PUGET SOUND ENERGY

Exhibit 2, Supplement 1

2022 Annual Report

Cost-Effectiveness Overview and Non-Energy Impacts

Table of Contents

I. Introduction

A. Background

Puget Sound Energy (PSE) has been providing energy efficiency services since the 1970's (then Puget Power) and will continue to deliver these services for the foreseeable future. With increasing customer demand for energy, PSE must continue to acquire new energy resources to meet the increasing energy needs of its customers. Every two years, PSE goes through a process of planning how it will meet expected customer demands over the next twenty years. Through this process, PSE compiles its Integrated Resource Plan (IRP). This plan provides guidance to assist PSE in selecting resources to meet expected energy demands.

Demand side resources (energy efficiency) are some of the most cost-effective ways for PSE to meet expected customer demand. When selecting which demand side resources to obtain, PSE conducts cost-effectiveness tests that assist PSE in determining which demand side resources to acquire compared to the alternative resources available.

Currently, PSE conducts two cost-effectiveness tests; the Utility Cost Test (UC) and the Total Resource Cost Test (TRC). These tests measure whether or not the benefits obtained by the demand side resource meet or exceed the costs to obtain the resource. This paper presents a broad overview of the cost-effectiveness tests PSE is required to conduct. The body of this paper is intended for audiences unfamiliar with cost-effectiveness tests.

The specific costs tests described in this paper are required of PSE to meet conditions agreed upon with the State of Washington in 2013, which indicate:

> (10) **Cost-Effectiveness Test is the Total Resource Cost (TRC) Test**
>
> (a) The Commission uses the TRC, as modified by the Council, as its primary cost-effectiveness test. PSE's portfolio must pass the TRC test. In general, each program shall be designed to be cost-effective as measured by this test. PSE must demonstrate that the cost-effectiveness tests presented in support of its programs and portfolio are in compliance with the cost-effectiveness definition (RCW 80.52.030(7)) and system cost definition (RCW 80.52.030(8)) and incorporate, quantifiable non-energy impacts, the 10 percent conservation benefit and a risk adder consistent with the Council's approach. An outline of the major elements of the Council's methodology for determining achievable conservation potential, including the Total Resource Cost test, is available on the Council's website at [https://www.nwcouncil.org/2021powerplan_cost-effective-methodology].
>
> (b) In addition to the Council-modified TRC, PSE must provide portfolio calculations of the Program Administrator Cost test (also called the Utility Cost test), Ratepayer Impact Measure test, and Participant Cost test described in the National Action Plan for Energy Efficiency's study "Understanding Cost-effectiveness of Energy Efficiency Programs." The study is available on the Web site of the United States Environmental Protection Agency at https://19january2017snapshot.epa.gov/sites/production/files/2015-08/documents/understanding_cost-

effectiveness_of_energy_efficiency_programs_best_practices_technical_methods_and_emerging_issues_for_policy-makers.pdf

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(c) Overall conservation cost-effectiveness must be evaluated at the portfolio level. Costs included in the portfolio level analysis include conservation-related administrative costs. For the additional cost-effectiveness tests identified in 10b - PSE must consult with the Conservation Resource Advisory Group (CRAG) to determine when it is appropriate to evaluate measure and program level cost-effectiveness. All cost-effectiveness calculations assume a Net-to-Gross ratio of 1.0, consistent with the Council's methodology.

II. Overview of Cost-Effectiveness Tests

The cost-effectiveness tests discussed in this chapter each provide a unique set of information to assist different stakeholders in understanding if the investment in demand side resources is of an overall benefit to them.

At a very basic level, cost-effectiveness tests are performed by calculating the ratio of the net present value of benefits (in dollars) to the net present value of costs.

NPV ∑ benefits ÷ NPV ∑ costs

Holding all other factors constant, energy efficiency programs that have a benefit-cost ratio greater than one are in the best interest of the stakeholder for whom the ratio was calculated.

A. The Utility Cost Test

The Utility Cost Test (UC) views demand side resource acquisition from the utility's perspective. This test is required for both gas and electric conservation programs. This test determines, from the utility's perspective, whether it is cheaper to purchase the demand side resource than it is to acquire an alternative supply side resource, like building a power plant or purchasing energy on the open market.

Generally speaking, a benefit-cost ratio of one or greater in the UC is essential for a program to be considered in a demand side resource portfolio. However, there are some exceptions to this rule. State regulations currently allow PSE to run low-income weatherization programs that have a benefit-cost ratio as low as 0.6 when there are significant non-energy impacts that cannot be quantified.

As the name suggests, the UC only considers utility costs and utility benefits for the construction of the benefit-cost ratio. The basic costs and benefits included in the calculation of the test are listed below:

Costs:

1. Program Overhead Cost

   a. Marketing[1]
   b. Outside services[2]
   c. Internal labor & overhead[3]
   d. Miscellaneous expenses related to program activities[4]
2. Incentives provided to customers who purchase an energy efficient measure
3. Other program specific costs[5]

Benefits:

1. Avoided cost of energy
   a. Market cost of energy
   b. Line losses
   c. Social Cost of Greenhouse Gas emissions
2. Avoided costs of capacity
   a. Deferred T&D expense
   b. Total annual fixed cost of generating capacity

B. The Total Resource Cost Test

The Total Resource Cost Test (TRC) views demand side resource acquisition from a total cost perspective. The test determines the benefit of the demand side resource given the total cost to all parties involved, not simply the acquisition cost to the utility. PSE is required to run the TRC for both gas and electric programs.

As with the UC, a TRC benefit-cost ratio of one or greater is essential for programs to be considered for inclusion in a demand side resource portfolio. However, like the UC, there are also exceptions to this rule. State regulations allow PSE to run low-income weatherization programs that have a benefit cost-ratio as low as 0.6 when there are significant non-energy benefits that cannot be quantified.

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[1] Marketing costs include all costs of advertising, bill inserts, campaigns, radio advertisements, etc. related to the program.

[2] Many of PSE programs are run, in part, by outside vendors. Outside services costs include all costs to contractors and vendors, who are not PSE employees, which are incurred by the energy efficiency program.

[3] Internal labor and overhead include all PSE employee expenses and PSE incurred overhead costs.

[4] Miscellaneous expenses include any incurred costs for event prizes, car rentals, PSE employee hotel rooms, etc. which are incurred as a result of operating the program.

[5] The costs listed above are standard for all program UC calculations with the exception of cost element three, 'other program specific costs'. Some programs have additional costs associated with them, such as the additional cost of natural gas on an electric to natural gas fuel conversion program. These costs need to be included in the costs for the UC calculation.

The TRC considers all costs, including those incurred by the utility, by the customer and by others who may have contributed. The costs and benefits included in the calculation of the TRC Test are listed below:

Costs:

1. Program Overhead Cost
    a. Marketing
    b. Outside Services
    c. Internal Labor & overhead
    d. Miscellaneous expenses related to program activities
2. Incentives provided to customers who purchase an energy efficient measure
3. Customer costs, either full or incremental, of acquiring the efficient equipment or services, net of any incentives provided by the utility
4. Other program specific costs

Benefits:

1. Avoided cost of energy
    a. Market cost of energy
    b. Line losses
    c. Social Cost of Greenhouse Gas emissions
2. Avoided costs of capacity
    a. Deferred T&D expense
    b. Total annual fixed cost of generating capacity
3. Conservation credit[6]
4. Non-energy impacts[7]

For the majority of programs, the benefit-cost ratio calculated through the TRC is smaller than the ratio developed through the UC. This is because of the addition of customer costs, which typically are far greater than (and thus outweigh) the addition of the conservation credit to the benefits in the TRC.

The benefit-cost ratio in the TRC may be higher than the ratio developed in the UC for programs with little to no customer cost. In these cases, the conservation credit, which is added to the benefits in the TRC, outweighs the small contribution of customer costs.

[6] The conservation credit is a 10% adder provided by the Northwest Power Act to advantage energy conservation over generation resources.

[7] Non-Energy Impacts include savings on non-energy related items. These include items like cost savings on water for low-flow showerheads.

In theory, programs where non-energy impacts are significant and quantifiable, the benefit-cost ratio of the TRC can be far greater than the ratio developed though the UC. However, non-energy related benefits can be difficult to quantify and include in the calculation of the TRC.

PSE recognizes that because non-energy impacts are often difficult to estimate, cost-effectiveness calculations typically bias toward a conservative estimate of benefits, and thereby undervaluing efficiency by excluding real benefits to customers. This is not usually the case in the Low Income Weatherization program, where the value of health and safety improvements is included as a non-energy benefit. In the 2020-2021 biennium, PSE invested time and resources into an investigation of non-energy impacts used by other North American utility jurisdictions and adopting them for use in PSE measures. This effort resulted in additional non-energy impacts in measures planned for the 2022-2023 biennium, and ongoing research and analysis will add even more quantified non-energy impacts.

III. Key Drivers of Cost-Effectiveness Calculations

A. Framework for Cost-Effectiveness Calculations

Cost-effectiveness calculations have several key drivers, which include:

1. The avoided cost of energy,
2. The avoided costs of capacity,
3. Program overhead costs,
4. Customer costs,
5. Program incentives,
6. Non-energy impacts,
7. Measure life,
8. The load shape used in the calculation of avoided costs,
9. The discount rate used for calculating the present value of benefits and costs.

Each of the major drivers to the outcome of the cost-effectiveness calculations are discussed below.

B. Avoided Cost of Energy & Capacity

Avoided costs are those costs the utility does not incur when purchasing a demand side resource instead of a supply resource. Avoided costs of energy and capacity are the main driver of the benefits that are included in PSE's cost-effectiveness calculations for energy efficiency programs. Higher avoided costs of energy and capacity make energy efficiency programs more attractive to PSE and more cost-effective for the utility, all other things being equal.

Because avoided costs are developed for individual end-use[8] types, each end-use are impacted differently by changes in energy costs[9]. In addition, changes in the avoided cost of capacity impact the cost-effectiveness of energy programs differently. Because PSE is a winter peaking utility, programs that save energy from heating-related efficiency upgrades are impacted significantly by changes in the avoided cost of capacity because they have a higher coincident savings (savings on peak) than programs that save energy in the summer[10]. Changes in the avoided cost of capacity have relatively little impact on energy efficiency programs that provide low savings in the peak hours.

Avoided costs of capacity are a function of the cost of building capacity resources for peak load and the load shape of the measure being assessed in the avoided cost calculation. PSE's peak load typically occurs during the weekday mornings or evenings during the month of December. For equipment where loads coincide with peak hours, capacity costs are included in the avoided costs.

Space heating measures have a higher coincidence with peak than non-heating related measures, such as lighting. Therefore, the avoided costs of capacity have a much greater impact on space heat measures than they do on measures that are used at a fairly constant rate throughout the year. This is because a larger portion of the savings for space heat measures coincides with times where PSE is paying for peak resources.

C. Program Overhead Costs

Program overhead costs consist of all costs incurred to run an efficiency program, except those that are incentive-related. Program overhead costs consist of marketing costs, expenses incurred for outside services, internal labor and labor overhead costs, and miscellaneous expenses[11] related to other costs of program activity.

Program overhead costs have a direct impact on the cost-effectiveness of the related energy efficiency programs. All else being equal, an increase in program overhead costs decreases the cost-effectiveness of efficiency programs.

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[8] An end-use type is a category into which energy efficiency items are placed, such as water heating, space heating, or lighting.

[9] If, for example, winter prices of energy increase but summer prices remain the same, the avoided costs of space heat measures increase more dramatically than the avoided energy costs of water heating measures, and there would be no impact on residential air conditioning avoided energy costs.

[10] For energy efficiency planning purposes, peak hours are considered to be the 5 hours in the morning and 5 hours in the evening when load is highest, every weekday in December.

[11] Miscellaneous expenses refer to non-typical program expenses such as travel, gift cards for program participants, etc.

D. Measure Costs

Like program overhead costs, measure costs have a direct impact on the outcome of the cost-effectiveness calculations. To the extent that total measure costs influence the incentive provided by the utility, thus impacting the utility cost, the measure cost impacts all of the tests discussed in this document. All other things being equal, an increase in the cost of a measure can decrease the benefit-cost ratio in the cost-effectiveness tests.

1. Incremental Cost or Full Measure Cost

For the calculation of benefit-cost ratios, PSE defines measure cost as either the full measure cost or the incremental measure cost, depending on the item being offered though the energy efficiency programs and the delivery mechanism where the rebate occurs.

The majority of participants in PSE efficiency programs receive monetary incentives when they are replacing old, worn out equipment such as a furnace, water heater, or light bulbs. For these programs, PSE uses the incremental measure cost when calculating the benefit-cost ratios. The incremental measure cost is defined as the cost difference between equipment installed or incentivized though the PSE program and the cost of the equipment the customer would have installed without program intervention; e.g. the added cost of a more expensive high-efficiency furnace versus a lower cost standard-efficiency furnace that complies with the code minimum. Therefore, it's not prudent to include the entire cost of the efficient equipment in the cost-effectiveness test.

For programs where customers receive monetary incentives to make changes to existing items that are not yet at the end of their useful life, PSE utilizes the full measure cost when calculating the benefit-cost ratios. Examples of measures for where the full measure costs are used include insulation, windows, and some early replacement programs.[12]

E. Incentives

The incentive amount provided by the utility has no impact on the TRC because this test uses the full or incremental measure cost, both of which include the incentive and customer cost when calculating the benefit-cost ratio. A change in the incentive changes the cost to the customer, but the total or incremental measure cost remains the same. From the TRC perspective, the incentive is just a transfer from the utility to the customer, with no impact on the overall cost.

[12] In 2011, PSE launched an early refrigerator replacement program. This program removes older, working refrigerators from customer homes and replaces them with new, efficient refrigerators. Because the customer was not going to purchase a refrigerator without the help of this program, incremental measure costs is non-existent. Therefore, full measure cost is considered for cost-effectiveness analyses of this program.

However, the incentive provided by the utility has a direct impact on the outcome of the UCT. When incentives are increased, all else remaining equal, the benefit-cost ratio of the UC decreases, since this increases the cost to the utility and/or ratepayers with no change in the level of benefits.

F. Customer Cost

Customer costs are those costs that the customer pays for the item being installed. For programs that use a full measure cost, the customer cost is the full measure cost minus the incentive provided to the customer. For programs that use the incremental measure cost, the customer cost is the incremental cost minus the incentive provided to the customer. There are a small number of programs that offer incentives greater than the incremental measure cost, where the incremental measure cost is used on the cost-effectiveness analyses. For these programs, customer costs are set to zero.

Assuming a constant incentive amount, the customer cost associated with a measure offered though PSE efficiency programs does not have an impact on the UC because customer costs are excluded from the test. In addition, the customer cost doesn't directly impact the TRC because that test uses either the full measure cost or the incremental cost, both of which include the customer cost, when calculating the benefit-cost ratio.

Customer costs indirectly impact the TRC in that they are a component of the total or incremental cost of the item being offered though the efficiency programs. For a given level of incentives, an increase in customer cost is a reflection of an increase in total or incremental measure cost. The increase in total or incremental measure cost decreases the benefit-cost ratios of the TRC.

G. Non-energy impacts

Non-energy impacts (often called "non-energy benefits") are defined as the impacts (usually positive) from energy efficiency programs that are not directly attributed to energy savings. Examples of these benefits are: water and other resource savings, improved health and safety, fewer shutoff notices for the utility and improved quality of life or product quality. Non-energy impacts are only included in the TRC, but PSE typically only quantifies these for when there is documentation. Non-energy impacts can be positive or negative and are always included in the numerator of the test, regardless of the sign. Changes in non-energy impacts are positively correlated with the benefit-cost ratio of the TRC Test, all else being equal.

Non-energy impacts have been a focus of PSE's research since the Washington State Utility and Transportation Commission proposed a set of conditions in accepting PSE's 2020-2021 Biennial Conservation Plan (Docket 19095; Attachment A). These conditions committed PSE to "demonstrate progress towards identifying, researching, and developing a plan to properly value nonenergy impacts that have not previously been quantified" and "[t]o the extent practicable…begin to identify the distribution of energy and nonenergy benefits in annual plans and reports." Progress in 2022 toward these conditions is described in Section V: Non-Energy Impacts.

H. Measure Life

The measure life is the rated useful life of the item(s) being incentivized though the program. Measure life is typically assessed using Regional Technical Forum[13] guidance or from PSE engineers and program managers who have a significant level of knowledge regarding the item being assessed.

Measure life and the associated benefit-cost ratios are positively correlated for all four of the cost-effectiveness tests conducted by PSE, all else being equal.

I. End-Use Load Shape

The shape of the load for each measure being assessed in the cost-effectiveness calculations impacts the TRC and UC Tests. Because PSE generally does not currently offer time-of-use rates, the shape of the load for each measure being assessed does not impact the Participant Cost Test.

PSE calculates avoided costs using multiple inputs. The avoided costs are higher for those items which have a significant portion of their load occurring in the winter. Because winter savings typically coincide with the system peak, which increases the avoided capacity cost, items which save energy in the winter are assigned a higher value for avoided capacity costs.

J. Discount Rate

For the 2021 program year, the discount rate for PSE efficiency program avoided costs was set at 6.97%. This discount rate was the approved rate of return on rate base ("ROR") by PSE's state regulators and was used in the development of the 2019 Integrated Resource Plan. As utility discount rates increase, the present value of avoided costs decreases. All else being equal, an increase in the discount rate decreases the benefit-cost ratios of PSE's cost effectiveness tests.

K. Summary of Key Cost Effectiveness Drivers

Key Driver	Direction of Key Driver	Direction of Benefit-Cost Ratios	
		TRC	UC
Avoided Energy and Capacity Costs	⬇	⬇	⬇
	⬆	⬆	⬆

[13] The Regional Technical Forum (RTF) is an advisory committee which was developed in 1999 to develop standards for the evaluation of conservation savings.

Program Overhead Costs for the utility	⬇	⬆	⬆
	⬆	⬇	⬇
Measure Cost	⬇	⬆	N/A[14]
	⬆	⬇	N/A
Incentive	⬇	N/A	⬆
	⬆	N/A	⬇
Non Energy Benefits	⬇	⬇	N/A
	⬆	⬆	N/A
Measure Life	⬇	⬇	⬇
	⬆	⬆	⬆
Discount Rate	⬇	⬇	⬇
	⬆	⬆	⬆

IV. Constructing Benefit-cost Ratios

A. Using Benefit-cost Ratios for Program Planning

Benefit-cost ratios (a.k.a. “cost-benefit ratios”) provide useful information to PSE implementation teams. Programs with high benefit-cost ratios, and low free-ridership rates, are of primary interest for expansion should PSE need to acquire more demand side resources.

Before benefit-cost ratios can be used for program planning, the inputs into the ratios need to be accounted for correctly. This section provides clarification on what to include as non-energy impacts, how to correctly account for additional O&M costs (or cost savings) incurred by the customer, and how to select discount rates for O&M costs (or cost savings) incurred by the customer.

[14] The Utility Cost and Ratepayer Impact Measure tests are not impacted.

B. Accounting for Non-energy Impacts

When including non-energy impacts in the benefit-cost ratios, always include the benefit in the numerator of the benefit-cost ratio. These benefits are not included in the UC. All non-energy impacts that are quantifiable are included in the TRC. Non-energy impacts that cannot be supported with adequate documentation are not included in the TRC. Moreover, non-energy impacts which are included in the TRC are accompanied with supporting documentation and calculations.

C. Incorporating Additional Customer Costs

Additional customer incurred costs, which are not included in the cost of the measure being purchased through the efficiency program, can be negative (cost savings) or positive. If the cost is negative (cost savings), the absolute value of the cost savings is included in the numerator (non-energy benefit) of the benefit-cost ratio. The cost is included in the denominator of the benefit-cost ratio whenever the cost is positive (representing an additional cost).

The UC ignores customer costs, which would exclude the additional cost of gas if counted as a customer cost. Therefore, the additional cost of gas is counted as a utility cost in the UC and placed in the denominator of the benefit-cost ratio. Similarly, because the TRC is a function of the UC, with added customer costs and non-energy impacts, the additional cost of gas for fuel conversion programs is also included as a utility cost and placed in the denominator of the benefit-cost ratio.

D. Applying the Correct Discount Rate

The rate used to discount costs or benefits for energy efficiency programs can impact the outcome of the benefit-cost ratios of PSE's cost-effectiveness tests.

When discounting additional costs, nominal discount rates is used. For additional costs (or savings) faced by the utility, program teams used PSE's ROR approved in its General Rate Case as the nominal discount rate.

E. Summary of Benefits and Costs to Include in Each Test

TEST	Benefits (NUMERATOR)	Costs (Denominator)
Perspective of Puget Sound Energy		
Utility Cost Test	1. Avoided Energy	1. Program Overhead Costs
	2. Avoided Capacity Costs	2. Incentives
Perspective of All PSE Customers		
Total Resource Cost Test	1. Avoided Energy	1. Program Overhead Costs

	2. Avoided Capacity Costs	2. Incentives
	3. Non-energy Impacts	3. Customer Costs (incremental or full measure cost-incentive)
	4. Additional Cost Savings From Non-program Related Items	

V. Non-Energy Impacts

A. Requirements

In accepting PSE' 2020-2021 Biennial Conservation Plan, the Washington State Utility and Transportation Commission proposed a set of conditions (Docket 190905; Attachment A). These conditions included the following:

> **"10) Equitable Distribution of Nonenergy Benefits**
>
> a) During this biennium, Puget Sound Energy must demonstrate progress towards identifying, researching, and developing a plan to properly value nonenergy impacts that have not previously been quantified. The nonenergy impacts considered must include the costs and risks of long-term and short-term public health benefits, environmental benefits, energy security, and other applicable nonenergy impacts. These impacts and risks must be included in the 2022-2023 Biennial Conservation Plan.
>
> b) Puget Sound Energy must identify the discrete nonenergy impacts and the monetized value used in cost-effectiveness testing for each electric conservation program. This must be provided in a detailed format with a summary page and subsequent supporting spreadsheets, in native format with formulas intact, providing further detail for each program and line item shown in the summary sheet in annual plans and reports.
>
> c) To the extent practicable, Puget Sound Energy must begin to identify the distribution of energy and nonenergy benefits in annual plans and reports. This reporting must use currently quantified nonenergy impacts as well as values and estimates of additional impacts as they become available."

B. Progress in 2022

In 2022 the WUTC led a working group to examine the use of cost-effectiveness tests across all regulated Washington energy utilities (Docket 210804). The purpose of this group is to determine whether the current cost-effectiveness tests (the so-called "TRC+") adequately captures the values that influence cost-effectiveness in line with current state law, and to try to align cost-effectiveness tests across all distributed energy resources (DERs).

PSE engaged with the WUTC and other state utilities in several working group sessions. At the end of 2022, the WUTC determined that the working group would continue into 2023. During this time, PSE felt it would be wise to not invest as much time and funding toward the development of new NEIs as we did in 2021, to prevent the possibility that the outcome of the working sessions with the WUTC might duplicate or render moot PSE's individual efforts. If the direction from the WUTC were to apply prescribed NEI values, for example, it would have rendered any research conducted on those values moot. For that reason, PSE continued to update its existing NEIs and apply them as we developed new measures for 2022 and 2023 while focusing on supporting the WUTC's effort to develop a new cost-effectiveness framework.

C. 2022 Reporting

Following the reporting provided in PSE's 2021 Annual Conservation Report, this section provides an overview of the NEIs reported in PSE's cost-effectiveness test in 2022. The summaries below provide an overview to the data reported in the 2022 Exhibit 2 Cost-Effectiveness Test.

The table below shows electric and gas savings reported in 2022, along with the total net present value of NEIs included in the cost-effectiveness tests. The table demonstrates that the use of NEIs increased dramatically in 2022, more than doubling the total value reported in 2021. Part of this is the increase in electric and gas savings, as NEI values are linked to measure savings. Another is an increase in the uptake in NEIs across the programs, something PSE committed to in last years' report.

Comparison of Reported Savings and NEIs, 2021 and 2022

2021		2022	
Electric Savings	168,743,359 kWh	Electric Savings	242,997,108 kWh
Gas Savings	2,355,062 therms	Gas Savings	4,670,005 therms
Total Present Value of NEIs.	$7,437,663	Total Present Value of NEIs.	$18,580,227

The breakdown of NEIs across programs is shown in the table below. Note that in order to prevent double-counting, in cases where dual-fuel homes with both electric and gas energy efficiency measures, NEIs might be distributed to one fuel over another. For example, in the table below the NEI benefits of the Low-Income Weatherization program are reported primarily to the electric side, which partially accounts for the lower number on the gas side.

2022 Non-Energy Benefits Reported Across PSE Programs

Electric			Gas		
Program Name	**Present Value of Non-Energy Benefits**	**% of Total Electric NEIs**	**Program Name**	**Present Value of Non-Energy Benefits**	**% of Total Gas NEIs**
Low Income Weatherization	$ 1,592,427	11.6%	Low Income Weatherization	$ 313,833	4.9%
Single Family Existing Space Heat	$ 2,161,285	15.7%	Single Family Existing Space Heat	$ 1,254,696	19.6%
Single Family Existing Water Heat	$ 162,115	1.2%	Single Family Existing Water Heat	$ 178,612	2.8%
Home Appliances	$ 561,785	4.1%	Home Appliances	$ 304,163	4.8%
Web-Enabled Thermostats	$ 980,434	7.1%	Web-Enabled Thermostats	$ 432,213	6.8%
Residential Water Use Reducers	$ 791	0.0%	Residential Water Use Reducers	$ 633	0.0%
Single Family Existing Weatherization	$ 1,489,238	10.8%	Single Family Existing Weatherization	$ 1,362,537	21.3%
Single Family New Construction	$ 6,405	0.0%	Single Family New Construction	$ 4,163	0.1%
Manufactured Home New Construction	$ 32,092	0.2%	Multi-Family Retrofit	$ 1,309	0.0%
Multi-Family Retrofit	$ 648,838	4.7%	Commercial Foodservice	$ 2,533,552	39.6%
Business Lighting Grants	$ 15,588	0.1%	Commercial Midstream	$ 1,801	0.0%
Lighting to Go	$ 1,764,417	12.8%	Small Business Direct Install	$ 3,461	0.1%
Commercial Foodservice	$ 754,013	5.5%	***Total***	***$ 6,390,972***	
Commercial Midstream	$ 1,801	0.0%			
Small Business Direct Install	$ 3,610,451	26.2%			
Total	***$ 13,781,682***				

D. Identifying the Distribution of Impacts

PSE is working to identify disparities in current PSE programs and in our efforts to serve customers with clean energy resources. We are reviewing our programs to determine the rates of burdens and benefits between the PSE customer base and named communities, and we are researching best practices to address these discrepancies. Condition 10 quoted above requires PSE to begin to "identify the distribution of energy and nonenergy benefits in annual plans and reports."

Chapter 3 of PSE's Clean Energy Implementation Plan, required under Washington's Clean Energy Transformation Act (CETA), provides a deeper look into how PSE is addressing the impacts of its service delivery. This supplement answers directly the distribution question as required by Condition 10.

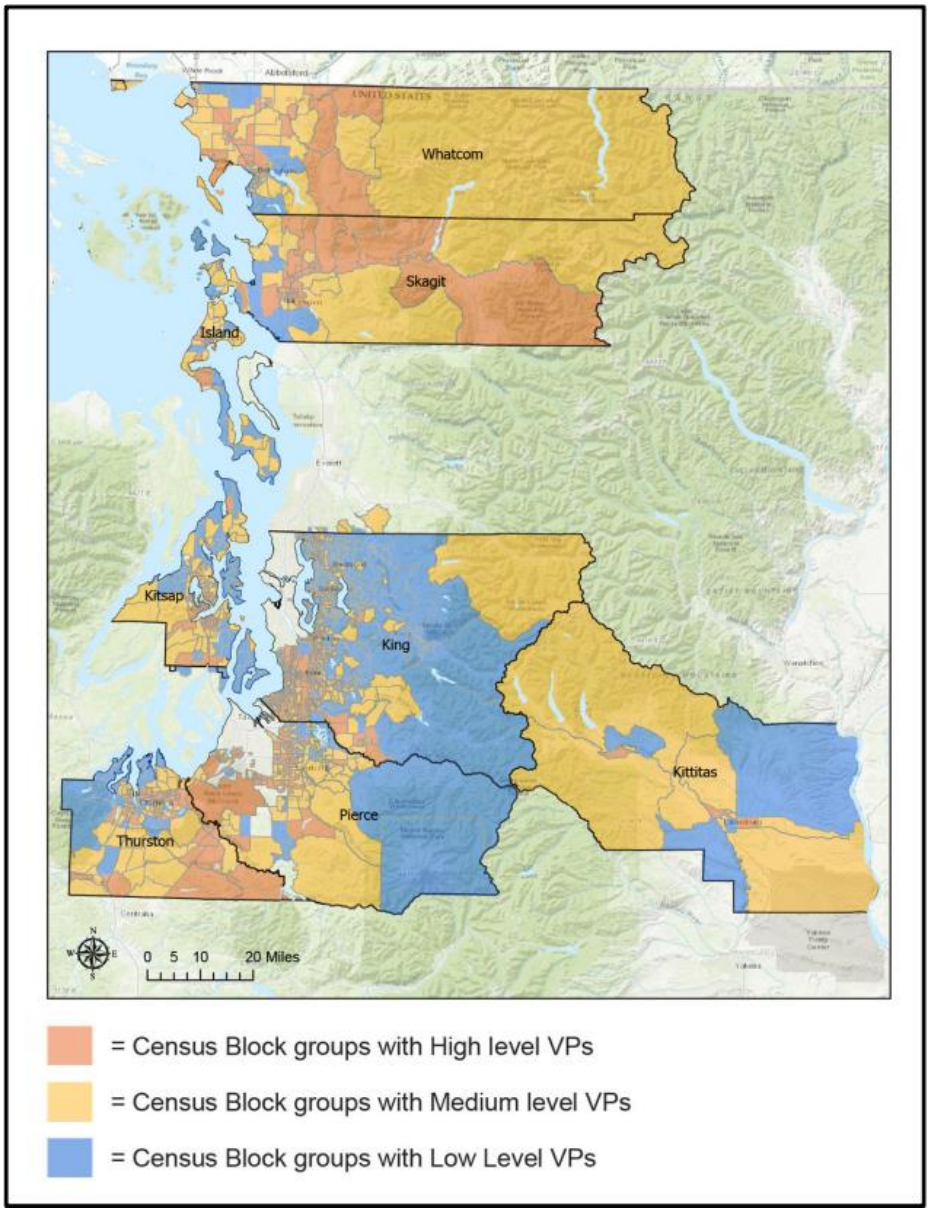
Since the passage of CETA, PSE has been engaged in stakeholder and advisory group collaboration to integrate data from several different resources to identify named communities. Named communities are defined by the CEIP as:

Highly Impacted Communities – A community designated by the Department of Health based on the cumulative impact analysis required by RCW 19.405.140 or a community located in census tracts that are fully or partially on "Indian country," and;

Vulnerable Populations - Communities that experience a disproportionate cumulative risk from environmental burdens due to: Adverse socioeconomic factors, including unemployment, high housing and transportation costs relative to income, access to food and health care, linguistic isolation, and sensitivity factors, such as low birth weight and higher rates of hospitalization.

PSE has analyzed its service territory using census tracts that define the population based on multiple factors defined in CETA. The map below presents a visualization of vulnerable populations by census block groups within PSE's Electric Service Area. The map illuminates the areas where high, medium, and low levels of vulnerability are experienced by customers within PSE's service area. This geographic representation gives PSE an indication of where we should focus efforts for outreach or program implementation.

Vulnerable Populations by Census Block Groups within PSE Electric Service Area



One of the efforts ongoing by PSE is mapping energy efficiency data onto the customer census tracts. This can be challenging, given that it requires every energy efficiency intervention to be

mapped to an address. In upstream or instant rebate programs, PSE does not always collect customer data, trying to strike the balance between encouraging participation by making it easy and seamless while collecting sufficient data to verify savings. In some cases, multi-family efficiency measures may apply to common areas, and data collected may not easily distinguish between resident customers and building owner customers.

The tables that follow demonstrate PSE's developing ability to report on the equitable distribution of energy and non-energy impacts. The first set of tables show the distribution of energy benefits across PSE's service territory in 2022, including incentive dollars allocated and savings achieved. Note that the totals below will not match the totals reported in the 2022 Annual Conservation Report, due to the data issues described above.

Distribution of Energy Benefits

Highly Impacted Communities

HIC	Service Type	Incentive Grants Allocated	Percent of Total Grants	Electric Savings (kWh)	Percent	Gas Savings (therms)	Percent	Number of unique customers served
No	Gas	$ 5,135,966.58	74%			$ 25,158,890.41	72%	53,605
	Electric	$ 13,723,977.37	71%	$ 7,644,203.28	63%			83,876
Yes	Gas	$ 1,783,358.31	26%			$ 9,937,764.38	28%	14,842
	Electric	$ 5,513,246.40	29%	$ 4,488,022.58	37%			44,688

Vulnerable Populations

HIC	Service Type	Incentive Grants Allocated	Percent of Total Grants	Electric Savings (kWh)	Percent	Gas Savings (therms)	Percent	Number of unique customers served
high	Gas	$ 1,177,381.58	66%			$ 6,492,110.32	65%	9,591
	Electric	$ 4,090,403.25	74%	$ 3,885,784.86	85%			39,861
medium	Gas	$ 456,989.25	26%			$ 344,901.66	8%	4,465
	Electric	$ 932,261.83	17%	$ 2,200,318.31	22%			5,341
low	Gas	$ 148,987.48	8%	$ 1,245,335.75	13%			1,267
	Electric	$ 490,581.32	9%	$ 359,259.52	8%			2,647

The next table shows the distribution of NEIs in 2022. The table shows the distribution of NEIs across customers participating in energy efficiency services implemented in 2022. Because of the issues attributing to addresses described above, the total present value of NEIs below will not match the NEIs as reported in Exhibit 2: Cost Effectiveness Results.

Distribution of Non-Energy Benefits

Highly Impacted Communities

HIC	Net Present Value of Non-Energy Benefits	Percent of total NEI value
No	$ 11,538,399	71%
Yes	$ 4,681,713	29%

Vulnerable Populations

VP	Net Present Value of Non-Energy Benefits	Percent of total NEI value
high	$ 3,155,300	19%
medium	$ 1,001,531	6%
low	$ 524,883	3%