Products Coordination Council;
- Regional Emerging Technology Advisory Committee;
- Cost Effectiveness Advisory Committee;
- Natural Gas Advisory Committee; and the
- End Use Load Research Project.

Exhibit 5 of this Report summarizes NEEA's 2022 value delivery to PSE for both its electric transformation efforts, as well as the new Natural Gas Advisory Committee. PSE extends its

sincere appreciation to the NEEA staff for their extensive work to provide this level of detailed information outside of its normal reporting cycle. For additional information about NEEA's unique value to the region, history, structure, and recent initiatives, please visit www.neea.org.

a. ***NEEA's Natural Gas Market Transformation Collaborative***

NEEA provides a more comprehensive discussion of its 2022 natural gas market transformation activities in Exhibit 5. PSE ratepayers are major funders of NEEA's collaborative, funding over 40 percent of the overall five-year budget of $18.3 million. The NEEA Natural Gas Market Transformation 2022 expenses of $1,100,112 were under the budget of $1,590,236.

NEEA reported natural gas code savings from activities in 2022. Code savings are forecasted separately from energy efficiency potential and are also recorded outside of the PSE CEM savings. No other natural gas savings from the Collaborative were able to be tied to PSE service territory in 2022.

b. ***Exhibit 5: NEEA 2022 Report of Activities and Initiatives***

Exhibit 5 summarizes 2022 activities, regional initiatives, and outcomes in the areas of emerging technologies, residential, industrial, commercial, codes and standards, partner services, and evaluation by the Northwest Energy Efficiency Alliance in PSE's service area.

2. Targeted Demand Side Management (TDSM)

Schedule 219

Targeted DSM (TDSM) is an initiative designed to identify localized conservation and demand response potential, develop plans to achieve a defined percentage of that potential, then implement those plans to deliver identified energy efficiency and capacity savings. PSE plans to reduce winter peak electrical usage on Bainbridge Island by 3.3 MW and Duvall's winter peak natural gas usage by 3000 MBH by 2029.

The TDSM program uses avoided costs for a specific municipality to calculate the cost-effectiveness of conservation measures. This allows PSE to offer rebates and incentives to PSE customers in these locations that are higher than those in its broader service territory. These rebates and incentives are available only during the duration of the specific non-wired alternative (NWA) Project, as determined by PSE.

a. ***2022 Program Accomplishments***

On November 7, PSE launched TDSM programs in the cities of Bainbridge Island and Duvall under the program name Peak Energy Rewards. These programs offer increased incentives for HVAC, Water Heat, Weatherization, and Windows for both Single and Multi-family customers, along with incentives for enrolling in Demand Response. Single-family customers can obtain enhanced rebates through project referrals for Recommended Energy

Professionals (REPs) generated by PSE and receive rebates directly on their project invoice to streamline the customer incentive process.

b. ***Adaptive Management***

Due to the sensitive nature of Peak Energy Rewards' enhanced rebates, marketing and outreach for the program was highly targeted. As such, marketing was restricted to a simple program web page, along with physical mailers sent only to residence residing within city limits. This created a gap in PSE's standard marketing vehicles, which led to the creation of a Peak Energy Rewards web page. This page contains basic information about the program and contact resources for project referral generation, along with customer support. Enhancements to the web page are planned in 2023 to implement a gating system that allows PSE customers who live in qualified TDSM cities to access a program page with detailed information, including equipment incentives, energy saving tips, and a detailed FAQ about the program.

PSE wanted to ensure multifamily customers receive equitable engagement. To address this, PSE leveraged existing relationships within the Multifamily program to develop training and educational materials for its Multifamily implementer. The multifamily experience differs from PSE's single-family offerings in the sense that single-family customers are being marketed to directly and are the sole deciders whencommitting to a project, whereas deciders for multifamily dwellings are marketed to through direct outreach by the Multifamily program implementer. Leveraging the existing relationships, networks, and processes allows PSE to streamline customer outreach and education for Peak Energy Rewards, while providing the standard Multifamily program additional resources to increase project conversion rates.

c. ***Key Variance Drivers***

Peak Energy Rewards was originally scheduled to launch in the summer of 2022. Due to technology limitations of a chosen implementation partner responsible for delivering the demand response component of TDSM savings goals, the launch had to be postponed by two months. This postponement applied a downward pressure on PSE's ability to capture installation projects prior to the end of the year.

In addition to the launch delay, installers in this region are inundated with work. This causes extended lead times on scheduling projects and gives installers the ability to pick and choose what projects they commit to. This, in conjunction with the fact that Peak Energy Rewards launched during the holiday season, mitigated Trade Allies' ability to dedicate bandwidth to learning the program. As such, initial installations utilizing the program's enhanced incentives did not see the anticipated uptake prior to the close of the year.

3. Production and Distribution Efficiency

Schedule E292

The Production and Distribution Efficiency program involves implementing energy conservation measures within PSE's own production and distribution facilities that provide cost-effective, reliable, and feasible energy savings.

Within production facilities, conservation measures reduce ancillary loads at the site and exclude efficiency improvements made to the generating equipment itself. These measures may include, but are not limited to, lighting upgrades, variable speed drives, and compressor upgrades.

For transmission and distribution (T&D) efficiency, efficiency measures are implemented at PSE's electric substations. These improvements may involve reducing the energy use within the substation or the distribution of energy beyond it. Efficiency measures may include lighting and heat pumps at the substation or system improvement measures including phase balancing and conservation voltage reduction (CVR), also referred to as voltage optimization (VO).

a. *2022 Program Accomplishments*

In 2022, PSE achieved 2,980,966 kWh of electric savings in the Production and Distribution Efficiency program from five fully implemented CVR projects. Four of these CVR projects had customer reliability issues after implementation due to low voltage issues at customer sites. Voltage settings for these four projects were adjusted back to pre-CVR settings to resolve customer power quality and reliability issues. These projects are being studied for re-implementation and will require more conservative voltage settings, which will reduce claimed 2022 CVR savings. Additionally, two of the four disabled sites may not be re-implemented in 2023 due to abnormal conditions driven by ongoing construction in the areas served by the substations. These ongoing challenges require proper phase balancing prior to CVR re-implementation. These two projects will get re-implemented when phase balancing can occur and savings will be claimed at that time. In total, the voltage adjustments and sites with delayed re-implementation will reduce final 2022 savings from CVR by 60 to 70 percent or more with final savings being dependent on the final voltage settings and re-implementation timeline. Adjustments to the claimed energy savings and quantify of fully commissioned CVR projects for 2022 will be reflected in PSE's 2023 Annual Conservation Report.

Analyses were performed during 2020-2021 to identify cost-effective measures at PSE production facilities, however, none were identified. There were no planned production facility projects in 2022 and no projects were implemented. The program focuses on efficiency opportunities of ancillary loads at generating facilities such as HVAC, lighting, and variable speed drives. Typically, these projects occur as incremental opportunities when offices or other non-generation equipment is updated at production facilities. Program staff will continue examination of these facilities and incorporate projects should opportunities become cost-effective.

b. *Adaptive Management*

In 2022, the distribution efficiency program extensively planned the Volt-Var Optimization (VVO) Pilots. The VVO pilots will be an improved CVR implementation method that allows for deeper levels of savings over PSE's current CVR implementation method of line drop compensation (LDC). Activities included selecting pilot locations, developing measurement and verification plans for the sites, and developing preliminary engineering plans for the equipment needed. VVO Pilots are currently planned for implementation in 2025/2026.

E. Other Customer Programs

PSE separates the Other Electric Programs category from other Electric and Gas Rider programs because they are not used in calculating cost-effectiveness of the overall Portfolio.

In 2022, the only program (partially) funded by the Conservation Rider, for which conservation savings are not claimed, was Net Metering. Net Metering is for onsite customer-side generation, including solar, wind, anaerobic digesters (renewable natural gas, etc.), and small-scale hydro. Net Metered systems are smaller than 100 kilowatts (kW).[4] Only other electric programs are excluded from CEM's cost-effectiveness calculations.

1. Net Metering

Schedule E150

PSE's Net Energy Metering (NEM) program provides interconnection services for qualifying customer-generators in accordance with State legislation enacted into law in February 11, 1999, and most recently amended July 28, 2019 (see RCW 80.60).

PSE provides interconnection services to qualifying customer-generators who operate fuel cells, hydroelectric, solar, wind, or animal waste gas generators of no more than 100 kilowatts (kW). In accordance with 80.60 RCW, PSE offers Schedule 150 (revised July 28, 2019) on a first-come, first-served basis until cumulative generating capacity taking part in this schedule reaches 179.2 megawatts (MW). Net Metered customer-generation can be used to offset part or all of the customer-generator's electricity use under Schedules 7 through 49 of Electric Tariff G.

Energy produced by customer-generator systems directly reduces energy used in the home or business from the grid. When the energy generated exceeds home or business electrical loads, the excess energy flowing to PSE is credited against the customer's consumption. In accordance with RCW 80.60, PSE also allows net metered customers to aggregate net excess

[4] Larger systems fall under the considerations of PSE's Schedule 91: Cogeneration and Small Power Production.

generation from their net metered service to offset consumption at one other electric service meter on the same or contiguous property and in the same account holder's name.

The Net Metering program's year runs April 1 to March 31. Any excess credit each month is rolled forward to the following month. When the new program year ends on March 31, the credit is reset to zero with no compensation to the customer.

While schedule 150 Net Metering applies to customers who generate electricity using water, wind, solar energy, or biogas from animal waste as fuel, 99.9 percent of new net metered systems were solar PV (photovoltaic) in 2022 with a median size of 10 kW DC and 9.6 kW DC for residential systems alone.

No direct customer incentives are provided by PSE as a part of this program. As described in the following section, the Conservation Rider only funds administrative and applicable distribution expenses, as provided by the indicated requirements.

a. *2022 Program Accomplishments*

PSE continues to see significant year-over-year growth in net metering. In 2022, PSE interconnected 3,745 customer projects under net metering, a 96.5 percent increase over 2021. In total, the projects added 31 MWs of solar, bringing the total net metered installed capacity to 136.8 MWs.

In addition, the PSE Energy Advisors responded to 4,193 customer calls regarding solar and generated 1,162 solar referrals upon customer request.

Error! Reference source not found. provides a program view of cumulative year-end number and capacity of net-metered systems.

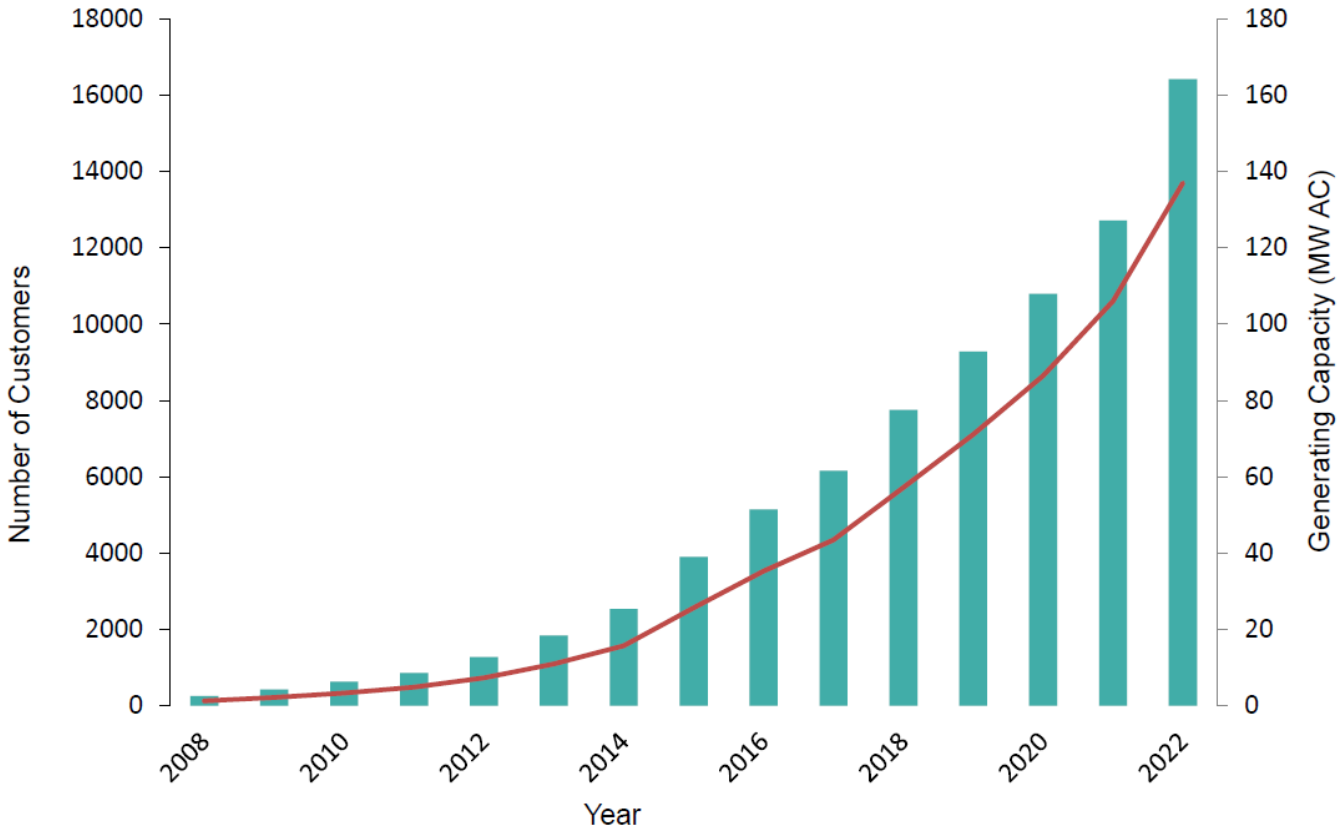

Figure I-1: Net Metering Customer-Generator System Count, 2008-2022

b. *Adaptive Management*

PSE continues to utilize PowerClerk, a cloud-based software solution to manage the interconnection application and review process. PowerClerk allows the user to make continuous improvements to the workflow that has helped PSE to adapt to the increasing number of project applications, as well as improving the data management capabilities for distributed solar on PSE's system.

c. *Key Variance Drivers*

As discussed above, growth in Net Metering grew by nearly 100 percent over 2021. The continued growth, year over year, has resulted in a higher-than-forecasted increase in the distribution charges that reflect the cost net metering customers create by storing kWh on PSE's distribution system. The charges also reflect the annual forfeiture by net metering customers for the unused kWh on PSE's distribution system. This expense shows up as a miscellaneous charge against the conservation rider.

In addition, annual fees for the PowerClerk Software tool exceeded forecasts due to the higher-than-anticipated number of customer applications. PSE pays an annual subscription

fee, along with a fee for each application and electronic signature. When applications exceed expectations, so do the costs.

2. Production Metering

Schedule 151

PSE administers the Washington State Renewable Energy Production Incentive Program, which provides qualifying Customer-Generators with production payments in accordance with State legislation and WAC 458-20-273. PSE receives tax credits for renewable production payments, as outlined in RCW 82.16. No direct customer incentives are provided by PSE as a part of this program. As described in the following section, the Conservation Rider only funds administrative and applicable distribution expenses, as provided by the indicated requirements. The terms of PSE's administration of payments to customers are described in Schedule 151.

Most customers enrolled in PSE's Net Metering program who have solar systems installed before June 2019 were also enrolled in the Washington State Renewable Energy Production Incentive Program. Eligibility, incentive rates, terms, and annual payments are determined by the Washington State University Energy Program. Participants with systems enrolled prior to October 2017 were in the state's RECRIP (the legacy program) for which PSE made final payments in 2020.

In 2022, PSE administered over $3.8 million to over 2,600 customer participants in the RESIP program for the generation of more than 31 million kilowatt-hours. To date, PSE has issued over $99 million in Schedule 151 production incentive payments.

Since the close of the state incentive program to new PSE solar customers in 2019, PSE has continued to offer, but does not require, production metering as part of an interconnected system. In 2022, fewer than 5 percent of new PSE solar customers included a utility-owned production meter in their system design.

3. Targeted Demand Response

Schedules E/G 249A, E/G 271

The purpose of the Targeted Demand Response (Targeted DR) pilot is to evaluate DR options applicable to identified NWA projects in specific, targeted localities. This pilot program evaluates several attributes, including technology requirements and performance; customer behavior and preferences; impacts and integration of DR to company operations; program costs; demand reductions achieved; energy savings achieved; and localized distribution system benefits. PSE expects to gain experience with DR technologies; a greater understanding of customer acceptance and tolerance of Demand control; the need for customer incentives (financial or other); and demand reduction effectiveness and reliability.

Targeted DR efforts are also included as a component of PSE's TDSM pilot for Bainbridge Island and Duvall.

a. *2022 Program Accomplishments*

In November, PSE launched Targeted DR programs in conjunction with Peak Energy Rewards (TDSM) in the cities of Bainbridge Island and Duvall. The goal of these programs was to measure the effective curtailment potential and impacts to both electric and gas infrastructure in the areas.

b. *Adaptive Management*

Targeted DR was originally planned to launch with Nest, ecobee, Mysa, and Honeywell as thermostat partners. Due to limitations of the DR platform provider, it was discovered that integration of Honeywell into PSE's Demand Response platform required additional development time implement. As such, inclusion of Honeywell in PSE's demand response platform was postponed to 2023 in order to meet the commitment to execute electric and gas demand response events in 2022.

c. *Key Variance Drivers*

Targeted DR was originally scheduled to launch in the summer of 2022. Due to technology limitations of a chosen implementation partner responsible for delivering the Demand Response platform, the launch had to be postponed by two months. This postponement applied a downward pressure on PSE's ability to capture a higher level of enrollees than planned for going into the peak winter season. As such, enrollment goals fell short of target, but only by a small magnitude. Despite this delay, PSE's Targeted DR enrollment goals are still on track in both Bainbridge and Duvall from a year-over-year perspective.

A secondary driver, noted in the Adaptive Management section, was the limited number of thermostat OEM partners PSE's selected Demand Response technology implementer was able to integrate into the platform within the established timeline. As such, only Nest, ecobee, and Mysa customers were able to enroll in PSE's Targeted DR program in 2022. Plans were made in Q4 of 2023 to include additional OEM partners to broaden accessibility for customers in the service territory.

II. Support & Planning

A. Portfolio Support

The organizations that comprise the Portfolio Support group play a critical role in CEM's success of consistently achieving conservation targets within expected cost parameters. Much of what REM and BEM Management (who make up key elements of the CEM department) implements and offers to customers depends on the work performed by these teams.

The teams' activities do not directly result in electric or natural gas savings, although the Portfolio Support activities expenses are spread over the portfolio for purposes of calculating cost effectiveness. The groups collaborate with program staff to ensure that (1) they engage and represent all customer classes, (2) incentives are properly set, and (3) program staff are targeting their efficiency communication effectively. Through market research and planning, the establishment of compelling messaging, easy-to-navigate and intuitive web content, and visible conservation presence within the communities that PSE serves and with its trade allies, the teams' contributions cannot be overstated.

1. Data and Systems Services

The Data and Systems Services organization performs the critical role of planning, development, support, and enhancement of CEM systems and tools. The team manages the ongoing support of the department's Demand Side Management central (DSMc) system, which:

- Compiles and tracks CEM programs, projects and measures, and
- Processes Residential, Commercial Rebates and Commercial Grants through structured workflows to provide a consistent review, approval and payment process.
- Provides a rebate submission portal for customers and contractors to submit and track residential rebates online (HVAC, Weatherization, Appliances and Smart Thermostats).
- Creates reporting, forecasting, and business performance metrics.

This group also oversees the department's EES Tracking and Forecasting system which is used to track and forecast program savings and expenses. This system allows the department to better monitor its progress towards meeting annual savings and spending targets for the entire EES portfolio of programs.

The Data and Systems Services organization also conducts analytics by understanding and presenting program data as meaningful knowledge and insights. The team is responsible for reviewing and ensuring data integrity from a wide variety of sources, including vendors, program staff, and contractors.

a. *2022 Program Accomplishments*

In 2022, the D&SS team launched the residential smart thermostat program on the online rebate portal. This replaced a previous submission portal that was managed by an external

vendor. This transition to an internally managed submission portal provides significant cost savings to the Smart Thermostat program and allows PSE to directly manage these customer rebates and interact directly with customers should questions or issues arise.

The D&SS team also worked to build new measures and modify many of the existing residential programs to offer special rebates associated with the TDSM initiative. Additionally, the team built a new process to provide customers an incentive for registering into PSE's new Demand Response program (Peak Energy Rewards).

Several commercial workflows were also developed and deployed in this system for managing projects. These include a new Telecom program as well as a Clean Buildings Accelerator program.

b. ***Adaptive Management***

The D&SS team implemented improvements to make the rebate application submittal process more intuitive. This included adding more instructions for customer and contractor submissions, changing the icons used for navigating through the application process and changes to improve the look and feel of the rebate submittal experience online.

Finally, the D&SS teamed developed and launched a Rebate Dashboard for PSE program staff to better track rebate volumes, clearly see processing times, and to better understand issues that can extend processing times.

2. Rebates Processing

Functions within the Rebates Processing team include intake, qualification, payment and customer service, as well as process improvement in the customer experience. Improvements include, but are not limited to, redesigning rebate forms for clear instructions and qualifying criteria, analyzing rejection reasons for the root cause of non-qualified rebates, and simplifying the application process for customers.

The Rebates Processing budget is predominantly labor and includes training, planning and development costs projected by Rebate Processing staff.

Roles on the Rebates Processing team include:

- Intake, qualifying, data entry, and incentive payment processing;
- Communicating with customers regarding the rebate submittal, including status and payment;
- Collaborating with the Energy Advisors to provide a seamless and efficient customer experience;
- Demonstrating best practices and continuous improvement; and
- Coordinating timely customer payments with PSE Accounts Payable.

The Rebates Processing team perform a critical verification step in CEM. While a selected sample of applications are directed for onsite inspection by the Verification team, all must go through several verification steps prior to payment authorization.

Key attributes include:

- Is the applicant a PSE customer?
- Is this the correct fuel type?
- Is the customer receiving service under the applicable Rate and Conservation Schedule?
- Did the customer submit a valid receipt (rather than one that's been used before)?
- Is the equipment eligible?
- Etc.

Table II-1 provides a summary of rebates processed by CEM Rebate Processing staff. The totals are not inclusive of all rebates, instant point of purchase markdowns, etc. paid within the REM sector. As with program measure counts, the totals are rounded and are intended only to provide a sense of the scale of activity within the Rebates Processing group.

Table II-1: 2022 In-House Residential Rebates Paid

Program	Count	Electric Incentives Paid	Gas Incentives Paid
Commercial HVAC	28	$139,883	$0
Commercial Kitchens	37	$32,235	$50,200
Electric Home Heating	2,737	$3,480,741	$0
Electric Water Heating	31	$15,400	$0
Lodging	25	$1,556,077	$0
Manufactured Home New Construction	142	$95,000	$1,000
Natural Gas Home Heating	5,005	$0	$3,053,200
Natural Gas Water Heating	1,052	$0	$255,800
Residential Smart Thermostats	4,043	$87,268	$260,796
Residential Windows	1,426	$412,353	$422,410
Retail Appliances	3,663	$267,400	$0

Single Family New Construction	65	$56,119	$26,500
Single Family Weatherization	2,658	$528,367	$1,927,353
Totals	**20,912**	**$6,670,843**	**$5,997,259**

3. Verification Team

The Verification team serves as another key element of its EM&V efforts. The Verification team provides PSE program staff with an overarching process to improve the quality of program implementation and validate energy savings with a high degree of rigor by incorporating higher levels of measurement and verification activities.

As the "V" in EM&V, PSE's Verification team performs on-site inspections and confirmations of randomly-selected participating homes and businesses to assure energy efficiency measures are properly installed. Combined with other Evaluation and Measurement functions, the Verification team seeks to secure both confidence in claimed energy savings and improvements in program quality.

a. *Composition*

The Verification team consists of quality assurance specialists and business analysts. The QA verification inspectors are responsible for conducting on-site inspections and related activities to verify installation of energy efficiency measures for rebated equipment. This team confirms installed measure quantities, model numbers, site qualifications, equipment settings, and other related installation parameters through review of primary documentation, phone surveys, and onsite inspections.

Energy efficiency measures include those installed and reported by trade allies, PSE contractors, and other third parties. The team's Business Analyst is responsible for data and systems, forecasting and working closely with program staff on a regular basis. The Business Analyst is also responsible for preparing the reporting, tracking, and communicating program findings and other related information from the field verifications to the program staff.

b. *Objective*

The team strives to positively contribute to program quality implementation and validate energy savings by combining detailed and documented statistical methods of analysis and sampling[5] with individualized field inspection protocols and documentation requirements tailored to each specific program.

[5] Sampling methods for randomly identifying measures or projects for verification, and a sampling tool to determine sample size for verification of each program was developed in collaboration with DNV KEMA and deployed throughout 2020.

Additionally, the Verification team assists with other quality assurance interests in residential and business efficiency programs; including non-random visits and reviewing retail stores' advertisements and inventory in the stores. Non-random visits, typically performed at the request of program managers for case-specific interests, are considered quality assurance reviews, and may also result in documented findings for program management follow-up.

When performing onsite inspections, QA verification inspectors routinely engage customers in several energy efficiency elements about which the customer may not have been aware. For instance, the QA verification inspector may provide a referral to a CAN contractor, alert the customer that they may be eligible for a weatherization rebate, etc. These efforts lead to increased customer satisfaction and raise customer awareness.

Table II-2 highlights the overall verification totals per program.

Table II-2: Summary of Verifications by Measure Type

Measure Category	Count
Commercial Midstream	1
Electric Home Heating	354
Electric Water Heating	8
Low Income Weatherization	21
Natural Gas Home Heating	942
Natural Gas Water Heating	123
Residential Midstream Home Heating	1
Residential Smart Thermostats	111
Residential Windows	12
Retail Appliances	59
Single-Family Weatherization	662
Small Business Direct Install	1
Web-Enabled Thermostats	1
Total Verifications	**2,296**

4. Programs Support

Programs Support functions include data management, employee engagement, communications, and integration work by Programs Support staff, and all supporting implementation of Residential and BEM customer programs. The Programs Support budget is

predominantly labor and includes training, planning and development costs projected by Programs Support staff.

Program Support roles include, but aren't limited to:

- Collaboration with CEM stakeholders on internal employee and customer communications;
- Biennial and strategic program planning support;
- Customer experience – CEM program participation surveys;
- Operational strategy and implementation;
- Organizational change management;
- Information technology;
- Developing program manuals, policies, document control and department presentations;
- Integration liaisons with Marketing, Outreach, Digital Experience, and other PSE internal departments;
- Trade Ally support; and
- Best practices and continuous improvement.

5. Trade Ally Support

Trade Ally Support manages PSE membership costs in CEM trade associations. These organizations stand apart from other trade memberships managed in individual CEM programs in that they provide comparatively broad-based EE research, training and/or implementation support services.

This function is the key difference that distinguishes this organization from the next group to be discussed, the Trade Ally Network (TAN), which manages direct relationships and referral processes for the TAN.

Trade Ally Support organizations provide education, information and related services for:

- The adoption or expansion of energy-efficiency products, services, and practices; and
- Conducting research toward the development of new, or improved validation or delivery of existing conservation measures, programs and services.

The Trade Ally Support line item budgets and tracks only annual membership dues or CEM services subscriptions PSE pays to broad-based industry trade and research organizations who perform and support ongoing development and implementation of REM and BEM programs.

PSE participates in and utilizes the services of many such organizations to support delivery, management, and promotion of energy efficiency services.

Utility, customer, and service provider benefits primarily include education and information exchange on end-use technologies, energy legislation, efficiency services, and related industry trends.

PSE budgets and tracks other Trade Ally expenses not related to dues, for example conference attendance by PSE CEM staff, with the pertinent efficiency program(s) receiving the benefit.

a. *Memberships and Subscriptions*

As discussed in Chapter 10: *Measurement & Verification*, PSE applies a great deal of rigor to ensure that Conservation Rider customer funds are used appropriately to add value to CEM conservation offerings when considering memberships.

Memberships paid from the Trade Ally Support account in 2022 focused mainly on local or regional conservation efforts. 2022 memberships included:

- Association of Energy Services Professionals – AESP;
- Consortium for Energy Efficiency – CEE;
- Electric League of the Pacific Northwest;
- ESource;
- Energy Solutions Center – ESC; and,
- Northwest Energy Efficiency Council – NEEC.

This extensive industry database provides an additional insight for program staff to ensure that they maintain awareness in utility and efficiency developments. 2022's subscription included additional tools for technology assessment and eliminated access to customer journey mapping tools (essentially, a process flow diagram of the customer experience with a utility).

6. Trade Ally Network

The TAN connects PSE customers with pre-screened, independent contractors committed to helping customers make safe, dependable and efficient energy choices. This ensures their business and home energy improvement projects are successful and handled with a high level of customer service. This customer service is the key difference that distinguishes this organization from the Trade Ally Support group, which manages memberships with industry trade organizations.

To determine if a specific contractor is participating in PSE's TAN customers can call an Energy Advisor at 1-800-562-1482. Additionally, the Trade Ally Connect web portal assists customers with referrals to member contractors, who service their respective areas, for energy efficient equipment installations.

a. *2022 Program Accomplishments*

The TAN set a five-year high for the number of customer referrals generated to the network of REPs in 2022. This resulted in the program seeing a 5 percent growth in revenue when compared to 2021, which supports general operation of the TAN.

In addition to supporting PSE customers, the TAN supports CEM rebate programs, initiatives, & pilots such as Efficiency Boost & Peak Energy Rewards with contractor support as well as customer referrals. The Efficiency Boost program has seen customer referrals grows exponentially since 2020 as more Trade Allies learn about the program and support its success. The Peak Energy Rewards program launched at the end of 2022 which included a new referral product for the TAN of Smart Thermostats. The team looks to continue engagements with Trade Allies in the future to further support this program

The network also supports organizations outside of CEM with contractor resources, such as the Customer Connected Solar team & PSE's Electric Vehicle programs. Continuing to support customers who are wanting to participate in these programs with reliable & trusted contractors is critical for PSE's future. As with customer referrals on the whole, both of these referral offerings saw growth in 2022.

b. *Adaptive Management*

The TAN made relatively small continuous enhancements to the Trade Ally Portal (TAP) throughout 2022 to improve the contractor experience while PSE looks to further expand on this in 2023.

In some rural areas of PSE's service territory where contractor resources may be light, the TAN worked with existing Trade Allies serving bordering areas to help customers acquire contractor resources. The TAN team will engage with non-participating contractors in those rural areas to share the benefits of joining the TAN to boost customer resources in the future.

c. *Key Variance Drivers*

As the region, customers, and PSE continue to recover from previous years, the TAN saw overall success in 2022 while supporting CEM programs and PSE customers. Recovery efforts, contractor supply chain improvements, and customer engagements led to the above success.

7. Automated Benchmarking System: EnergyCAP

EnergyCAP is an online platform for commercial PSE customers to view their energy usage data. Users can also submit data to Energy Star Portfolio Manager for compliance with Clean Buildings and Seattle Energy Benchmarking ordinances. This tool replaces the MyData and MyDataManager legacy software.

a. *2022 Program Accomplishments*

In 2022, PSE launched the EnergyCAP software to replace the PSE MyData and PSE MyDataManager platforms. This was a cross-departmental effort to secure customer data streams and migrate users. At the end of 2022, EnergyCAP housed approximately 500 customer portfolios, a mix of existing and new users.

b. *Adaptive Management*

The scope of EnergyCAP implementation changed over the course of 2022 to accommodate difficulties in accessing and transferring data streams. The project was intended to launch in August 2022, but it instead used a phased approach to launch aspects of the system as they became available. For example, interval data launched in the EnergyCAP system in January 2023. As building performance standards continue to expand, the EnergyCAP team is focused on providing reliable access to billing data and expanding operations to support increased customer use.

c. *Key Variance Drivers*

EnergyCAP performance is primarily impacted by data reliability, quality, and availability. EnergyCAP is also influenced by the need for manual input by team members. Currently, the system requires high-touch manual interaction, which is expected to decrease as users become more familiar with the system and data issues decrease. PSE expects to see increased use of the system as compliance deadlines approach, but look for solutions that decrease the manual interaction per user.

8. Energy Advisors

The Energy Advisor Department is a unique customer solution operation. This expert group brings efficiency into PSE customers' homes, and guides customers in changing behaviors, understanding their energy use, and assisting them in using PSE's best-suited programs for their needs. Energy Advisors (EAs) also promote and explain PSE's renewable energy programs, energy efficiency rebates, available promotions, products and services and tax incentives. The Energy Advisors assist customers with these services over the phone, email, and in person.

Unlike transaction-based customer care departments, the EAs provide expertise and deliver solutions tailor-made for customers' homes. The EAs perform research, conduct analyses, provide resolution, and respond to customer inquiries. They follow-up on requests related to energy efficiency and conservation that inform customers, and they make suggestions on how customers can reduce and manage their energy use. EAs represent PSE in an effort to promote and cross-market energy-efficiency products and services by presenting and providing educational materials to employees, organizations, and community groups.

EAs receive training and instruction in departmental procedures, tools and systems, current programs, building science, and customer service. They are expected to use good judgment in

independently responding to recurring customer issues and/or complaints. Unique, difficult, or unusual customer service issues are referred to Senior EAs**.**

Customers have access to speak directly to an EA through a toll-free number, **1-800-562-1482**, Monday through Friday, 8 a.m. to 5 p.m.

a. *2022 Program Accomplishments*

Table II-3 provides a summary of key EA customer-focused metrics.

Table II-3: Key Energy Advisor Metrics

2021 Energy Advisors	
Calls Answered	40,514
Emails	6,052
Events Staffed	21
Contractor Referrals Generated	9,204

The metrics noted in Table II-3 denote:

- Calls Answered are from the Residential Sector and a portion of Business Sector incoming activity.
- Events staffed are those home shows, municipal gatherings, and other events where EAs are on-hand to share a wide range of CEM information directly with PSE customers. Event metrics are presented in the following section.
- Emails include a wide variety of actions taken by EAs in response to emails sent to the general EA email link.

9. Energy Efficient Communities

EEC is a program-support channel to deliver CEM program information directly to residential and small commercial customers and through partnerships with community organizations, municipalities and other entities at the local level. The program works to leverage community resources to connect with, educate and move customers to CEM program participation. The team works to discover locally-appropriate ways of engaging with customers by leveraging PSE's resources, community knowledge and partner support.

The EEC team works closely with the CEM programs to determine whether a broader partnership with a community organization or a more targeted, direct-to-customer approach is needed, such as a door-to-door initiative to small businesses. As an outreach team for both residential and small commercial programs, the EEC team also works on cross-program promotion, where appropriate.

The following discussions provide reviews of key 2022 EEC’s areas of focus.

a. *2022 Program Accomplishments*

- Delivered more than 125 presentations on a variety of programs and participated in an additional 121 events (virtual and in-person, as appropriate) to service organizations, homeowner's associations, downtown associations, non-profit organizations, etc.
- Partnered with 11 non-profit organizations, through PSE's Powerful Partnerships program, that had an interest in pursuing sustainability throughout their own organization or with their audiences. The team worked with the partners to promote select energy efficiency programs through their monthly digital/print/web/social outlets and directly with their client base through resource tabling, workshops and webinars.
- Created county profiles to showcase the number of residential and commercial rebates processed, as well as the total residential and commercial incentives that were paid each year. These profiles are available on pse.com and are used during presentations to a variety of audiences, such as city councils, homeowners' association meetings, and tabling events. These profiles show that customers are participating in energy efficiency programs at a local level to generate local interest.
- Identified completed projects that showcase energy efficiency measures for use in case studies on social media, video, web and print collateral.
- Identified 3rd party sharing opportunities with community-based organizations to share promotional emails, social media posts and newsletter blurbs, resulting in 99,851 impressions.
- Identified 37 small businesses throughout the year for assessment and project completion for the SBDI program.
- Led direct engagement with 100 local businesses and interest list building for three SBDI blitzes in Cle Elum/Rosyln, Lacey, and Whidbey areas.
- Followed up with 484 recent SBDI participants to educate and propose further Small to Medium Business program/ efficiency opportunities, focused on Commercial HVAC, Commercial Kitchen, and Commercial lodging programs.

Table II-4: Customer Outreach Activities and Impressions

Customer Type	Outreach activities	Engagements and Impressions	In Language Engagements and Impressions
Commercial focused	132	12736	990
Residential focused	203	42871	5986

Totals	**335**	**55607**	**6976**

b. *Adaptive Management*

The Communities team pivoted focus towards priority audiences including vulnerable populations and small to medium businesses where direct, in person engagement builds trust. Specific attention was given towards income eligible programs: Low Income Weatherization, Efficiency Boost, and low barrier to entry programs like Smart Thermostat and the PSE Marketplace. PSE partnered with local community-based organizations to find events, and training workshop opportunities to connect directly with these audiences.

The team built workshop style presentations where customers could be walked through application processes and build confidence in utilizing available efficiency programs on pse.com.

Additionally, the Communities team partnered with the marketing team to build an in language Spanish campaign including 26 workshops, tabling events and presentations, staffed booths at large scale culturally appropriate events, and identified in language collateral distribution opportunities.

c. *Pilot-like Initiatives*

The Communities team coordinated SBDI multilingual third-party contract management with two local contractors. These contractors developed lists of multilingual businesses and provided in language outreach in Spanish, Mandarin, Cantonese, and Vietnamese. This resulted in 42 completed SBDI projects, with a savings of 170,986 kWh.

Additionally, the team initiated conversations with local city government agency in Lacey for a potential 2023 pilot rebate-matching program.

d. *Equity Focus*

The pilot initiative noted above for small business in language was also an effort to engage English as a second language customers.

Other activities conducted targeted with an equity focus included:

- In language presentations, workshops and train the trainer style classes, as well as collateral distribution, in collaboration with local community-based organizations, targeted towards Low Income Weatherization, Efficiency Boost, and energy saving tips for homes.
- Support for a limited time offer Smart Thermostat promotion to income eligible customers through 50 local resource fair tabling at food banks and community centers, including 14 in Spanish language.

10. Customer Digital Experience

The focus of the Customer Digital Experience initiatives is to significantly improve CEM's ability to communicate the "how and why" of energy efficiency, using new technologies and engaging interactive methods. Ongoing work includes the design of web tools and mobile-friendly apps that are effective in delivering electricity and natural gas savings. Customer Digital Experience supports interactive content development, e-newsletters and other miscellaneous software applications, including online form, database and web hosting services.

a. *Customer Awareness Tools*

The Customer Awareness Tools category is comprised of four electronic services provided to PSE customers via a variety of media, designed to fit customers' communication expectations. The services include:

i. Unusual Usage Alerts (UUA)

- Available for residential customers with an AMR or AMI meter and 12 or more months of data at the current address.
- More than 215,000 UUA reports were delivered to customers in 2022.
- Unusual usage alerts are generated when a customer is projected to use significantly more energy than they used for the same billing cycle the year prior.
- Two major changes were made to the UUA communications in 2022 to help customers better understand what the projected increase means, and which 6-hour period during the day the customer on average uses the most energy (for AMI metered customers).

ii. My Energy Usage

- When PSE customers log onto their PSE digital account, they can view their energy usage center, which is moderated by PSE's contractor.
- Additionally, the energy usage center also allows customers to select ways to be more energy efficient to help them save energy, and perform an online assessment to learn about their home's energy usage
- A major accomplishment in 2022 was having deeper customer engagement with the online tools, beyond simply viewing usage graphs. PSE saw a 58% increase in page views of the Home Energy Survey, Usage Analysis, and Ways to Save pages compared to the average for 2020-21. PSE also saw a 103% increase in home survey questions answered compared to the average for 2020-21. These increases were driven by a variety of factors, Home Energy Report program expansion, new promotion of online tools, and the implementation of Open Authorization (OAuth) in late 2021.
- Some additional updates that helped promote the use of, and awareness about online customer energy efficiency tools, were repurposing the Home Energy

Assessment page, and updating the Energy savings tips page in the Energy Efficiency section of pse.com to promote the My Usage tools.

- PSE also reviewed the energy savings tips available to identify and enable additonal savings tips to broaden customer's potential savings actions.

iii. Seasonal Readiness Emails (SRE)

- PSE's contractor sent just over 400,000 reports to customers twice in 2022. These proactive communications go out before the onset of the heating and cooling seasons to help customer prepare for weather changes, and periods of increased usage.

iv. Customer Engagement Tracking (CET)

The Customer Engagement Tracker (CET) survey is an instrument designed to explore utility customer reactions to the Home Energy Reports program and other related outreach. The survey aims to accomplish the following key objectives:

- Explore customer interaction with and reception of the Home Energy Reports.
- Gauge overall impact of the program on the PSE customer relationship, both via self-reported influence and by measuring differences in engagement between program participants and non-participants (controls).
- Compare results between PSE deployments and to those of other contractor utility partners, with an eye towards potential program improvements.

b. *PSE Marketplace*

The PSE Marketplace offers instant discounts to eligible customers on smart thermostats and LED products such as indoor and outdoor fixtures. The PSE Marketplace provides instant rebates on products for qualifying PSE customers. Visitors to the site can quickly and easily see which rebates they are eligible for by answering a short list of questions.

i. 2022 Program Accomplishments

Smart thermostats proved to be the most popular product on the marketplace. PSE partnered with Emerson, Nest, Mysa, and ecobee to create limited time offers through which, in combination with PSE's rebate, customers could obtain a smart thermostat for little to no cost. The PSE Marketplace was also leveraged to send seasonal targeted emails to customers featuring lighting rebates. During 2022 new products were added to the PSE Marketplace such as the smart indoor LED fixture and Google Home Mini bundle, the ecobee smart security starter kit, and several new indoor and outdoor fixtures.

ii. Adaptive Management

A frequent customer service problem was smart thermostats being returned to the PSE Marketplace because they are not compatible with the customer's heating system but the manufacturer's packaging had been opened. This caused troubles for the marketplace service provider trying to recoup costs from customer returns. A resolution was developed by designing an insert to include inside the shipping packaging alerting customers to confirm

that the smart thermostat is compatible with their heating system before opening the manufacturer's packaging.

During 2022, program staff investigated adding the smart thermostat Efficiency Boost rebate for income-qualified customers to the PSE Marketplace. From this research the stand-alone PSE Efficiency Boost Marketplace was designed, built, and tested. The PSE Efficiency Boost Marketplace will be launched in 2023.

iii. Key Variance Drivers

The PSE Marketplace program came in under budget for 2022 due to forecasted expenses also being shared with the lighting, electric smart thermostats, and gas smart thermostats program budgets.

11. Market Integration

Market Integration consists of salary costs of employees and contractors working on CEM marketing and promotional support activities, which makes marketing efforts more transparent. Tasks include the enhancement of online energy-efficiency tools and features social media, digital content creation, and email communications. Other tasks include traditional marketing that centers on awareness-based promotional channels used across all programs, such as advertising, collateral, and websites.

a. *2022 Program Accomplishments*

In 2022, PSE continued a robust energy efficiency messaging campaign across its service area, designed to drive broad awareness of the solutions PSE provides to help residential customers use less energy and save on their energy costs. The campaign highlighted PSE's rebates, incentives and low-cost/no-cost tips.

Tactics including digital display banners and video, social media, email, print, radio and streaming audio were in market throughout the year, with two featured campaigns: Earth Month in April, and Energy Awareness Month in October and the remainder of Q4.

April 2022 Earth Month Campaign

- Earth Month highlighted energy efficiency tips and rebates through digital content, including social media and targeted email. PSE was also a featured partner of Seattle Kraken National Hockey League (NHL) and Climate Pledge Arena's "Green Month," with energy efficiency tips and solutions shared via Kraken's and Climate Pledge's social media channels and website, leveraging PSE's existing partnership with the organizations.
- The month culminated with a fan event at a Seattle Kraken NHL game driving the message of "Small actions, big impact. energy efficiency rebates," and featuring PSE's Energy Efficiency Pledge. The Pledge was also promoted to all customers online during April through PSE's social media and email channels.

- The April Earth Month Campaign delivered more than 400,000 customer emails, over 500,000 social media impressions, and nearly 7,000 Energy Efficiency Pledges.

October 2022 Energy Awareness Month and Q4 Campaign

- The Energy Awareness Month/Q4 campaign launched in October 2022, highlighting the message, "PSE is here to help," with the purpose of helping customers mitigate the impacts of impending higher winter bills, increasing rates and other economic factors.
- This campaign featured radio, video and digital banner advertising, email, bill inserts and earned media—including an article in the Seattle Times—all designed to drive customers to the resource page pse.com/lower, with energy efficiency tips, information on rebates, connection to the Energy Advisor team, REPs and the online energy assessment tool. Two awareness-driving events highlighted energy efficiency solutions, the first at the Seattle Kraken NHL 2022 season home opener, and the Ask an Expert Winter Preparedness virtual webinar, offered in multiple languages.
- The Q4/Energy Awareness Month campaign garnered 10,200,000 total impressions and 58,000 unique pageviews of pse.com/lower.

a. *Adaptive Management*

In April 2022, PSE launched a quarterly energy efficiency awareness customer survey to measure message receptivity over time, with the target of raising awareness among residential customers by 4 percentage points from a baseline of 49%. Results:

- July 2022: 53%
- October 2022: 52%

PSE will continue to measure awareness of the solutions provided to help customers use less energy and save on their energy costs, and optimize its efforts as needed.

12. Events

The CEM Team participates in community, local, and regional events, including home shows, trade shows, seminars, corporate events and community events. The event audience consists of the general public, businesses, builder/contractors, multifamily property owners, city leaders, HOAs, and students/teachers. PSE's event strategy serves as one piece of a robust communications strategy for educating and engaging residential and commercial customers about energy efficiency program offerings. Events provide a unique opportunity for staff to interact directly with customers, discussing a variety of products, programs, and services, and they provide a space for PSE to answer questions and provide resources. Events staff match customer interests and needs with energy efficiency programs, and they gather customer feedback to inform and influence future programs.

PSE employs a third-party vendor to augment its dedicated events staff and to ensure maximum energy efficiency exposure. The purpose of this is to increase awareness and uptake of PSE's energy efficiency programs, drive energy savings, and reach a broad and diverse audience base through community events, conferences, home shows, and virtual events.

a. *2022 Program Accomplishments*

The Events team pivoted to digital platforms and shifted to PSE-owned virtual events for both residential and business customers during the pandemic. Virtual events continue to be successful tactic to drive awareness and engagement for PSE's programs and products. PSE leveraged digital channels to design events with a strong call to action and drive awareness, customer engagement, and participation in energy efficiency programs for both residential and commercial programs. The team made improvements to be inclusive and accessible by adding closed captioning (11 languages) and simultaneous translation. Translated sessions are recorded and made available for customers to watch on their own time as well. PSE has seen a high rate of engagement for these translated recordings (i.e., Hindi, Spanish, and Mandarin). This proved to be effective, and PSE will continue to implement this as a standard offering.

In 2022, the team participated in 55 community residential events, 22,186 short conversations, 7,833 engage conversations, and over 1.6 million impressions.

b. *Highlights of Residential Events*

The Events Team created robust, integrated virtual events that leveraged event opportunities to connect with community stakeholders, increasing energy efficiency awareness, education, and participation. Customer data and a segment-based approach was used to target audiences and tailor messaging in order to make events high impact. These virtual events included:

- Ask an Expert; Live PSE webinar series with PSE's energy efficiency experts with live Q&A and chat with residential customers.
- In-person events like:
    - Earth Week — various events throughout the service region;
    - My PSE Energy Efficiency Pledge campaign partnering with the Seattle Kraken ice hockey team during Energy Week;
    - Take the Pledge summer roadshow;
    - Samoa Cultural Day;
    - Olympia Home Show;
    - farmer's Markets;
    - various PRIDE events;
    - assisted with the Spanish campaign events; and
    - Small Business Saturday.

c. *Highlights of Commercial and Business Events*

In 2022, the Events team continued the ongoing practice of engaging PSE employees, vendor partners, and businesses to educate them on PSE's CEM programs and services aimed to drive participation and investment in energy efficiency. These efforts included:

- Hosting Coffee & Conversations (PSE virtual event series); Live PSE webinars with PSE's energy efficiency experts with live Q&A and chat with business customers.
- Hosting a PSE Business Lighting Application Training (live virtual event with PSE experts).
- Attending the TRENDS virtual conference to reach large and small property owners, multifamily property owners and managers, personnel and representatives.
- Attending and presenting at the Smart Building Exchange event.
- Attending and presenting at BOMA events.

d. *Adaptive Management*

PSE made improvements to be inclusive and accessible by adding closed captioning (11 languages) and simultaneous translation. Translated sessions are recorded and made available for customers to watch on their own time as well. PSE has seen a high rate of engagement for these recordings (i.e., Hindi, Spanish, and Mandarin). This proved to be effective; therefore, PSE continues to implement this as a standard offering.

B. Research and Planning

Functions of this group include:

- conservation supply curves,
- strategic planning,
- market research,
- program evaluations, and
- Biennial Conservation Achievement Review (BCAR).

In addition to playing a critical role in CEM's overall measurement and verification functions, the work of these teams assists CEM program staff in designing innovative conservation offerings, evaluating processes and savings calculations, verifying cost-effectiveness, and building the Company's biennial IRP. They ensure that there is a regular schedule of program performance review, consistent with applicable requirements.

1. Conservation Supply Curves and Strategic Planning

Although separately listed in PSE's Exhibit 1: *Savings and Budgets*, the Conservation Supply Curves and Strategic Planning functions are managed in the same CEM organization, and tend to have overlapping goals and focus.

a. *Conservation Supply Curves Description*

The purpose of the Conservation Supply Curve function is to complete a Conservation Potential Assessment (CPA) or the company's Integrated Resource Plan (IRP). The Conservation Potential Assessment, conducted by a third-party consultant, identifies the amount of energy savings potential that is technically available, and, of that, what portion is achievable over the 20-plus-year planning horizon of PSE's IRP. PSE then determines the amount of conservation potential that is economic (that is, cost effective) relative to supply-side options in its overall resource portfolio analysis for the IRP. The IRP, which is filed every two years, is the basis for PSE's electric and natural gas energy resource acquisition strategy, as well as the targets for its energy efficiency programs. The IRP analysis is also used to derive the 10-year conservation potential and the two-year electric conservation target required to comply with the Washington Energy Independence Act. Development of the natural gas conservation target follows a similar process.

b. *2022 Accomplishments*

In 2022, the Research and Planning Team supported the development of the CPA that feeds into the subsequent IRP. This work covered both electric and gas measures, and key milestone engagement activities included reviewing and providing feedback on the measure inputs, as well as the measure potential outputs from the Cadmus modeling efforts. Various program staff were leveraged to attempt to cover the breadth of measures and data within the Cadmus datasets.

i. Key Variance Drivers

Cadmus provided additional services beyond the standard CPA scope that included customer surveys and research to better understand the residential heat pump market interest.

c. *Strategic Planning Description*

The Strategic Planning function is responsible for providing support and guidance to a variety of regulatory and other strategic initiatives. Responsibilities include regulatory compliance filings, federal and state legislative review, policy analysis, end-use research, or other strategic efforts related to energy efficiency.

Strategic Planning roles include, but are not limited to:

- internal and external research, planning and development,
- biennial and strategic program planning support,
- development and maintenance of avoided costs and cost-effectiveness models,

- legislative and regulatory policy analysis,
- coordination with regional organizations including NEEA and RTF,
- supporting CEM third-party program bidding activities, and
- cost-effectiveness modeling and calculations are also conducted within the Strategic Planning team. PSE comprehensively addresses program-level detailed views of electric and natural gas cost-effectiveness results for 2022 in Exhibit 2.

d. *2022 Accomplishments*

The team was thoroughly invested in research and understanding of several key policy shifts, from both national and state levels as well as the Utility Regulatory level. At the national level, the investment was in tracking and understanding the potential impacts and opportunities both to PSE's programs and customers. The state's Climate Commitment Act also presented new challenges to understand the order of magnitude of the policy impact as well as roughing out concepts of new program features that might leverage new funding channels. Finally, this team was responsible for planning a Targeted Electrification Pilot.

i. Key Variance Drivers

The proposed settlement language for a Targeted Electrification Pilot was released to the public in August 2022. The team began conceptualizing program design features to meet the objectives laid out in the Commission's rate case order.

2. Market Research

Market Research conducts a variety of research studies and analyses to support program design, marketing strategies, and the development of effective program promotion and customer communications for CEM.

a. *2022 Program Accomplishments*

Program accomplishments in 2022 for the Market Research team in support of the CEM group included:

- Multiple dashboards detailing program performance across digital channels, highly impacted and vulnerable populations, Low to Moderate market segment elements such as housing type and vintage, and program participation survey results,
- Continued work developing propensity models for program participation,
- Mid-stream Commercial market sizing, online market development and
- Ad hoc queries supporting program implementation such as email list generation.

b. *Equity Focus*

Market Research completed work in 2021 supporting PSE's Clean Energy Implementation Plan and in 2022 developed a dashboard enabling CEM program staff to begin assessing program participation across highly impacted communities and vulnerable populations. Market Research developed and delivered training for EES staff to gain experience using the dashboard for analysis of possible barriers to equitable program participation and coordination with Outreach Staff. PSE is still anticipating approval of its CEIP at the time of this writing, but is prepared to report metrics based on its plan.

3. Program Evaluation

The Program Evaluation function is focused on implementing PSE's overall Evaluation, Measurement & Verification (EM&V) function in compliance with applicable regulatory conditions to achieve the continual improvement of energy efficiency service delivery to customers.

PSE Evaluation staff are committed to the evaluation of energy savings and the continual improvement of energy efficiency service delivery to customers. PSE program implementation teams work together with the Evaluation Team to inform the development of evaluation scopes of work. The Evaluation Team then develops and maintains a strategic Evaluation Plan (Exhibit 6), in accordance with the guiding Evaluation Framework (Exhibit 6, Supplement 1), ensuring that all programs receive review on a maximum four-year cyclic basis.

Evaluations are conducted by third-party evaluation consultants that are selected by a competitive Request for Proposals (RFP) process. Since 2020, PSE has contracted with one third-party evaluator, DNV GL, to conduct evaluations across the program portfolio. This approach facilitates greater efficiency and integration of data and results than would evaluations conducted by multiple firms.

In 2022, evaluation resources focused on commercial and residential programs. The level of detail at which each program is evaluated was determined by prioritizing each program into evaluation tiers. All levels of rigor were consistent with the principles, objective, and metrics prescribed in the guiding Evaluation Framework (Exhibit 6, Supplement 1) in PSE's 2022-23 BCP. In prioritizing programs for evaluation, PSE considers the regulatory timing requirements, level of energy savings, significant program changes, results of prior evaluations, and whether a program is new or has never been evaluated before.

Consistent with regulatory requirements and Conservation Research Advisory Group (CRAG) guidance, several programs underwent comprehensive evaluations in 2022, with two programs receiving their final evaluation report (others will receive a final report in 2023). Other programs received various levels of market and process evaluations and engineering reviews of energy savings.

After an evaluation deliverable is completed, members of the EES program team participated in the Evaluation Report Response (ERR) process to ensure that evaluation results are implemented in the program. The Program Team completes the ERR indicating what actions will be taken in response to evaluation findings and recommendations. This ensures a closed-

loop system with evaluation findings and implementation responses and adjustments being documented in the Source of Savings database.

PSE frequently shares the results of its evaluations with the RTF to support continuous improvement of measure energy savings values widely used in the region. In addition, PSE monitors the RTF, NEEA, and the Northwest Research Group (NWRG), as well as directly reaching out to neighboring utilities for opportunities to collaborate on common evaluation needs.

a. *2022 Program Accomplishments*

In 2022, PSE's EM&V consultant began scheduled compliance evaluations of four residential programs: Web Enabled Thermostats, Multifamily Retrofit, Home Energy Reports, and Home Appliances. These evaluations are due in 2024 and will be included in the 2023 Annual Report and 2022-2023 Biennial Reports. PSE's EM&V consultant is also evaluating four residential pilot programs: Retail Choice (Efficient Products Guide), Hybrid Heat Pump, HED (AMI Single Family Enhanced Engagement), and Unusual Usage Alerts. The results for Retail Choice Pilot evaluation are given in Exhibit 6, Supplement 1 of this report. The Retail Choice Pilot evaluation results are provided only for informational purposes since PSE will not continue the pilot as a program in 2023. The HED, Hybrid Heat Pump, and Unusual Usage Alerts pilot evaluations are currently ongoing and, as a result, the findings are not yet available. PSE provided preliminary findings from the Hybrid Heat Pump pilot evaluation to the CRAG in August 2022.

On the commercial side, evaluations kicked off for five commercial programs: Commercial/Industrial Retrofit, Business Lighting, Large Power Users, Industrial Programs, and Commercial HVAC. An evaluation report was completed for the Commercial Strategic Energy Management Program, and it is included in this Annual Report as Exhibit 6, Supplement 1. In addition to the evaluations conducted to comply with regulatory requirements, in 2022 PSE kicked off several smaller-market evaluations and interim pilot evaluations. These are conducted to provide better insight into program delivery and market conditions and to conduct routine due diligence to ensure pilots and other programs operate effectively. In 2022, these market evaluations included an evaluation of the Demand Response Pilot, an evaluation of the Virtual Commissioning pilot (which changed to a program in 2022), reviews of program M&V guidelines, and a data review to assess market uptake in the Business Lighting program.

b. *Key Variance Drivers*

Residential Programs: PSE planned to evaluate the Shop PSE program during the 2022-2023 cycle. However, since the Shop PSE program was discontinued at the end of 2019 and replaced by the PSE Marketplace Program at the end of 2020, PSE decided not to evaluate the former program. Instead, PSE identified that the Home Appliances program required a compliance evaluation and opted to evaluate that program. PSE plans to evaluate the PSE Marketplace Program in the next program cycle when participation data is sufficient to warrant an evaluation.

In the 2020-21 Program Evaluations, the evaluation consultant found unusually low realization rates in the Single Family Space Heat (Gas) program. As a result, in 2022, PSE's consultant performed further evaluation research with an expanded set of participants to determine if the results were an anomaly. PSE will be consulting with the CRAG on the follow-up research results to determine if any program changes are necessary.

The only commercial evaluation concluded in 2022 was for the Commercial Strategic Energy Management program. There, the evaluators found that uncertainty in energy modelling, COVID-19 impacts, and access to original customer meter data made estimation of a realization rate difficult. The impact evaluation estimated a range of 84–144 percent realization for electric savings and 49–75 percent for gas savings. Due to the uncertainties in estimation, the evaluators did not recommend any retroactive changes to claimed savings, but they instead recommended a series of process improvements to program delivery that will help mitigate similar uncertainties in the future. PSE has responded in agreement to nine of the 10 recommendations made by the evaluators, as shown in the ERR appended to the CSEM Program Evaluation, provided in this Annual Report.

4. Biennial Conservation Achievement Review (BCAR)

In compliance with conditions associated with approval of PSE's 2022-23 BCP, PSE is required to conduct an independent portfolio-level review of the electric savings reported by PSE for the 2022-23 biennium. The review is managed jointly by Commission staff and PSE staff and ongoing oversight by the CRAG. The independent reviewer is selected via an RFP process and must complete the following tasks:

- verify the calculation of total portfolio MWh savings; and
- provide a review of EM&V activities and application for best practices and reasonable findings, which includes the following:
    - validate the adequacy of PSE's savings verification process, controls and procedures;
    - validate savings tracking and reporting processes and practices; and
    - review program process and impact evaluations completed during the biennium for appropriateness of evaluation approach/methodologies (program specific) and program cost-effectiveness calculations.

In the 2022-23 biennium, PSE is also required to conduct an independent portfolio-level review of the natural gas savings reported by PSE, although additional tasks were not specified.

a. *2022 Program Accomplishments*

In 2022, PSE issued a competitively bid RFP for an independent evaluator to lead the BCAR. In coordination with the WTUC, PSE selected a new vendor in September 2022 to conduct the review. PSE and the vendor began work on initial data requests and review of deemed Unit Energy Savings (UES) values used by PSE. While no BCAR reports or memos were produced regarding 2022-2023 biennium programs, savings or measures, PSE

expects to include final reports in the 2022-2023 Biennial Conservation Report to be filed in 2024.

b. *Key Variance Drivers*

Prior to the 2022-2023 program cycle, the conservation achievement review was referred to as the “Biennial Electric Conservation Achievement Review (BECAR).” Because the approval conditions for 2022-23 included natural gas portfolio savings review, PSE has renamed it the “Biennial Conservation Achievement Review (BCAR).

III. Stakeholder Relations

PSE, along with its primary constituents, the Commission Staff and the CRAG sustained its emphasis on continuously maximizing the value, clarity, impact, and transparency of information provided to Commission Staff and the CRAG. PSE received feedback from CRAG members, both directly and through casual reference, that its efforts were recognized and appreciated. PSE also recognizes and appreciates that Commission Staff and the CRAG expended significant effort to understand, become involved with, and help resolve strategic and policy issues in 2022.

A. Washington Utilities and Transportation Commission

CEM values its working relationship with Commission staff and appreciates their level of thoroughness, thoughtfulness, and adaptability. PSE was able to complete its 2022 initiatives as a result of the cooperation between its CEM staff and Commission Staff. The following discussion outlines the key conservation-related UTC filings that PSE made in 2022. In the list, PSE presents the date and description of each filing the UTC Docket number for straightforward reference.

All conservation-specific filings complied with WAC 480-109-110(3): CRAG members received draft copies of each of the filings.[6]

1. CEM - Specific Filings

- **March 1, 2022: Filed electric Schedule 120, UE-220137**. Effective May 1, 2022, the updated Schedule 120 represents an average increase of the electric Conservation Rider portion of affected customer bills by 0.97 percent.
- **March 1, 2022: Filed natural gas Schedule 120, UG-220138**. Effective May 1, 2022, the updated Schedule 120 represents an average increase of the natural gas Conservation Rider portion of affected customer bills by 0.2 percent.
- **April 1, 2022: Filed 2021 Annual Report of Conservation Accomplishments, UE-190905.** Consistent with requirements in WAC 480-109-120(3), this report represented the evolution and continuous improvement in providing CEM program accomplishments, activities, and value-add information for PSE's Stakeholders.
- **November 15, 2022: Filed 2023 ACP, UE-210822 and UG-210823.**

[6] Schedule 120, PSE's cost-recover adjustment filing, is the exception, as also noted in WAC 480-109-110(3).

B. Conservation Resource Advisory Group (CRAG)

PSE acknowledges and is very appreciative for the work and committed engagement demonstrated by the CRAG throughout 2022. Many members of the CRAG demonstrated considerable engagement and a thorough understanding of PSE programs and implementation strategies through the year.

CRAG members brought to bear a considerable understanding of technical elements associated with some of CEM's more complicated conservation measures and offerings, as well as a thorough understanding of the impact and implications of how those would affect potential savings and costs. CRAG members provided valuable consideration and insights of state policy goals and initiatives, along with their constituents' expectations.

The CRAG's perspective on the region's dynamic marketplace was also invaluable. As a result, PSE adaptively managed its Portfolio throughout the year with these considerations in mind.

Through PSE's collaborative process, it achieved significant milestones during the past year, as discussed throughout the Report and in the following sections.

1. Background

PSE formed the CRAG in response to Section D of Exhibit F in the 2001 General Rate Case Stipulation Agreement, Dockets UE-011570 and UG-011571. The CRAG consists of approximately 12 Stakeholders and represents a wide variety of interests, including consumers, industry, and regional concerns. It also includes a member of the Commission Staff. The CRAG works closely with CEM on a variety of conservation initiatives, most notably conservation tariff filings, savings goal setting, and long-term conservation strategies.

In order to ensure its applicability and value, PSE and the CRAG reviewed the Vision Statement at the first CRAG meeting of the year, March 23, 2022.

2. CRAG Meetings

In 2022, PSE met the requirements of WAC 480-109-110(2) and condition (3) (e) by convening four CRAG meetings during the year. PSE places emphasis on ensuring that it maintains an accurate meeting record, where meeting attendees can reference agreements, action items, and issue resolutions. PSE also provides a very long lead time for meeting schedules to avoid potential scheduling conflicts. Every CRAG meeting includes several standing agenda items, including:

- activities that have occurred since the previous meeting;
- CRAG meeting action item status;
- marketing and program updates; and
- PSE emails meeting materials to attendees participating via conference call prior to the meeting call to order.

The following discussions are very high-level "snapshots" of the six 2022 CRAG meetings. They are intended only to provide a general sense of the meeting topics. CRAG members received a meeting summary document, along with all handout material and the slide deck shortly after each CRAG meeting.

- **March 23 Meeting**
  This meeting was convened to share Schedule 120 filing information, discuss the company's clean energy strategy, and provide program updates.
- **May 3 Meeting**
  The May CRAG meeting's intent was to provide a look at the department's equity focus areas, discuss the Biennial Conservation Report, and provide program updates.
- **August 3 Meeting**
  The August meeting's intent was to share information on the Hybrid Heat Pump Pilot, share out on Named Communities work, provide an update on efforts toward meeting the BCP conditions, and discuss the Demand Response program.
- **October 12 Meeting**
  The final CRAG meeting of the year focused on the GRC settlement requirements, updating the CRAG on Targeted Electrification, and providing CEM program updates.

Glossary

This section provides descriptions of commonly used CEM terms and acronyms.

A. Commonly-Used Terms

Term	Definition
Calculated Savings	This savings type is different from deemed values (described below). This term indicates that there is a pre-approved, stipulated input savings value (or cost) per measure. This value (or cost) is then multiplied by site-specific input values to arrive at the overall savings value (or cost).
Conditions	Specific deliverables and stipulations with which the Company must adhere through the course of operating and managing energy efficiency programs. In addition to compliance requirements outlined in the Settlement Terms Sections A through J and L in Docket No. 100177, 2018-2019 conditions are listed in Appendix A of Order 01 in Docket UE-171087. Conditions are typically included in Commission Orders approving PSE's biennial conservation targets.
Custom Savings	This savings type applies to conservation projects where a PSE EME performs specific evaluation and review of a unique customer site to determine savings values—therms or kWh—that apply only for that site. For this type of measure, there is insufficient information, the occurrence is too infrequent, or it cannot be specifically defined to justify development of a Calculated or Deemed protocol.
Deemed Measure	As in a measure's deemed savings value; a savings (or cost) value that applies to a unit of specific measure, regardless of where or how the measure is installed. Measures for which it is possible to "deem" per-unit energy savings, cost, and load shape based on program evaluation data and engineering estimates. (For instance, one residential interior CFL lamp may have a deemed value of 24 kilowatt-hours per year.) This classification applies to both RTF and PSE Deemed (noted on the following page). This term has been supplanted by "UES", defined below.
Direct Benefit to Customer (DBtC)	A PSE-specific term, indicating rebates, grants, credits or services that are of value to customers. Services can include, but aren't limited to, credits on a monthly bill, upstream incentive provided to channel partners or trade allies—either within the PSE service territory or regionally—and free energy efficient devices available by mail.
Direct-Install Measure	A conservation measure that is installed by a PSE representative—rather than a PSE customer—into a qualifying structure.
Distribution	For the purposes of Schedule 292, means electrical facilities within the State of Washington that the Company owns or operates to convey electricity from the point of generation or purchase to the point of use by a Customer. Distribution includes transmission and distribution lines related substations and transformers.
EIA	Energy Independence Act. A reference to the 2006 voter initiative, The Washington Clean Energy Initiative. The vote resulted in the creation of RCW 19.285 and WAC 480-109, which is now referred to as the Energy Independence Act. The EIA was also sometimes colloquially referred to as "I-937".
Measure	A product, device, piece of equipment, system or building design or operational practice used to achieve greater energy efficiency or to promote Fuel Conversion and Fuel Switching. Unless specifically enumerated in a specific CEM Program, all Measures, proposed by Customers or otherwise, shall meet or exceed the efficiency standards set forth in the applicable energy codes, or,

	where none exists, “standard industry practice” as determined by the Company. Measures will meet common construction practices, and meet industry standards for quality and energy efficiency.[7] Measures should also meet cost-effectiveness standards.
Orders (see also Conditions)	Overarching instructions to an entity under the purview of the Washington Utilities and Transportation Commission (UTC or Commission). Orders may be made at the conclusion of a Docket proceeding or throughout the course of a Docket’s existence. At the time of the publication of this BCP, PSE is operating under Order 01 of Docket UE-171087, along with other Orders in various Settlement Stipulations or Agreements.
Program	Programs may consist of a single measure, an assortment of related measures or a suite of measures that are related strictly by delivery type or customer segment.
PSE Deemed	Relative to measure savings types (Custom, Calculated, PSE Deemed or RTF Deemed), these measures are supported by PSE engineering calculations or evaluation studies, in compliance with WAC 480-109-100(5).
RTF Deemed (see also UES)	A legacy term, only used in the Source of Savings database. Relative to PSE savings types (Custom, Calculated, PSE Deemed or RTF Deemed), supported by RTF analyses, in compliance with WAC 480-109-100(5).
Savings	Savings (both natural gas and electric) are defined and reported as those recognized in the first year of a measure’s total expected life. PSE reports the total savings for the year that the measure was implemented, regardless of when it is installed. Electric savings are counted at the customer meter, not the busbar. Gas savings are counted at the customer natural gas meter. It is important to note that all measures have an associated life, during which the noted annual savings accumulate. Each measure has a different life, as determined by rigorous evaluation. The average measure life per program can be found in the CEM Cost-Effectiveness tables in Exhibit 2 of this report. As noted above, measures have associated savings beyond the first year; those savings continue to accrue to the benefit of PSE.
System	In this document, System may have the following meanings: 1) Any software program—supported by PSE’s IT department or otherwise—or physical apparatus used to record, track, compile, report, archive, audit energy savings claims or financial data. Electrical, and/or natural gas equipment that is either attached together or works in concert to provide space conditioning, plumbing functions or other end-uses associated with structures, such as HVAC systems, pumping systems, etc.

[7] Schedule 83, section 4, Definitions, #m. Schedule 183, section 4, #l.

B. Savings Terminology

Terms	Definition
CPA Pro-Rata Share	Pro-rata share of the utilities IRP's Conservation Potential Assessment's 10-year potential. Includes NEEA.
EIA Target	Equals the CPA Pro-Rata Share, applicable to electric savings
Decoupling Threshold	[EIA Target (electric) CPA Pro-Rata Share (gas) * 0.05]
Total Utility Conservation Goal/Achievement	All savings programs funded by Conservation Riders [EIA Target + Pilots + NEEA + 449/Special Contracts + Decoupling Threshold]
Adjusted Programs	Programs approved by the Commission to be excluded from a Penalty Threshold. For last three biennia, these included NEEA and Pilots with Uncertain Savings.
Utility-Specific Conservation Goal/Achievement	[Total Utility Conservation Goal/Achievement – (Excluded programs (for instance, NEEA, Pilots with uncertain savings, retail wheeling accounts, etc.) + adjustments)]
EIA Penalty Threshold	[Utility-Specific Conservation - Decoupling Threshold]
Excess Savings for Carbon (Dept. of Commerce driven)	(Referencing results, rather than targets) The difference of [Total Utility-Conservation Achievement – Total Utility Conservation Goal]
PSE Excess Savings for Penalty Thresholds (UTC Driven)	(Referencing results, rather than targets) The difference of [(Total Utility-Specific Conservation Achievement) - (EIA Penalty Threshold + Decoupling Penalty Threshold)]

C. Acronyms

Acronym	Definition
ACP	Annual Conservation Plan
aMW	Average MegaWatt. An expression of energy (versus "power"). It is used to express very large amounts of energy. The term represents an average of power (Megawatts [MW]) used over time (the standard term being one year or 8,760 hours). Thus, 1 aMW = 8,760 MWh.
BCP	Biennial Conservation Plan
BEM	Business Energy Management
BOMA	Building Owner and Managers Association
CEM	Customer Energy Management
CFL	Compact Fluorescent Lamp
C/I	Commercial/Industrial. References programs in the Business Energy Management sector.
CRAG	Conservation Resource Advisory Group
DSMc	Demand Side Management central. A comprehensive project management system, developed and maintained by Nexant.
EES	Energy Efficiency Services; a PSE legacy acronym that is still associated with some tracking and reporting systems and databases, referencing CEM's former name. (Eliminating this reference would cause severe disruption of queries and reports in some systems and filing structures.)
EE	Energy Efficiency
EME	Energy Management Engineer
EM&V	Evaluation, Measurement and Verification
HVAC	Heating, Ventilation and Air Conditioning
IRP	Integrated Resource Plan
IRPAG	Integrated Resource Planning Advisory Group
kWh	Kilowatt Hour. 1,000 watt-hours = 1 kWh, which is equivalent to 10 100-watt incandescent lamps being turned on for one hour.
LED	Light Emitting Diode (typically, a lamp type)
MWh	Megawatt-hour. 1,000 kWh = 1 MWh
NEIs	Non-Energy Impact, Quantifiable. Formerly known as Non-Energy Benefit, or NEB. Attributes having a direct cost-effectiveness correlation applicable to the Total Resource Cost test. It is important to note that any reference to NEIs in any PSE document refers to those that are quantifiable. Any non-quantifiable benefits will be specifically noted.
NEEA	Northwest Energy Efficiency Alliance
RCW	Revised Code of Washington.
REM	Residential Energy Management

RTF	Regional Technical Forum, an advisory committee and a part of the Northwest Power and Conservation Council. The RTF develops standardized protocols for verifying and evaluating conservation.
SBDI	Small Business Direct Install (program within the BEM Sector, Commercial Rebates).
TRC	Total Resource Cost. The cost to the customer and/or other party costs to install or have installed approved Measures plus Utility Costs and minus Quantifiable Benefits (or Costs).[8]
UC	Utility Cost: The Company's costs of administering programs included, but not limited to, costs associated with incentives, audits, analysis, technical review and funding specific to the Measure or program and evaluation.[9]
UES	Unit Energy Savings. Formerly "Deemed", the RTF updated the term in 2011.
WAC	Washington Administrative Code
WUTC, or UTC	Washington Utilities and Transportation Commission

[8] Schedule 83, section 4, Definitions, #z. Schedule 183, section 4, #x.

[9] Schedule 83, section 4, Definitions, #bb. Schedule 183, section 4, #z.

Conclusion

This concludes the CEM 2022 Annual Report.

Please refer to the Report's Exhibits and Supplements for additional CEM details:

A. Exhibits Included in the 2022 Report of Conservation Accomplishments

- Exhibit 1: Savings & Expenditures
- Exhibit 2: Cost-Effectiveness Calculations
- Exhibit 4: Prescriptive Measures Offered in 2022
- Exhibit 5: NEEA 2022 Report of Activities and Initiatives
- Exhibit 7: Requirements Compliance Checklist

B. Supplements

- Exhibit 1
    - Supplement 1: 2022 Actual Expenditures Compared to Actual Spends
- Exhibit 2
    - Supplement 1: Cost-Effectiveness Overview and Non-Energy Impacts
- Exhibit 6 (The Evaluation Plan is excluded from this report)
    - Supplement 1: Evaluation Studies and Evaluation Report Responses Performed in 2022

Customer Energy Management looks forward to a productive and successful 2023.

Respectfully submitted,

Puget Sound Energy
Customer Energy Management