EXH. RDC-1T
DOCKET UE-210795
2022 PSE CEIP
WITNESS: ROGER D. COLTON

BEFORE THE

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

In the Matter of PUGET SOUND ENERGY, INC. 2021 Clean Energy Implementation Plan	**Docket UE-210795**

PREFILED RESPONSE TESTIMONY (NONCONFIDENTIAL) OF

ROGER D. COLTON

ON BEHALF OF NW ENERGY COALITION AND FRONT AND CENTERED

October 10, 2022

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INTRODUCTION

Q. PLEASE STATE YOUR NAME, TITLE AND BUSINESS ADDRESS.

A. My name is Roger Colton. I am the owner of the firm Fisher, Sheehan & Colton, Public Finance and General Economics. My business address is 34 Warwick Road, Belmont, Massachusetts, 02478.

Q. PLEASE DESCRIBE YOUR BACKGROUND AND EXPERIENCE.

A. In my professional capacity, I work primarily on low-income utility issues. This involves regulatory work on utility rates and customer service issues, as well as research into low-income usage, payment patterns, and affordability programs. At present, I am working on various projects in the states of New Hampshire, Connecticut, Maryland, Pennsylvania, Ohio, Michigan, Tennessee, Kansas, Wisconsin, and Washington. My typical clients include state agencies (e.g., Pennsylvania Office of Consumer Advocate, Maryland Office of People's Counsel, Connecticut Office of Consumers Counsel), federal agencies (e.g., the U.S. Department of Health and Human Services), community-based organizations (e.g., National Housing Trust, Natural Resources Defense Council, Sierra Club), and private utilities (e.g., Toledo Water, Entergy Services, Xcel Energy d/b/a Public Service of Colorado).

In addition to state-specific and utility-specific work, I engage in national work throughout the United States. For example, in 2011, I worked with the U.S. Department of Health and Human Services (the federal LIHEAP office) to create and advance the utilization of the Home Energy Insecurity Scale as an outcomes measurement tool for the federal Low-Income Home Energy Assistance Program ("LIHEAP"). In 2007, I was part of a team that performed a multi-sponsor public/private national study of low-income

energy assistance programs. In 2020, I completed a study of water affordability in twelve U.S. cities for the London-based newspaper, The Guardian. In 2021, I authored, on behalf of a coalition of national consumer groups, comments to the U.S. Environmental Protection Agency regarding how to assess a local community's "financial capacity" to comply with their Clean Water Act obligations. A brief summary of my professional background is provided in my curriculum vitae (Exh. RDC-2).

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND.

A. After receiving my undergraduate degree in 1975 from Iowa State University, I obtained further training in both law and economics. I received my law degree in 1981 from the University of Florida. I received my Master's Degree in Regulatory Economics from the MacGregor School at Antioch University in Yellow Springs, Ohio in 1993.

Q. HAVE YOU EVER PUBLISHED ON PUBLIC UTILITY REGULATORY ISSUES?

A. Yes. I have published three books and more than 80 articles in scholarly and trade journals, primarily on low-income utility and housing issues. I have published an equal number of technical reports for various clients on energy, water, telecommunications, and other associated low-income utility issues. My most recent publication is a chapter in the book "Energy Justice: U.S. and International Perspectives," published by Edward Elgar Publishing in London. My chapter is titled "The equities of efficiency: distributing usage reduction dollars." It offers an objective definition of "equity" based on established legal and economic doctrines.

Q. HAVE YOU EVER TESTIFIED BEFORE THIS OR OTHER UTILITY COMMISSIONS?

A. Yes. I have previously testified before the Washington Utilities and Transportation Commission ("WUTC") on behalf of The Opportunity Council and the Spokane Neighborhood Action Program ("SNAP").[1] Overall, I have testified in more than 300 proceedings in 43 states and various Canadian provinces on a wide range of utility issues. A list of the proceedings in which I have testified is available in my curriculum vitae. *See* Exh. RDC-2 at 25–41.

Q. ON WHOSE BEHALF ARE YOU APPEARING IN THIS PROCEEDING?

A. I am testifying as a witness for Front and Centered and for the NW Energy Coalition.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my Response Testimony below is to assess the PSE Clean Energy Implementation Plan ("CEIP")[2] with respect to the following elements of the obligations imposed on PSE by Washington's Clean Energy Transformation Act ("CETA"):

- Identifying the Highly Impacted Communities and Vulnerable Populations;
- Assessing the disparities impacting Highly Impacted Communities and Vulnerable Populations and the distribution of benefits and burdens using Customer Benefit Indicators (CBIs) and associated metrics; and
- Reviewing the specific actions PSE has proposed to reduce disparities, increase customer benefits, and reduce customers' burdens.

To summarize, my testimony highlights numerous flaws in PSE's methodology for designating "Vulnerable Populations," which excludes many communities that have

[1] I/M/O Avista Energy Corp, Docket UE9911606 (2000); I/M/O Avista Energy Corp., Docket UE-100467 (2010); I/M/O PacificCorp., Docket UE-991832 (2000).

[2] Puget Sound Energy, 2021 PSE Clean Energy Implementation Plan, Corrected, Feb. 1, 2022, https://www.cleanenergyplan.pse.com/ceip-documents#CEIP (hereinafter "CEIP").

multiple indicia of deep need; addresses gaps in PSE's proposed CBIs and metrics; and determines that PSE's "specific actions" are inadequate to accomplish the equity goals of CETA. To address all of these (and other) shortcomings in PSE's CEIP, I recommend below that the UTC direct PSE to implement a new methodology for designating Vulnerable Populations, add certain excluded communities to the list of Vulnerable Populations, adopt additional metrics and apply CBIs more broadly, and adopt programs for geo-targeting PSE's investments to named communities, for targeting energy efficiency investments to the low-income customers with the deepest need, and for developing the clean energy workforce in PSE's service territory.

Part 1. Identifying Highly Impacted Communities and Vulnerable Populations.

Q. PLEASE DESCRIBE THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY.

A. In this section of my testimony, I briefly describe CETA's requirements pertaining to Highly Impacted Communities and Vulnerable Populations[3] and I assess PSE's methodology for designating populations as "vulnerable." There are numerous flaws in PSE's approach that have led PSE to omit some communities with multiple indices of need from its Vulnerable Population designations. Until PSE can more thoroughly revise its designation methodology, I recommend several additional criteria that PSE should use to designate additional Vulnerable Populations in this CEIP. PSE should designate as a Vulnerable Population (1) any census block group that has the highest score for any one of the commonly grouped sensitivity factors and socioeconomic factors, (2) any census

[3] While the phrase "named communities" does not appear in the CETA statute or implementing regulations, it is the term PSE uses to refer collectively to Highly Impacted Communities and Vulnerable Populations. Accordingly, I will use it at times in my testimony to refer collectively to Highly Impacted Communities and Vulnerable Populations.

block group that PSE identified as "high need" or "underserved" in connection with the Biennial Conservation Plan, (3) any census block group with an average home energy burden exceeding 6% of income for households with annual income less than 200% of the federal poverty level, (4) any census block group in a census tract that is a Qualified Census Tract as defined by HUD for purposes of the Low-Income Housing Tax Credit program, and (5) any census block group in a census tract that is a "community in economic distress" as defined by the U.S. Department of Treasury for purposes of the New Markets Tax Credit program.

Q. WHAT RESPONSIBILITIES DOES PSE HAVE WITH RESPECT TO HIGHLY IMPACTED COMMUNITIES AND VULNERABLE POPULATIONS?

A. Ensuring the "equitable distribution of energy and nonenergy benefits and reduction of burdens to vulnerable populations and highly impacted communities" is the foundation of PSE's equity obligations under CETA. *See* RCW 19.405.010(6); RCW 19.405.060(1)(c)(iii). "Vulnerable populations" are defined in CETA as "communities that experience a disproportionate cumulative risk from environmental burdens due to: (a) Adverse socioeconomic factors, including unemployment, high housing and transportation costs relative to income, access to food and health care, and linguistic isolation; and (b) Sensitivity factors, such as low birth weight and higher rates of hospitalization." RCW 19.405.020(40). A "highly impacted community" is defined in CETA as "a community designated by the department of health based on cumulative impact analyses in RCW 19.405.140 or a community located in census tracts that are fully or partially on 'Indian country' as defined in 18 U.S.C. Sec. 1151." RCW 19.405.020(23). The legislature was explicit in CETA that "[i]t is the intent of the

legislature that in achieving [a transition to clean energy] for Washington, there should not be an increase in environmental health impacts to highly impacted communities." RCW 19.405.010(6).

CETA also requires that PSE ensure that "all customers" are benefiting from the transition to clean energy. RCW 19.405.060(1)(c)(iii).

Q. WHAT ROLE, IF ANY, DOES PSE PLAY IN IDENTIFYING HIGHLY IMPACTED COMMUNITIES?

A. PSE does not play a direct role in identifying Highly Impacted Communities for purposes of CETA. Instead, the task of identifying Highly Impacted Communities has been assigned by statute to the Washington State Department of Health. RCW 19.405.020(23); *see also* Exh. RDC-3 (PSE Response to NWEC DR 039); Exh. RDC-4 (PSE Response to NWEC DR 065); Exh. RDC-5 (PSE Response to NWEC DR 066); CEIP, *supra*, at 10, 51. Highly Impacted Communities are designated at the census tract level. Exh. RDC-4 (PSE Response to NWEC DR 065). PSE identified 887 census block groups in PSE's service territory—and 457 census block groups in PSE's electric service territory—as falling within census tracts designated Highly Impacted Communities. Exh. RDC-6 (PSE Response to NWEC DR 049, Attachment B).

Q. WHAT ROLE, IF ANY, DOES PSE PLAY IN IDENTIFYING VULNERABLE POPULATIONS?

A. Unlike the task of identifying Highly Impacted Communities, the task of identifying Vulnerable Populations is one that PSE performs.

Q. HOW DID PSE IDENTIFY ITS "VULNERABLE POPULATIONS"?

A. PSE chose to define Vulnerable Populations at the census block group level, although nothing in CETA required PSE to define Vulnerable Populations on a geographic basis rather than by assessing whether individual customers share a particular vulnerability factor. PSE then ranked each block group in its service territory with respect to a variety of risk factors. CEIP, *supra*, at 55 ("The data for vulnerable population factors are distributed at various numeric scales across PSE's service area block groups"). PSE scaled the distributions of values across the metrics to a standard scale of 1–5, where "1" represents the lowest frequency of the factor and "5" represents the highest frequency. *Id.* Thus, for a given block group within PSE's electric service area, each factor received a score of 1–5. *Id*.[4] Ultimately, PSE summed the overall score for each block group and divided the results into terciles labeled high, medium, and low. *Id.* According to PSE, its division of block groups into High/Medium/Low

> illuminates the areas where high, medium, and low levels of vulnerability are experienced by customers within PSE's service area. Geographic areas categorized as having a "high" vulnerability score were deemed to be Vulnerable Populations. This geographic representation gives PSE an indication of where we should focus efforts for outreach or program implementation.

Id. at 58.[5]

[4] PSE noted that some metrics, such as access to food and historical redline influence, may be qualitative. PSE flagged these metrics with "0" or "1," where "0" indicates an absence of the condition and "1" indicates the condition is present. CEIP, *supra*, at 55.

[5] *See also* CEIP, *supra*, at 71 ("To define which customers fall into the vulnerable population category, PSE evaluated several metrics discussed in Appendix H. These customers were then grouped into three categories: low, medium, and highly vulnerable population, depending on the intensity of the factors that led to their vulnerable population status. We gave every PSE electric service area block group a low, medium, or high classification.").

Q. DOES THIS PSE METHODOLOGY ADEQUATELY IDENTIFY VULNERABLE POPULATIONS?

A. No. The PSE methodology has numerous shortcomings and substantially understates the extent of vulnerable customers in the Company's service territory.

First, PSE has chosen to identify "Vulnerable Populations" on a geographic basis rather than on a population basis that designates groups of similarly situated individual customers who share a particular vulnerability factor. Using PSE's approach, for example, customers with high energy burdens are not deemed to be a "Vulnerable Population" unless they live in the one-third of census block groups with the highest penetrations of similarly burdened customers. Similarly, customers who have high susceptibility to pollution-related illnesses, either because they have medical problems (e.g., asthma, COPD) or because they lack access to primary medical care, are not deemed to be a "Vulnerable Population" unless they live in the one-third of geographic areas with the highest proportion of households having medical problems and/or lacking access to medical care. For future CEIPs, the WUTC should reject this approach to defining "Vulnerable Populations."

Second, dividing the penetrations of the various indicators of vulnerability into thirds and defining the bottom third, ipso facto, to be "low vulnerability," may easily understate the vulnerability of some factors. Even a percentage of households in the lower third of the proportion with low access to food or health care could represent a high level of vulnerability. Similarly, being in the lower third of block groups ranked by penetration of disconnections does not mean that those block groups are low vulnerability communities. Rates of disconnections can demonstrate a vulnerable community even if

those rates are in the lower third of all rates of disconnection. Hypothetically, two-thirds of communities could be experiencing disproportionate cumulative risk from various vulnerability factors, not just the top one-third designated by PSE.

Third, many of the factors considered by PSE are, in essence, measuring the same or similar attributes of a population. For example, estimated energy burdens and housing burdens may really be measuring income levels. Linguistic isolation and unemployment may both be indicators of educational attainment. Higher rates of hospitalization may well be measuring the same attribute as the lack of access to primary health care. Seniors with fixed incomes and disability status may be largely measuring the same attribute. To the extent that multiple factors measure the same population attribute, including them all gives those population attributes a disproportionate impact on the determination of whether a particular area represents a Vulnerable Population.

Fourth, while some population attributes may have a disproportionate influence on PSE's determination of whether particular areas represent Vulnerable Populations, other factors are excluded entirely. For example, while the factors include the percentage of households in poverty, the Company does not consider the depth of poverty; for example, the percentage of households/persons in deep poverty is not considered.[6] An alternative way to consider the extent of the *very* poor would be to consider the percentage of households with annual income less than $10,000. Housing burdens are considered by PSE, but housing quality (as tracked by HUD in its Comprehensive Housing Affordability Strategy database, or "CHAS") is not. The rate of death from

[6] "Deep poverty" is a term of art, referring to households with income at or below 50% of the federal poverty level.

cardiovascular disease is considered, but the rate of death and/or illness attributable to extreme heat events, which are two of the most commonly tracked tests of health vulnerability to climate-related issues, are not.

Fifth, PSE's scoring system treats each factor as having an equal weight. The percentage of households having their utility service disconnected is given the same weight as the percentage of low birth weights. The percentage of energy-burdened households is given the same weight as the percentage of customers with income at or below 80% of area median income.

Sixth, PSE's scoring system does not consider the synergistic impacts of its asserted vulnerability factors. Synergistic factors are those which are a greater problem in combination with each other than they are standing alone. A high rate of utility arrearages combined with high energy burdens is a much greater problem than arrearages or burdens standing alone. A high rate of heat-related deaths, combined with high energy burdens that impede access to air conditioning, is a much greater problem than either of those factors standing alone.

Seventh, this process involves high percentages of households experiencing or exhibiting a vulnerability on one factor being diluted or canceled by a low percentage of households experiencing or exhibiting a vulnerability on a separate, completely unrelated factor. For example, a hypothetical block group "X", with a high score on the percentage of population that is extremely energy burdened (5) combined with a low score on the percentage of population who has mental illness (1) could well yield a score that is lower than a hypothetical block group "Y", with two mid-range scores on the rate of low birth weights (3) and the percentage of households with limited English proficiency (4). In

this example, block group "X" would have a score of 6 (5 + 1 = 6) while block group "Y" would have a score of 7 (3 + 4 = 7). Block group "Y" would then be considered by PSE to have a higher vulnerability than block group "X" despite the fact that block group "X" is more energy burdened, and PSE, itself, reported that "energy burden. . . may be a helpful lead indicator to engage multiple dimensions of vulnerability in PSE's Service Area." CEIP, *supra*, at 55. The impact of PSE's scoring procedure is to mask disparities in benefits and burdens rather than to identify disparities. By amalgamating scores on all factors measuring different population attributes, disparities in population attributes for the individual factors are effectively averaged. The difference in the totals will be less than the differences on individual factors.

Q. ARE THERE POPULATIONS OR COMMUNITIES IN NEED THAT HAVE NOT BEEN DESIGNATED AS VULNERABLE POPULATIONS OR HIGHLY IMPACTED COMMUNITIES IN PSE'S CEIP?

A. Yes. PSE's own data indicates that there are census block groups throughout PSE's electric service territory that are highly vulnerable, but are not designated as Vulnerable Populations in PSE's CEIP. For example, in PSE's 2022-2023 Biennial Conservation Plan ("BCP"), which is a "direct input" into the CEIP,[7] PSE identified several categories of communities in need in its service territory: (1) "high needs communities";[8] (2) "communities with high energy burdens";[9] (3) communities with high concentrations of

[7] Exh. RDC-7 (PSE Response to NWEC DR 129).

[8] 2022–2023 Biennial Conservation Plan Overview, 210822;210823-PSE-BCP-2022-2023-BCP-Overview (hereinafter "BCP Overview") at 12.

[9] *Id.* at 3, 12.

"hard-to-reach customers";[10] and (4) communities with high concentrations of "potentially under-served customers."[11] Although PSE has not defined "communities with high energy burdens" or "communities with high concentrations of hard-to-reach customers" or attempted to apply these designations to specific block groups,[12] PSE does maintain data on which block groups in its service territory constitute "high need communities"—which PSE identified through two different methods—and "potentially under-served customers." *See* Exh. RDC-8 (PSE Response to NWEC DR 049); Exh. RDC-9 (PSE Response to NWEC DR 049, Attachment A).

For block groups in PSE's service territory that fall into one of these BCP categories, PSE also maintains data on the estimated percentage of households with an energy burden greater than 6% in each block group. *See* Exh. RDC-10 (PSE Response to NWEC DR 050, Attachment A).

PSE's own BCP data shows that PSE's named community designations do not capture all of the block groups that PSE previously identified as being "high need" and/or "underserved" for BCP purposes, some of which have significant populations of high-energy-burden households. For example, block groups #530579513001, #530670118211, and #530579513001 were all designated "high needs" *and* "underserved" by PSE for BCP purposes and more than 25% of the households in each block group has high energy burdens according to PSE's own data, but these block groups are not in Highly Impacted Communities and were designated either "medium" or

[10] *Id.* at 32.

[11] *Id*.

[12] *See* Exh. RDC-8 (PSE Response to NWEC DR 049).

"low" vulnerability. *See* Exh. RDC-10 (PSE Response to NWEC DR 050, Attachment A, showing percentage of households with high energy burden and vulnerability status by census block group); Exh. RDC-6 (PSE Response to NWEC DR 049, Attachment B, showing BCP categorization by census block group and indicating whether the block group is in a Highly Impacted Community).

PSE can and should compare its BCP data against its lists of named communities to identify block groups in its electric service territory that PSE already identified as being in need but that have been excluded from PSE's named community designations.

If necessary, PSE can supplement its own energy burden data with data that is publicly available through the U.S. Department of Energy's Low-Income Energy Affordability Data tool, which provides census tract-level data on the average energy burden for low-income households (including households with income at or below 100% of the federal poverty level and those with income at or below 200% of the federal poverty level) for every census tract in the United States.[13]

Q. ARE THERE ANY OTHER COMMUNITIES IN NEED THAT SHOULD BE INCLUDED IN PSE'S VULNERABLE POPULATIONS DESIGNATIONS IN THIS CEIP?

A. While the task of identifying "vulnerable populations" under CETA is a relatively new task, identifying communities in need is neither new nor a task that is unique to Washington's energy utilities. I focus on two data sets that identify additional

[13] U.S. Dept. of Energy, Low-Income Energy Affordability Data (LEAD) Tool, https://www.energy.gov/eere/slsc/maps/lead-tool; National Renewable Energy Laboratory (NREL), U.S. Dept. of Energy, Low-Income Energy Affordability Data (LEAD) Tool Methodology (July 2019), https://www.nrel.gov/docs/fy19osti/74249.pdf.

communities in need that do not fall within PSE's named communities: (1) the U.S. Department of Housing and Urban Development (HUD), which has identified "Qualified census tracts" for purposes of providing housing development subsidies; and (2) the U.S. Department of the Treasury, which identifies census tracts considered "communities in economic distress" through its New Markets Tax Credit ("NMTC") program.

Q. EXPLAIN THE COMMUNITIES IN NEED YOU HAVE FOUND IN QUALIFIED CENSUS TRACTS (QCTS) IDENTIFIED BY HUD.

A. Qualified census tracts (QCTs) are identified by HUD for purposes of the Low-Income Housing Tax Credit ("LIHTC") program. To be a QCT, a census tract must have 50 percent of households with incomes below 60 percent of the Area Median Gross Income (AMGI) or have a poverty rate of 25 percent or more.[14]

There is some, but not complete, overlap between the QCTs that have been identified in the PSE electric service territory and the census tracts that contain PSE's named communities. The overlap is set forth in Table 1 below.[15] As shown, in PSE's service territory, of the 16 QCTs that are not Highly Impacted Communities, PSE identified only six of these 16 QCTs as containing at least one block group designated as Vulnerable Populations (scored as having "high" vulnerability). This means that PSE did *not* identify any Vulnerable Populations in ten of the 16 QCTs. These ten census tracts

[14] There is a limit on the amount of Qualified Census Tracts in any Metropolitan Statistical Area ("MSA") or Primary Metropolitan Statistical Area ("PMSA") that may be designated to receive an increase in eligible basis: all of the designated census tracts within a given MSA/PMSA may not together contain more than 20% of the total population of the MSA/PMSA. For purposes of this rule, all non-metropolitan areas in a state are treated as if they constituted a single metropolitan area.

[15] Since QCT data is available at the census tract level while PSE identifies Vulnerable Populations at the block group level, for the purpose of this analysis, I treated any census tract containing at least one census block group scored as having "high" vulnerability as a Vulnerable Population.

represent roughly 16,000 customers. Within those census tracts, 21.5% of the total population has an annual income less than 200% of the federal poverty level.

Table 1.
Customers And Percentage of Population with Income Below 200% of Poverty In QCTs That Are Not Named Communities

	Count of Census Tracts	Sum of Residential Customers	% of Pop. Below 200% of Poverty
QCTs That Are Not an HIC nor a Vulnerable Population	10	15,916	21.5%

Moreover, despite not being in a named community for purposes of PSE's CEIP, these QCTs contain populations of low-income customers with very high energy burdens. Households in these census tracts with an annual income of less than 100% of the federal poverty level have an average energy burden of 20.5% of income (i.e., for every $100 of income, these households are billed $20.50 for their home energy bills). Within these census tracts, households with an annual income of less than 200% of federal poverty level have an average energy burden of 8.0%.

Table 2.
Average Energy Burden for Population with Income Below Poverty In QCTs That Are Not Named Communities

	Average Energy Burden, Below 100% of Poverty	Average Energy Burden, Below 200% of Poverty
QCTs That Are Not an HIC nor a Vulnerable Population	20.5%	8.0%

Q. EXPLAIN THE COMMUNITIES IN NEED YOU HAVE FOUND IN "DISTRESSED COMMUNITIES" IDENTIFIED BY THE NEW MARKETS TAX CREDIT PROGRAM.

A. The gap between the "distressed communities" identified for the federal New Markets Tax Credit (NMTC) Program and PSE's named communities is even greater than the gap between the QCTs discussed above and PSE's named communities. The NMTC program was designed to spur investment and economic development in distressed neighborhoods. To ensure this, Congress enacted specific eligibility criteria requiring that projects go into census tracts that have low median incomes or high poverty rates. The program also gives preference to neighborhoods with severe levels of economic distress, neighborhoods outside of metropolitan areas, and projects that serve or employ low-income populations.

Table 3 below shows the number of "distressed communities" identified by the NMTC program that fall outside of PSE's named communities (Highly Impacted Communities and Vulnerable Populations). The NMTC program identified 28 census tracts that were neither identified as a Highly Impacted Community nor a Vulnerable Population (with "high" vulnerability). Those census tracts have a PSE customer base of 53,722 residential customers. Within those 28 distressed census tracts, 16.7% of the total population lives with an annual income less than 100% of the federal poverty level, while more than twice that number (34.3%) live with an annual income less than 200% of the federal poverty level.

Table 3. Customers and Percentage of Population with Income Below Poverty In NMTC "Distressed Communities" That Are Not Named Communities

	Count of Census Tracts	Sum of Residential Customers	% of Pop. Below 100% of Poverty	% of Pop. Below 200% of Poverty
"Distressed Communities" That Are Not an HIC nor a Vulnerable Population	28	53,722	16.7%	34.3%

These "distressed communities" also represent areas with excessive home energy burdens. Within the NMTC census tracts identified as "distressed communities" and *not* identified as a "named community," the average home energy burden was 18.6% for households with income less than 100% of the federal poverty level, and 8.4% for households with income less than 200% of the federal poverty level.

Table 4. Average Energy Burden for Population with Income Below Poverty In NMTC "Distressed Communities" That Are Not Named Communities

	Average Energy Burden, Below 100% Poverty	Average Energy Burden, Below 200% Poverty
"Distressed Communities" That Are Not an HIC nor a Vulnerable Population	18.6%	8.4%

Q. WHAT, IF ANY, CHANGES TO PSE'S DESIGNATIONS OF VULNERABLE POPULATIONS DO YOU RECOMMEND?

A. Given the significant flaws in PSE's approach to defining Vulnerable Populations, the WUTC would be justified in directing PSE to refile its CEIP with a new methodology and list of Vulnerable Populations. But in light of timing constraints, for purposes of this year's CEIP, I recommend that the WUTC declare that the methodology and data used by

PSE to identify Vulnerable Populations will be considered insufficient to support any future CEIP and that in the future, PSE must:

- Designate groups of similarly situated individual customers who share a particular vulnerability factor as Vulnerable Populations to the extent possible, and designating Vulnerable Populations at the census block group level only when individual customer data is not available;
- Evaluate vulnerability factors to assess whether some factors are in fact measuring the same underlying attribute, and consolidate factors where this is the case;
- Include as vulnerability factors several important indicia of vulnerability that PSE excluded from its inaugural CEIP, including deep poverty, housing quality, and death and illness from extreme heat.
- Consider the synergistic impacts of some vulnerability factors that render people with multiple vulnerabilities significantly worse off than people with just one;
- Designate Vulnerable Populations wherever they are warranted, rather than arbitrarily restricting Vulnerable Population status to only the top tercile experiencing a particular vulnerability factor and designating all others "low" or "medium" vulnerability; and
- More heavily weight factors like energy burden that are leading indicators of vulnerability.

The WUTC should also direct PSE to immediately begin gathering data necessary to implement this revised method for designating Vulnerable Populations.

For this CEIP cycle, the WUTC should also only approve PSE's CEIP with the condition that PSE make the following modifications to its list of Vulnerable Populations.

First, PSE should be directed to define any block group that has an incidence of the highest score for any of the categories of commonly grouped factors as a Vulnerable Population. Appendix K to PSE's Integrated Resource Plan, upon which PSE states it based its assessment of Vulnerable Populations (CEIP, *supra*, at 51), grouped impacts into categories such as environmental exposures, environmental effects, socio-economic factors, and sensitive populations.[16] For the purpose of designating as Vulnerable Populations block groups with the highest scores in a category of vulnerability factors, PSE could group vulnerability factors as follows:

- Environmental exposures (heat islands, death from extreme heat, illness from extreme heat);
- Sensitive populations (disability, cardiovascular disease, low birth weights, higher rates of hospitalization, home care);
- Energy security/insecurity (arrearage/disconnections, estimated energy burden, housing burden);
- Other socioeconomic factors (access to digital/internet resources, access to food, access to health care, educational attainment level, historical redline influence, linguistic isolation, race, transportation expense, unemployment, poverty, deep poverty, renter status, seniors with fixed income, housing quality).

[16] 2021 PSE Integrated Resource Plan, Appendix K, at K-22, https://oohpseirp.blob.core.windows.net/media/Default/Reports/2021/Final/Appendix/22.%20IRP21_AppK_032321.pdf.

Second, PSE should be directed to define as a Vulnerable Population any block group that it identified as "high need" or "underserved" in the Biennial Conservation Plan.

Third, PSE should be directed to define any block group in a census tract with an average home energy burden exceeding 6% of income for households with annual income less than 200% of the federal poverty level (as determined by reference to the U.S. Department of Energy's Low-Income Energy Affordability database) as a Vulnerable Population.

Fourth, PSE should be directed to designate as a Vulnerable Population any block group in a census tract that is a Qualified Census Tract as defined by HUD for purposes of the Low-Income Housing Tax Credit program.

Fifth, PSE should be directed to designate as a Vulnerable Population any block group in a census tract that is a "community in economic distress" as defined by the U.S. Department of Treasury for purposes of the New Markets Tax Credit program.

Q. ARE THERE OTHER WAYS PSE SHOULD ADDRESS THE NEEDS OF CUSTOMERS IN ENERGY BURDENED CENSUS TRACTS THAT HAVE BEEN FOUND TO BE IN NEED BUT THAT PSE HAS NOT IDENTIFIED AS NAMED COMMUNITIES?

A. Yes. Regardless of whether PSE accepts my recommendations above for changing its approach to Vulnerable Population designations and expanding the list of Vulnerable Populations, PSE should target its energy efficiency programming to ensure that it reaches all customers in a geographic area where any one of the following conditions is present, whether or not they are in a named community: (1) there is a "high need" or

"underserved" block group for BCP purposes, or (2) the census tract has an average home energy burden exceeding 6% of income for households with annual income less than 200% of the federal poverty level, or (3) the census tract has been identified by HUD as a "Qualified Census Tract" or (4) the census tract has been identified by the U.S. Department of the Treasury as an NMTC "distressed community."

Part 2. Establishing CBIs and Metrics to Analyze Benefits and Burdens.

Q. PLEASE DESCRIBE THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY.

A. In this section of my testimony, I assess the manner in which PSE evaluates how energy and non-energy benefits and burdens are distributed among its customers, including across named communities. I focus on the CBIs and metrics that PSE proposes, and recommend several critical additions to ensure that PSE is accurately measuring the equitable distribution of benefits and burdens. Specifically, I recommend that PSE add metrics that track arrearages and disconnections for nonpayment; indoor air quality; housing quality; and health impacts from extreme heat. Each of these factors is critically important to the customers it impacts, and not adequately accounted for in PSE's proposed CBIs and metrics.

A. Importance of Measuring Arrearages and Disconnections.

Q. WHAT CUSTOMER BENEFIT INDICATORS HAS PSE PROPOSED TO MEASURE THE EQUITABLE DISTRIBUTION OF BENEFITS RESULTING FROM ITS ACTIONS?

A. PSE has proposed eleven Customer Benefit Indicators (CBIs), each with associated metrics. *See* CEIP, Appendix H. PSE's eleven CBIs are: Improved participation in clean

energy programs from named communities; increase in quantity and quality of clean energy jobs; improved home comfort; increase in culturally- and linguistically-accessible program communications for named communities; improved affordability of clean energy; reduced greenhouse gas emissions; reduction of climate change impacts; improved outdoor air quality; improved community health; decreased frequency and duration of outages; and improved access to reliable clean energy. The metrics associated with each of these CBIs are set forth in Table H-1 in Appendix H.

Q. ARE PSE'S PROPOSED CBIs AND METRICS ADEQUATE TO MEASURE ALL OF THE CEIP'S POTENTIAL IMPACTS ON LOW-INCOME CUSTOMERS?

A. No. One important omission is that none of PSE's CBIs and metrics measure disconnections for nonpayment or arrearages. PSE dismisses the need to consider factors such as arrearages and disconnections as being "non-resource topics." Exh. KKD-1T at 10, 11 (Testimony of Kara A. Durbin). PSE conceded, however, that there is no statute, regulation, or WUTC order that directs it to exclude what it refers to as "non-resource topics" from its CEIP. Exh. RDC-11 (PSE Response to NWEC DR 108); Exh. RDC-12 (PSE Response to NWEC DR 109).

PSE's CEIP does propose "reduce median electric bill as a percentage of income for residential customers who are also energy burdened" as a metric in the cost reduction/burden reduction category of CBIs. However, measuring the reduction of energy burdens, while necessary, is not sufficient to track the costs, the burdens, or the risks of bill unaffordability. A reduction in energy burdens might occur, for example, while leaving burdens at an unaffordable level (e.g., a reduction from 12% to 8%). PSE's proposed metric measuring the reduction of energy burden would reflect this

improvement, but would mask the fact that bills still remain unaffordable. Moreover, a reduction in energy burdens is measured at an annual level. An energy burden metric would not reflect seasonal variation in bill payment. Finally, PSE's proposed energy burden metric would address bills *for current service* as a percentage of income. But when low-income customers get behind on payment (i.e., incur arrears), they must pay not only their bill for current service, but the unpaid balance as well. An energy burden analysis, standing alone, does not address how that cycle of nonpayment and debt occurs.

PSE should have included arrearages and disconnections in its CBIs and metrics. Arrearages and disconnections directly relate to CETA's directive to utilities to "ensure that all customers are benefiting from the transition to clean energy: Through the equitable. . . reduction of burdens to vulnerable populations and highly impacted communities; . . . reduction of costs and risks; and energy security and resiliency." RCW 19.405.040(8).

Bill nonpayment issues are unquestionably relevant to "burdens" and "energy security" (or, as more commonly referenced, "energy insecurity"). Arrearages and disconnections can have a devastating impact on customers, as they lose access to essential services from home heat to hot water to WiFi. Accordingly, arrearages and disconnections should have a direct bearing on PSE's resource selection, such as the extent and type of energy efficiency investments it makes. And PSE should explicitly recognize that freedom from loss, denial, or interruption of service due to nonpayment, and from the inability to take service without unreasonable household sacrifice, is an essential component of energy security.

Bill nonpayment issues are also relevant to "costs and risks." RCW 19.405.040(8). Cost reductions occur through reductions in cost elements such as working capital (associated with both the age and level of arrears), bad debt, and credit and collection expenses. Working capital is the cost of carrying bills that have been rendered to customers but remain unpaid. Working capital can be reduced through bill reductions in two different ways. On the one hand, the level of an unpaid balance can be reduced. All else being equal, a $150 arrearage imposes a lesser working capital requirement than a $200 balance. On the other hand, the age of an unpaid balance can be reduced. All else being equal, a 60-day arrearage imposes a lesser working capital requirement than a 120-day arrearage does.[17]

Without measuring arrearages and disconnections for nonpayment, PSE will be missing key data about the impact of its actions on low-income customers. Numerous studies show a close relationship between income, disconnections, and "energy insecurity"—the inability to adequately meet household energy needs.

The table below presents EIA/DOE nationwide data from its 2015 Residential Energy Consumption Survey (RECS) on how energy security plays out for low-income households.[18] The data shows that as household income increases, home energy insecurity decreases.

[17] Reducing working capital is also an important way to reduce rates because it is a capital expense. As such, PSE would earn a rate of return on its working capital allowance, which would include an equity component. Given that the return on equity is the utility's "profit," higher rates of equity return would also have an income tax component associated with it. Accordingly, each $1 reduction in working capital would result in more than a $1 reduction in rates.

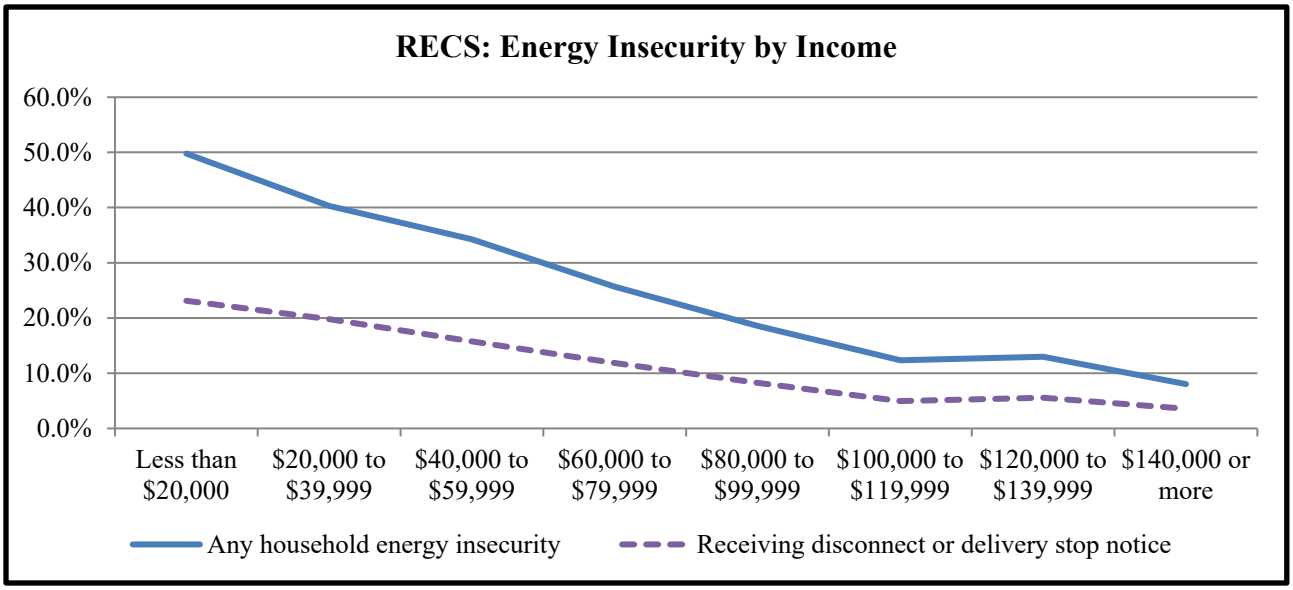
[18] Data from the 2019 RECS has not yet been publicly released. The 2015 data is the most recent data available. U.S. Energy Information Administration, 2015 Residential Energy Consumption Survey (RECS) Data, https://www.eia.gov/consumption/residential/data/2015/index.php.

Table 5. Percentage of Households Experiencing Energy Insecurity From 2015 EIA/DOE Residential Energy Consumption Survey (RECS)[19]

2015 annual household income	Any household energy insecurity	Reducing or forgoing food or medicine to pay energy costs	Leaving home at unhealthy temperature	Receiving disconnect or delivery stop notice	Unable to use heating equipment	Unable to use cooling equipment
Less than $20,000	49.8%	38.4%	20.1%	23.1%	10.5%	10.0%
$20,000–$39,999	40.3%	29.3%	13.9%	19.8%	7.0%	8.1%
$40,000–$59,999	34.2%	22.8%	10.3%	15.8%	5.4%	5.4%
$60,000–$79,999	25.7%	14.5%	7.2%	11.8%	3.3%	5.3%
$80,000–$99,999	18.6%	8.2%	4.1%	8.2%	1.0%	2.1%
$100,000–$119,999	12.3%	7.4%	3.7%	4.9%	1.2%	1.2%
$120,000–$139,999	13.0%	7.4%	5.6%	5.6%	N/A	N/A
$140,000 or more	8.0%	2.7%	2.7%	3.6%	0.9%	1.8%

The figure below shows the close relationship between "any household energy insecurity" in general, and the receipt of a notice of disconnection (applicable to public utilities) or "stop delivery" notice (applicable to deliverable fuels such as fuel oil).

[19] U.S. Energy Information Administration, Table HC11.1 Household Energy Insecurity, 2015 Residential Energy Consumption Survey (RECS) Data, https://www.eia.gov/consumption/residential/data/2015/hc/php/hc11.1.php.



In sum, by omitting arrearages and disconnections from its metrics of CETA burdens—despite CETA's explicit language directing utilities to consider reductions in risk, energy security, and nonenergy burdens—PSE has overlooked some of the most profound ways its actions can harm low-income customers, and has failed to adequately consider in its CEIP the ways in which the benefits and burdens of its actions are or are not equitably distributed.

B. Importance of Measuring Air Quality and Housing Quality.

Q. HOW DOES PSE PROPOSE TO DEFINE AND MEASURE NON-ENERGY BENEFITS IN ITS CEIP?

A. PSE states that the lone "non-energy benefit" it intends to track through Customer Benefit Indicators is improved home comfort. CEIP, *supra*, at 76–78. In turn, PSE states that "home comfort" includes the following: "The benefit for this metric represents the estimated lifetime value of the non-energy impacts associated with measures deployed by EE programs, calculated in Net Present Value for each of the following: Air quality;

Lighting quality; Thermal comfort; Health and safety; and Noise." CEIP, *supra*, at 76. PSE explained:

> The intent of this indicator is to reflect home comfort in terms of benefit to the customer over and above energy savings. We developed this metric through the energy efficiency BCP process, please see Appendix H [of the CEIP] for additional information. The metric encompasses the five elements listed above, summed for each energy efficiency program.

CEIP, *supra*, at 77.

PSE states that in the future it "will forecast the amount of benefit for customers participating in energy efficiency programs. This information will be based on non-energy impacts (NEIs) and the Biennial Conservation Plan. Because the nature of this metric is tied to energy efficiency programming, this metric will not be tracked for other PSE programs." CEIP, *supra*, at 78.

Q. ARE THERE FACTORS RELATED TO NON-ENERGY BENEFITS THAT PSE DOES NOT INTEND TO TRACK AND REPORT?

A. Yes, many. I will focus in particular on three of PSE's omissions: indoor air quality, housing quality, and health impacts from extreme heat.

PSE states that it does not plan to directly measure the impacts on indoor air quality resulting from its CEIP investments. The Company asserts:

> Some PSE customers, especially those who are in highly impacted communities and vulnerable populations, may experience poor air quality in their homes, which impacts their health, and the inability to maintain a comfortable temperature in

their homes. These burdens may be mitigated by an increase in energy efficiency programs that incorporate cost savings related to home comfort.

CEIP, *supra*, at 77. In other words, rather than measuring air quality and associated health impacts directly, PSE intends instead to categorize improvement in these factors as improved "comfort" and to apply the "home comfort" CBI only to its energy efficiency programs.

In addition, PSE does not propose any CBIs or metrics to measure housing quality or the health impacts associated with extreme heat. Although PSE proposes to measure housing burdens, it omits any measurement of housing quality, as tracked by HUD in its Comprehensive Housing Affordability Strategy (CHAS) database. And while PSE proposes to measure the rate of death from cardiovascular disease, it does not propose to measure the rate of death, hospitalization, or illness attributable to extreme heat events.

Q. WHY IS IT IMPORTANT TO HAVE SEPARATE METRICS FOR HOUSING QUALITY, AIR QUALITY, AND EXTREME HEAT IMPACTS?

A. Death and/or illness from extreme heat events are two of the most commonly tracked tests of health vulnerability to climate-related issues. PSE's proposed metric for "home comfort" will not capture the health impacts of extreme heat events. The Britannica Dictionary defines "comfort" as "a state or situation in which you are relaxed and do not have any physically unpleasant feelings caused by pain, heat, cold, etc."[20] PSE proposes to measure "comfort" by reference to very specific dollar values assigned to changed circumstances in the home. CEIP, Appendix H, at 22 (Table 14). None of those dollar

[20] The Brittanica Dictionary, Comfort (noun), https://www.britannica.com/dictionary/comfort.

values address health-related issues (including death, illness, and hospitalization) associated with extreme heat.

Moreover, the health-related impacts of extreme heat (including death) may be as related to home energy burdens as much as they are related to housing quality. Because of concerns over the affordability of their bills, low-income customers are not only less likely to have air conditioning, they are also less likely to operate their air conditioning, and more likely to operate their air conditioning for less time, than are higher-income customers. During extreme heat events (which will become increasingly likely as a result of climate change), having limited or no access to air conditioning can cause serious illness, hospitalization, and even death. These impacts are not measured or tracked by PSE's proposed "home comfort" metrics.

Furthermore, poor indoor air quality, poor housing quality, and extreme heat can have devastating synergistic impacts on named communities that are far worse than any of these factors on its own. Low-income communities, in particular, have the least ability to protect themselves from the consequences of climate change. As climate change causes more extreme temperatures and wildfires, and people more frequently take shelter indoors from heat and smoke, indoor air quality increases in significance. But poor housing quality with inadequate HVAC systems and an inability to afford air conditioning can leave low-income people quite literally with "no place to hide."

Lumping indoor air quality and other factors together under "home comfort" is likely to mask, rather than illuminate, these important impacts on some of the most vulnerable people in PSE's service territory.

C. Recommended Changes to CBIs and Metrics.

Q. WHAT, IF ANY, CHANGES DO YOU RECOMMEND PSE MAKE TO ITS CBIs AND METRICS?

A. I recommend that the WUTC direct PSE to incorporate metrics tracking arrearages, disconnections for nonpayment, housing quality, indoor air quality, and health impacts from extreme heat. In addition, I recommend that the WUTC direct PSE to apply its home comfort CBI and associated metrics to all of its programs and specific actions, instead of only to energy efficiency.

Q. BY LIMITING YOUR DISCUSSION OF CBIs AND METRICS TO THE TOPICS DISCUSSED ABOVE, DO YOU MEAN TO IMPLY THAT NO ADDITIONAL CBIs OR METRICS ARE APPROPRIATE?

A. No. My testimony on CBIs and metrics is limited to the discussion of arrearages and disconnections, indoor air quality, housing quality, and extreme heat. The need for other additional CBIs and metrics is addressed in the Prefiled Response Testimony of Lauren McCloy (Exh. LCM-1T) filed in this docket on behalf of Front and Centered and the NW Energy Coalition.

Part 3. Equity Analysis of PSE's Specific Actions.

Q. PLEASE DESCRIBE THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY.

A. In this section of my testimony, I recommend changes to the "specific actions" that PSE has proposed to pursue in its CEIP. While I focus my attention on energy efficiency, my comments extend, as well, to investments in distributed energy technologies such as rooftop solar.

First, I explain the need for PSE to invest in clean energy programs for low-income customers, and especially low-income renters.

Second, I make recommendations for how PSE should target its specific actions. Specifically, I recommend that for named communities, PSE develop a Geo-Targeting Pilot applicable to all programs that allows PSE to geo-target specific actions to the individualized factors that led to each community's designation as highly impacted or vulnerable. I also recommend that PSE implement a Payment-Troubled Targeting Program to target income-qualified energy efficiency investments to the customers who need them most, whether or not they are in named communities.

Third, I recommend that PSE increase its funding and savings targets for low-income weatherization programs to comply with CETA's requirement that PSE ensure an equitable distribution of benefits and reduction of burdens.

Fourth, I recommend that PSE incorporate a workforce development initiative into its Low-Income Weatherization program to help meet increasing demand for energy efficiency services, to diversify the workforce, and to cultivate ambassadors from named communities.

Q. PLEASE EXPLAIN PSE'S PROPOSALS WITH RESPECT TO LOW-INCOME WEATHERIZATION PROGRAMS IN ITS CEIP AND BCP.

A. In the BCP, PSE describes its Low-Income Weatherization program as an effort to "improve[] the energy efficiency of single-family residences, multifamily structures, and manufactured/mobile homes" as well as to "provide[] education on routine ways to reduce energy use and costs[.]" BCP Overview at 11. In addition, the Company says, it "supports health and safety measures and energy-related repairs." *Id*. The Company

reports that "[a]s highly impacted communities and vulnerable populations are identified, these communities will be folded into LIW customer engagement strategies. This will inform program strategies to reduce or remove systematic and participation barriers and to target future outreach and marketing campaigns in communities with high energy burden." *Id*. at 12. The narrative portion of PSE's CEIP does not specifically mention the Low-Income Weatherization program, but says that PSE will "act across energy efficiency (EE) programs to mitigate risk and increase benefits to highly impacted communities and vulnerable populations" and "develop culturally relevant outreach to bring integrated EE opportunities to highly-impacted communities and vulnerable populations." CEIP, *supra*, at 106. And Tab 1 ("Energy Efficiency") of CEIP Appendix E-2 lists forecasted energy efficiency targets, energy efficiency cost, and incremental cost for Low-Income Weatherization under both the "No-CETA" and "With-CETA" portfolios. CEIP, Appendix E-2 (Incremental Cost Calculation Spreadsheet).

When PSE was asked about the aggregate kWh of savings and aggregate dollars of expenditures projected for each LIW measure for both "No-CETA" and "With-CETA" scenarios described in the "Energy Efficiency" tab of CEIP Appendix E-2, PSE responded that there is no information available "for the theoretical no-CETA scenario" on either savings from Low-Income Weatherization[21] or spending on Low-Income Weatherization.[22] In contrast, there is such data for PSE's "with-CETA" portfolio in the BCP, for both savings from Low-Income Weatherization[23] and spending on Low-Income

[21] Exh. RDC-13 (PSE Response to NWEC DR 080).

[22] Exh. RDC-14 (PSE Response to NWEC DR 081).

[23] Exh. RDC-15 (PSE Response to NWEC DR 083).

Weatherization.[24] The tables below set forth that BCP data both in absolute terms (kWh of savings; dollars of expenditures) and in percentage terms.

Table 6. 2022–2023 BCP: Low-Income Weatherization Savings and Expenditures in kWh and Dollars

Measure Category and Type	Sum of Savings (kWh)	Sum of Expenditures ($)
Undesignated	**0**	**$630,550**
Undesignated	0	$630,550
Controls	**119,170**	**$113,293**
Thermostat	119,170	$113,293
HVAC	**1,525,696**	**$3,289,918**
Heat Pump	1,233,816	$2,750,985
Ventilation	291,880	$538,933
Lighting	**8,024**	**$30,028**
Lamp	8,024	$30,028
Water Heating	**800,966**	**$1,061,245**
Aerator	648,500	$950,184
Showerhead	98,816	$49,841
Water Heater	53,650	$61,220
Weatherization	**1,501,026**	**$3,774,725**
Insulation	1,140,559	$2,393,235
Sealing	208,072	$1,180,645
Window	152,396	$200,845
Grand Total	**3,954,882**	**$8,899,759**

[24] Exh. RDC-16 (PSE Response to NWEC DR 084).

The table below provides the same data except in percentage terms rather than in absolute terms. The table shows, for example, that the Low-Income Weatherization program is expected to spend 1% of its total spending on "controls," 12% of total spending on "water heating," and 42% of total spending on "weatherization." The sum of the categories is 100% of the total. For each category that has sub-components, the table below lists the percentage within that category for each sub-component (e.g., 81% of Low-Income Weatherization "HVAC" spending is on "heat pumps," while the remaining 19% of the "HVAC" category is spent on "ventilation").

Table 7. 2022–2023 BCP:
Low-Income Weatherization Savings and Expenditures
In Percentage Terms

Measure Category and Type	Sum of Savings	Sum of Expenditures
Undesignated	**0%**	**7%**
Undesignated		100%
Controls	**3%**	**1%**
Thermostat	100%	100%
HVAC	**39%**	**37%**
Heat Pump	81%	84%
Ventilation	19%	16%
Lighting	**0%**	**0%**
Lamp	100%	100%
Water Heating	**20%**	**12%**
Aerator	81%	90%
Showerhead	12%	5%
Water Heater	7%	6%
Weatherization	**38%**	**42%**
Insulation	76%	63%

Sealing	14%	31%
Window	10%	5%
Grand Total	**100%**	**100%**

PSE spends an amount on lighting specifically through its Low-Income Weatherization program that is sufficiently small that it rounds to 0% of the total.

A. Importance of Clean Energy Investments to Low-Income Customers.

Q. PLEASE DESCRIBE WHAT YOU EXAMINE IN THIS SECTION OF YOUR TESTIMONY.

A. In this section of my testimony, I explain why PSE should prioritize investments in low-income weatherization for low-income, energy-burdened customers, and why it is appropriate to target energy efficiency programs to low-income households even if those households are not in a named community.

Q. WHY SHOULD LOW-INCOME CUSTOMERS BE PRIORITIZED FOR PSE'S CLEAN ENERGY INVESTMENTS?

A. Generally speaking, there is a need for a robust ratepayer-funded low-income energy efficiency program directed to low-income customers throughout the PSE service territory, whether or not any particular customer lives in a geographic area defined to be a "Vulnerable Population."

In the absence of external assistance, energy efficiency investment will not occur for low-income households. As a result, low-income customers will be excluded from deriving benefits from energy efficiency investments provided through PSE programs, including the corresponding improvement in the affordability of low-income PSE bills.

Due to market barriers that present particular investment impediments, low-income households are prevented from investing in energy efficiency. A "market barrier" is a market condition which stands as an obstacle to the implementation of cost-effective energy efficiency investments. A commonly recognized "market barrier," for example, is inadequate knowledge. Consumers may not make efficiency investments because they do not understand the economics of the investment return.

Market barriers impact low-income households differently, and more extensively, than residential households generally. "Low-income market barriers" are market barriers that either uniquely, or disproportionately, impede low-income households from investing in cost-effective energy efficiency without outside assistance.[25]

Q. WHAT MARKET BARRIERS MIGHT CAUSE THE EXCLUSION OF LOW-INCOME CUSTOMERS FROM ENERGY EFFICIENCY PROGRAMS?

A. In my testimony, I consider several types of impediments to investment in energy efficiency for low-income customers, including liquidity barriers, the renter status of many low-income households, shelter costs in the PSE service territory, and the physical characteristics of the housing units occupied by low-income customers. Through a review of these various market barriers, it is possible to gain insight into the need for low-income energy efficiency investments, and into the capacity of low-income residents to generate those investments without outside assistance. A review of the impediments to low-income investments also

[25] As will be seen, the same market barriers that impede (or entirely prevent) low-income customers from making investments in energy efficiency will impede (or entirely prevent) low-income customers from making investments in clean energy renewable technologies as well. My discussion below of energy efficiency applies equally to these renewable technology investments.

provides insights into what programs will be effective, or ineffective, in overcoming those impediments.

Q. PLEASE EXPLAIN THE LIQUIDITY BARRIER THAT PREVENTS LOW-INCOME HOUSEHOLDS FROM INVESTING IN COST-EFFECTIVE ENERGY EFFICIENCY.

A. One low-income market barrier that prevents low-income customers from realizing the bill reductions generated by energy efficiency is the lack of investment capital available to low-income customers.

To a low-income household, it makes no difference if an energy efficiency investment would be a "cost-effective" way to control home energy costs if the household has insufficient money to make the investment in the first instance. If a household lacks the funds to invest in efficiency improvements, the cost-effectiveness of those investments—even in the medium term—becomes irrelevant. As might be expected, households with annual incomes at or below $10,000 or $15,000 tend to have extremely low liquidity. The payback period for any particular energy efficiency measure becomes irrelevant if the household does not have the investment capital with which to begin.

This principle can be illustrated with appliance replacements. It is often cost-effective for a consumer to spend more money for a more energy-efficient new appliance. For example, if a less-efficient refrigerator costs $600 and the more-efficient refrigerator costs $800, it is cost-effective for the customer to pay the $200 difference to purchase the more efficient appliance if the increased efficiency will save more than $200 in energy costs. But for a household that lacks the liquidity for the less-efficient $600 option, let alone

the additional $200 for the more-efficient option, the cost-effectiveness of either investment becomes irrelevant, even if that household could benefit greatly from energy savings.

Additionally, when a household has very little money, it cannot afford to tie up that money in long-term investments. The household instead needs its investment returned in savings quickly. Research has found that low-income households tend to have very high implicit discount rates (also sometimes known as hurdle rates or internal rates of return), ranging up to the 80–90 percent level. This translates into a payback period of roughly one year. This short payback period will almost entirely exclude low-income households from the energy efficiency market.

Q. PLEASE EXPLAIN WHY STATUS AS A RENTER CAN ALSO POSE A MARKET BARRIER THAT EXCLUDES LOW-INCOME HOUSEHOLDS FROM ENERGY EFFICIENCY PROGRAMS.

A. Low-income households tend to live in rental dwellings. This is true not only of low-income households in named communities, but also of low-income households outside of PSE's named communities. Of the 94,408 households in PSE's excluded communities[26] who were homeowners in 2019, only 5,154 (5.5%) had income at or below $20,000. Of the 36,775 renters in PSE's excluded communities 2019, 5,781 of them (15.7%) had income at or below $20,000. Looked at conversely, of the total 10,938 households in excluded communities with income below $20,000, 53% (5,781) were renters.[27]

[26] My use of the term "PSE excluded communities" refers to census tracts that are not "named communities" in that they have neither been identified as a Highly Impacted Community nor contain any block groups having a "high" vulnerability score.

[27] Table B17019, American Community Survey, 5-year data, 2019. Available at https://data.census.gov/cedsci/all?q=b17019.

This finding has two significant impacts on whether energy efficiency is accessible to low-income households. First, tenants have little or no incentive to improve their landlord's property as tenants receive little, if any, of the increased value of the property. This phenomenon is frequently referred to as the problem of "split incentives." In the energy efficiency context, the term "split incentives" refers to the situation where the cost of installing measures is borne by the owner of a housing unit while the benefit of reduced consumption—and thus reduced bills—is directed toward the resident (*i.e.*, the tenant). Since the costs and benefits are borne by different stakeholders, no investment often occurs.

In addition, tenants do not generally have the authority to make decisions over improving major housing systems, whether it be a heating/cooling system or a hot water system. Indeed, even major appliances such as refrigerators are often owned and controlled by the property owner rather than by the tenant. This lack of authority is generally referred to as the lack of "dominion interest" over the major systems in a home that would generate substantial energy efficiency investment and bill reductions. Even if the tenant had the financial wherewithal to fund energy efficiency investments, as a non-owner of the home, the tenant would not have the authorization to make such changes to the major systems and appliances. Therefore, low-income households are often excluded from participating in this bill reduction technique.

This market barrier—renter status—disproportionately impedes the installation of energy efficiency measures for low-income households. PSE's CEIP offers no energy efficiency measures directed specifically at overcoming this market barrier. There is no "specific action" articulated by PSE directed toward low-income renters.

Q. PLEASE EXPLAIN WHY SHELTER COSTS CAN POSE A MARKET BARRIER THAT EXCLUDES LOW-INCOME HOUSEHOLDS FROM ENERGY EFFICIENCY PROGRAMS.

A. As home energy prices increase as a percentage of income, low-income households have fewer available discretionary resources to invest in measures that could reduce their household energy expenditures. The discussion below examines the stress on household income by focusing on total shelter costs.[28] Rising home energy prices are a major factor in driving overall shelter prices upwards, which creates a barrier to the implementation of energy efficiency measures as a strategy to control those costs. This is a particular problem for the lowest-income households, including outside of PSE's named communities.

One common principle in reviewing basic household budgets is that total shelter costs should represent no more than 30% of a household's income. A household devoting more than 30% of income toward shelter costs is considered to be over-extended. The affordability of housing under federal programs such as the Low-Income Housing Tax Credit and Home Investment Partnership Program ("HOME") programs, for example, is determined by reference to the 30% shelter burden figure. In addition, programs such as the Section 8 subsidized housing program, as well as public housing, are governed by the principle that total shelter costs should not exceed 30% of income. In assessing shelter burdens under HUD's Comprehensive Housing Affordability

[28] "Shelter costs" include rent or mortgage payments plus all utilities (except telephones). Internet service is not considered to be a "utility."

Strategy planning process, "excess" shelter burdens are also defined as those over 30% of income.

The U.S. Census Bureau reports shelter burdens, disaggregated by rental burdens and homeowner burdens. In PSE's excluded communities, more than 92% of all renters with income less than $20,000 a year have rent burdens exceeding 30% of income.[29] Low-income homeowners served by PSE are not much better off. In PSE's excluded communities, 87% of homeowners with income less than $20,000 have a shelter burden of 30% or more. As incomes increase, shelter burdens for both renters and homeowners sharply decrease in PSE's excluded communities.[30] But to the extent that shelter costs increase faster than income does, this situation will continue to get worse.

Q. HOW DO THESE SHELTER BURDENS RELATE TO HOME ENERGY EFFICIENCY?

A. High shelter burdens relate to energy efficiency in two ways. First, the high shelter costs themselves impede low-income households' ability to invest in energy efficiency measures. If the household struggles to meet its day-to-day bills, it does not have the discretionary income to invest in energy savings measures, even if those measures are "cost-effective" over a reasonable period of time.

In addition, as home energy takes up an increasing proportion of total shelter costs, there is less money "left" to pay for the housing component of total shelter costs. As a result, households are either forced into increasingly lower-priced (and

[29] Table B25074, American Community Survey, 5-year data, 2019 (available at https://data.census.gov/cedsci/all?q=b25074).

[30] U.S. Census Bureau, Table B25095, American Community Survey, 5-year data (2019), https://data.census.gov/cedsci/table?q=B25095&g=0100000US.

presumptively lower-quality) housing, or those households face ongoing bill payment problems attributable to the mismatch between household resources and household expenses.

In either case, the very shelter cost characteristics that cause the need to improve energy efficiency to reduce bills is also the characteristic that makes it less likely that such investments in energy efficiency can occur. This impediment to the ability of low-income households to invest in energy efficiency should be of concern to energy stakeholders because it is the energy bills, themselves, that are contributing to the budget squeeze imposed by shelter costs.

Despite this specific market barrier that will impede, if not completely prevent, low-income investments in energy efficiency, PSE's CEIP does not identify any "specific actions" that are directed toward overcoming the barrier of high shelter burdens, let alone identify such specific actions in its excluded communities.

Q. PLEASE EXPLAIN WHY HOUSING CHARACTERISTICS CAN POSE A MARKET BARRIER THAT EXCLUDES LOW-INCOME HOUSEHOLDS FROM ENERGY EFFICIENCY PROGRAMS.

A. Low-income households are more likely than higher-income households to live in older, lower-quality housing stock with little existing weatherization (poor insulation, leaky windows, etc.) and outdated, inefficient appliances, with the result that more work is needed to improve energy efficiency in these households. In addition, the housing available to low-income people may require repairs or upgrades before weatherization or energy efficiency services can be performed, such as remediating structural problems or hazards in the home that would pose a danger to contractors, or upgrading electrical

systems to support newer appliances. If energy efficiency programs are not fully subsidized or focus on minor measures (such as more efficient lightbulbs, or low-flow faucets and showerheads) rather than the comprehensive services necessary to improve energy efficiency in older housing stock, then low-income households may be unable to participate or see little value in participating.

B. The Appropriate Targeting of PSE's Clean Energy Investments.

Q. PLEASE EXPLAIN HOW PSE SHOULD IMPROVE THE DISTRIBUTION AND TARGETING OF ITS CLEAN ENERGY INVESTMENTS.

A. PSE should pursue geotargeting as one of its specific actions for all distributed energy resource and demand response programs, including energy efficiency. Through geotargeting, PSE can address the *particular* disparities and vulnerabilities that led to a *particular* geographic area being identified as a Highly Impacted Community or Vulnerable Population.

What is required in one community may differ dramatically from what is required in a different community. For example, it would not be possible to effectively reduce the disparities that led to a block group's high vulnerability status by reducing environmental exposure if the factor that caused the block group to be categorized as a Vulnerable Population in the first instance involved socioeconomic factors such as poverty or high energy burdens rather than exposure to environmental harms.

Q. IS THERE A TERM FOR IDENTIFYING SPECIFIC GEOGRAPHIC AREAS TO BE TARGETED WITH INVESTMENTS DIRECTED TOWARD OVERCOMING SPECIFIC PROBLEMS IN THAT AREA?

A. Yes. Identifying a specific area to receive both an increased level and priority of energy efficiency investment is referred to as "intentional targeting" or "geo-targeting." For the purpose of this testimony, I use the two terms interchangeably. Geo-targeting involves identifying the specific needs of an area and shaping the specific actions to represent a specific response to those specific needs.

Q. DO YOU HAVE RECOMMENDATIONS FOR THE SUCCESSFUL IMPLEMENTATION OF GEO-TARGETING?

A. One successful strategy for engaging in geo-targeting is to engage in a neighborhood-based targeting. As I describe in detail above in Part 1, it is possible to identify specific census tracts that have a high concentration of households with characteristics demonstrating a particular need. Neighborhood targeting would involve outreach to the entire neighborhood, recognizing that doing so would generate a high penetration of investment in households that have demonstrated characteristics of need. The implementation of a successful neighborhood targeting scheme, such as I recommend here, has been implemented by other electric utilities.

I recommend a PSE Geo-Targeting Pilot modeled on the Consumers Energy pilot program adopted as part of a settlement of a proceeding reviewing the Consumers Energy (CECo) "Energy Waste Reduction" ("EWR") plan. A Geo-Targeting Pilot directed towards named communities would also complement, and could be combined with, the DER Public Engagement Pilot described and recommended by Lauren McCloy (*see*

LCM-1T) to engage communities at the "empowerment" level on the International Association for Public Participation's Public Participation Spectrum.[31]

The CECo geo-targeting pilot was approved by the Michigan PSC as part of a settlement on March 17, 2022. I have attached a copy of the CECo settlement to this testimony as Exh. RDC- 17. In that CECo Settlement, the parties (Consumers Energy, and environmental intervenors which included Sierra Club, Natural Resources Defense Council, Ecology Center, and National Housing Trust) agreed in relevant part to adopt a geo-targeting pilot in which the utility would initiate research to support the development of an income-qualified geo-targeting protocol and future targeting strategies for increasing participation by vulnerable and underserved populations. As part of that research, the utility committed to undertake a low-income needs assessment study that would examine historic participation rates in the utility's income-qualified programs and who had historically been eligible for them and draw on publicly available data to rank geographies based on high need criteria. The utility also agreed to invest $1 million between 2023 and 2024 to support an income-qualified program targeted to six specific zip codes in Flint to evaluate the impact of a geo-targeting approach on economically vulnerable customers.

A Geo-Targeting Pilot similar to the CECo Geo-Targeting Pilot could allow PSE to most effectively direct its programming to the subsets of PSE's named communities who would most benefit from subsidized energy efficiency services.

[31] *See* Prefiled Response Testimony of Lauren McCloy, Exh. LCM-1T (citing International Association for Public Participation, IAP2 Spectrum, https://iap2usa.org/cvs).

I recommend a PSE level of funding similar to the CECO Geo-Targeting Pilot: $1 million.

Q. HOW SHOULD PSE IMPROVE THE DISTRIBUTION AND TARGETING OF ITS ENERGY EFFICIENCY INVESTMENTS IN LOW-INCOME COMMUNITIES?

A. In order for PSE to advance the equitable distribution of clean energy benefits through the equitable distribution of energy efficiency investments, PSE should ensure that customers in need can be targeted with energy efficiency investments, whether or not they live in a geographic area that has been identified as a Highly Impacted Community or Vulnerable Population. Specifically, I recommend that PSE develop a Payment-Troubled Targeting Program to direct low-income energy efficiency investments specifically and explicitly toward low-income customers throughout PSE's electric service territory, including in excluded communities, who are facing payment difficulties and who would most benefit from energy efficiency investments.

I recommend targeting income-qualified energy efficiency investments based on the following non-exclusive[32] factors:

- **High energy usage:** Research has shown that the single greatest predictor of energy usage reduction potential is high consumption prior to efficiency measures being implemented.
- **High arrearages:** High arrearages and high usage frequently, but do not universally, correspond. Customers with high arrearages disproportionately tend to have high usage as well. Targeting low-income customers with high arrearages

[32] By "non-exclusive," I mean that customers may fall into one or more of these categories.

generates the following benefits: (1) high arrearages have been associated with a greater usage reduction potential; and (2) directing usage reduction to low-income customers with high arrearages can reduce the utility's non-energy costs whether or not the arrearages are reduced to $0. For example, if usage reduction investments can help a low-income customer reduce his or her arrearage from $500 to $300, the utility pockets the working capital savings associated with carrying those $200 in reduced arrearages (along with a potential reduction in bad debt if those arrears are ultimately written off).

- **Broken/defaulted deferred payment arrangements:**[33] A low-income customer on a deferred payment arrangement ("DPA"), by definition, is in arrears. To the extent that a customer has a history of negotiating a DPA, that customer has evidenced a willingness to work with the utility to address its nonpayment, even though the DPA default indicates that effort was unsuccessful. To the extent that usage reduction can reduce the bill for current service, the low-income customer is more likely to pay the total asked-to-pay amount. As discussed, not only will the ultimate risk of lost revenue due to nonpayment be reduced, but the immediate working capital associated with any delayed collection of revenue will be reduced

[33] Numerous terms are used in the utility industry to reference an agreement whereby a customer acknowledges an unpaid balance and agrees to pay that unpaid balance in installments over time, while continuing to pay bills for current service as billed. Terms include, for example, but are not limited to, payment agreements, installment agreements, payment arrangements, payment plans. Frequently, modifying words such as "extended" (e.g., "extended payment plan") or "deferred" (e.g., "deferred payment plan") are added to the phrases. My use of the term "deferred payment arrangement" is intended to cover each of those situations. A Deferred Payment Arrangement differs from what is commonly referenced to as an "Arrearage Management Program" ("AMP"). An AMP generally has some element of arrearage forgiveness provided. That is *not* the program type referenced in this testimony.

as well. Defaulting on a DPA should be an indicator of payment-troubled status for purposes of targeted low-income usage reduction.

- **Disconnection for nonpayment:** A disconnection of service for nonpayment (or multiple threats of disconnection) within the immediately preceding two-year period should establish payment-troubled status for targeting purposes. A disconnection for nonpayment is the ultimate indicator of payment-troubled status. Even if the disconnection was avoided subsequent to the issuance of a notice of disconnection, that level of payment-trouble should prioritize a household for low-income usage reduction services.

To reiterate, these non-exclusive factors would not be *eligibility* criteria. They would instead be targeting objectives, through which PSE should identify low-income customers to enroll in its Payment-Troubled Targeting Program.

Q. HAS ANY OTHER UTILITY ADOPTED A PROGRAM TARGETED AT PAYMENT-TROUBLED CUSTOMERS SUCH AS YOU RECOMMEND?

A. Yes. In 2018, Michigan's largest electric utility, DTE, agreed as part of a settlement to test a proposal to target a portion of its low-income "Energy Waste Reduction" (energy efficiency) toward a payment-troubled targeting pilot for "payment-troubled" income-eligible customers.[34] The settlement explained the project as involving "increased ramping efforts" by DTE in its energy efficiency assistance program "to target low-income customers in arrears," with "low-income customers" defined as "those customers with income at or below 200% of the federal poverty limit." *Id.* The settlement specified

[34] Letter from DTE to Administrative Law Judge VanSteel, Docket U-18262, Settlement (March 20, 2018), https://mi-psc.force.com/sfc/servlet.shepherd/version/download/068t0000000sS7rAAE (attached as Exh. RDC-18).

that "[c]ustomers may be eligible for this program regardless of home ownership or renting status." The utility committed to increase program spending "by a total of $5,000,000 for the EWR 2018-2019 plan to target low-income customers in arrears," with a commitment to spend at least $1,000,000 in 2018 and the balance of the $5,000,000 in 2019. *Id.*

Q. WHAT WAS THE TARGETING METHODOLOGY THAT DTE AGREED TO IMPLEMENT?

A. DTE agreed to use its billing systems to identify customers in arrears, and to prioritize customers with the highest amount of arrears first, with second priority going to customers with the highest energy intensity (the ratio of annual energy consumption used per square foot in the home) as reflected in DTE's billing system.[35] DTE agreed to segment the resulting customer list geographically based on the regions served by DTE's outreach partner agencies and to work with those partner agencies to extend this programming to the priority customers in arrears.

Q. HOW WOULD THE PAYMENT-TROUBLED TARGETING PROGRAM DIFFER FROM LOW-INCOME WEATHERIZATION GENERALLY?

A. Income *eligibility* for the Payment-Troubled Targeting Program would remain at the current definition of income eligibility. This proposed targeting initiative should not change the income *eligibility* levels for its low-income programs. However, PSE should also establish certain *targeting* objectives. Other programs distinguish between setting "eligibility standards" and setting "targeting objectives." For example, the federal LIHEAP statute establishes income eligibility as not to be less than 110% of the federal

[35] *Id.*

poverty level or more than 60% of state median income. Under the federal LIHEAP statute, three populations within that income-eligible population are to be *targeted* for assistance: (1) the elderly; (2) households with young children; and (3) the disabled.

The Payment-Troubled Targeting Program would engage its credit and collection records as a means to identify low-income households that might benefit from participation in the proposed Payment-Troubled Targeting Program in named or excluded communities.[36] PSE should routinely inquire of its customer information system which customers meet the targeting criteria. The resulting lists of tagged customers generated through this use of the computer system data should be provided to Community-Based Organizations ("CBOs") working with, and under contract to, PSE to engage in the outreach and intake process. A funding level of $1 million above and beyond that budget otherwise earmarked for Low-Income Weatherization would be appropriate.

C. Funding for Low-Income Weatherization.

Q. WHAT KIND OF LOW-INCOME WEATHERIZATION INVESTMENTS SHOULD BE PURSUED BY PSE?

A. Because of substantial market barriers, low-income households cannot and will not pursue energy efficiency measures in the absence of an appropriately designed, targeted, and funded PSE low-income program. Accordingly, to address and redress these barriers, PSE should deliver low-income energy efficiency programs that involve fully subsidized, direct-install energy efficiency services for low-income households.

[36] *See generally* Colton, *The Use of Utility Data Processing Records as a Data Mining Source on Low-Income Consumers: Converting Information to Knowledge* (1999) (prepared for Affordable Comfort, Inc.); *see also* Colton, *Zip Code Scoring: Targeting EITC Outreach to Delinquent Utility Customers* (February 2003).

Q. WHAT BUDGET HAS PSE PROPOSED FOR ITS LOW-INCOME WEATHERIZATION PROGRAM?

A. PSE proposes a budget for its low-income customers in two different places in its CEIP. On the one hand, PSE states that its "estimated cost" for "low-income weatherization" is $24.43 million. CEIP, Appendix L (Programs and Actions Master Table). On the other hand, PSE states that the "Energy Efficiency Cost Based on With-CETA Portfolio" has an annual budget for "low income weatherization" of $6,091,714 per year for the years 2022 through 2025 (a total of $24.37 million). CEIP, Appendix E-2 (Incremental Cost Calculation Spreadsheet). PSE asserts in its "incremental cost calculation" that it estimates it will generate 7,888 mWh of energy savings, while its "Programs and Actions Master Table" estimates a savings of 7,909 mWh. The degree to which those data elements are similar leads me to conclude that they are intended to reference the same program planning. PSE proposes to maintain a constant annual Low-Income Weatherization budget ($6,091,714) for each year of the four-year period (2022 through 2025).

PSE estimates that its total "incremental cost" for low-income weatherization is $8,981,928 over four years ([$6,091,714 - $3,846,232] = $2,245,482/year x 4 years = $8,981,928). Given its non-CEIP investment of $15,384,927 over four years, PSE's proposed CEIP low-income investment is an increase of 58% ($8,981,928 / $14,384,927 = 0.58).

Q. IS THE BUDGET PSE RECOMMENDS FOR LOW-INCOME WEATHERIZATION ADEQUATE OR APPROPRIATE?

A. No. Notwithstanding PSE's proposed increase in its Low-Income Weatherization budget discussed above, the budget is insufficient to meet the need for this program across PSE's service territory. The PSE budget understates the need by failing to consider the extent of the investments necessary to overcome the market barriers preventing low-income customers from participating in many energy efficiency programs. The PSE budget also understates the need by failing to account for the large numbers of low-income customers in particular need that do *not* live in Highly Impacted Communities and/or Vulnerable Populations. The need that exists in these excluded communities (i.e., those that are neither Highly Impacted Communities nor Vulnerable Populations) is substantial. Finally, the CEIP understates the benefits to be generated by energy efficiency investments by affirmatively declining to recognize and consider affordability benefits such as reduced arrearages and reduced numbers of nonpayment disconnections.

Q. WHAT BUDGET LEVEL DO YOU RECOMMEND FOR PSE'S LOW-INCOME WEATHERIZATION?

A. I recommend that Low-Income Weatherization spending as a percentage of total residential energy efficiency spending be ramped up over the four years 2022 through 2025 such that the percentage of Low-Income Weatherization spending of total residential spending in 2025 equals 125% of the percentage of population in PSE's electric service territory that lives with an annual income of at or below 200% of the federal poverty level. Given that 21% of PSE's total population lives with an annual income at that level of poverty, the 2025 Low-Income Weatherization spending would be 26.3% of total residential spending in 2025. The cumulative increase in Low-Income Weatherization spending between 2023 and 2025 would be 38.9%. Unspent money in

any given year would be rolled over into the next year's Low-Income Weatherization budget.

Table 8. Proposed Low-Income Weatherization (LIW) Spending (2022–2025)

	2022	2023	2024	2025
PSE Proposed LIW Spending[37]	$6,091,714	$6,091,714	$6,091,714	$6,091,714
Total PSE Proposed Residential Spending	$38,291,674	$38,291,674	$38,291,674	$38,291,674
Total PSE Proposed LIW as % of Total Residential Spending	15.9%	15.9%	15.9%	15.9%
Low-Income Multiplier	100%	125%	125%	125%
Proposed Ramp-Up Period	15.9%	18%	19%	21%
Proposed LIW Spending (%)	15.9%	22.5%	23.8%	26.3%
Proposed LIW Spending ($)	$6,091,714[38]	$8,615,626.56	$9,094,272.48	$10,051,564.32
Incremental Spending Proposal (Annual)	$0.00	$2,523,912.86	$3,002,558.78	$3,959,850.62
Cumulative Increase ($)	$0.00	$2,523,912.86	$5,526,471.64	$9,486,322.26
Cumulative Increase (%)	**0.0%**	**17.2%**	**30.2%**	**38.9%**

Q. WHY DO YOU PROPOSE A LOW-INCOME MULTIPLIER?

A. The purpose of the increased Low-Income Weatherization budget is to help fulfill the clean energy and equity goals of CETA so that low-income customers are not left behind by PSE's clean energy investments.

If the percentage of low-income spending was simply equal to the percentage of the low-income population in the PSE service territory, low-income households would increasingly be left behind and the clean energy equity goals of CETA would not be achieved. First, the need for external assistance to advance investments in low-income

[37] CEIP, Appendix E-2.

[38] Given that 2022 is nearly complete, no change in the 2022 budget is possible.

energy efficiency is greater than in the general population. Because of a variety of market barriers that are unique to low-income households, these customers cannot make energy efficiency investments out of their household budgets. Second, low-income households are more likely to be older housing stock with little existing weatherization (poor insulation, leaky windows, etc.) and outdated, inefficient appliances such that they cost more to make efficient. Third, because there is a need for a higher subsidy for low-income investments, the cost to achieve savings is generally greater. As a result, the amount of savings (and thus the amount of bill reduction) per dollar invested in low-income efficiency will be substantially lower. Fourth, investments in low-income energy efficiency will generate offsetting cost reductions that do not accrue from investments in energy efficiency generally. These cost reductions, which go far beyond traditional notions of avoided energy and capacity costs, include factors such as reduced arrears (and thus reduced working capital), reduced bad debt, and reduced credit and collection expenses. A low-income multiplier to help reflect these additional avoided costs that will be shared across all residential ratepayers is thus appropriate. These added cost reductions benefit all ratepayers in a way that residential energy efficiency spending overall does not.

Q. IS GENERATING AN EQUITABLE DISTRIBUTION OF SAVINGS IMPORTANT TO ACHIEVING CETA'S CLEAN ENERGY EQUITY GOALS?

A. Yes. If CETA's equity goals are to be achieved, the dollars of low-income investment need to be somewhat higher than the dollars of investment on higher-income households. By focusing on savings, the focus is on the outcomes of PSE's actions, not on the level of PSE's efforts. By focusing on outcomes, the inquiry keeps the focus of the assessment of

equity on the *recipient* of resources rather than on the *provider* of resources. Rather than focusing only on whether dollars are being expended equitably, the inquiry focuses instead on what is *accomplished* by the person on whose behalf those resources are expended.

In short, the effort to ensure an equitable distribution of savings introduces an explicit consideration of outcomes into PSE's CETA equity evaluations. The question is not simply whether money is being distributed proportionately, but whether that expenditure of money is generating an equal opportunity to actually achieve the desired objectives. A focus on savings also allows all stakeholders (PSE, the WUTC, NWEC, Front and Centered, and others) to track not merely the *incidence* of outcomes, but also to track the *comprehensiveness* of outcomes as well, looking not only at the number of low-income households in which energy savings were achieved, but the magnitude of those savings.

Q. WHAT IS THE RELATIONSHIP BETWEEN PSE'S PROPOSED SPENDING ON LOW-INCOME WEATHERIZATION AND PSE'S ANTICIPATED SAVINGS FROM LOW-INCOME WEATHERIZATION?

A. The relationship between spending on low-income weatherization and energy savings from low-income weatherization as proposed by PSE[39] is set forth in the table below. The data set forth in this table shows that the percentage of residential savings that PSE expects to be generated from low-income customers is substantially lower than the percentage of residential spending devoted to low-income customers. Two significant observations can be made. First, the level of low-income spending is disproportionate to

[39] Exh. RDC-19 (PSE Response to NWEC DR 074).

the level of low-income savings. In 2021, while 7.2% of total spending was directed toward low-income customers, only 2.8% of the total savings was generated from low-income customers. Second, increasing the low-income spending does not generate a proportionate increase in the amount of usage reduction. From 2021 to 2024, PSE proposes to more than double its low-income spending (from 7.2% of the total to 15.7% of the total). Despite that increase, the percentage of savings generated from low-income customers increases by only 35% (from 2.8% to 3.9%).

Table 9.
Low-Income Investment
as a Percentage of Total Residential Energy Efficiency
From Exh. RDC-19 (PSE Response to NWEC DR 074)

	2021 Report	2022 Plan	2023 Plan	2024	2025
Low Income Weatherization	$1,744,533	$6,108,196	$6,108,196	TBD	TBD
Total Residential Energy Efficiency	$24,356,138	$37,890,289	$38,900,269	TBD	TBD
Low-income Weatherization investment as % of Residential Energy Efficiency	7.2%	16.1%	15.7%	TBD	TBD

Low-Income Savings (kWh)
as a Percentage of Total Residential Energy Efficiency
From Exh. RDC-20 (PSE Response to NWEC DR 076)

Low Income Weatherization	1,066,699	1,977,441	1,977,441	TBD	TBD
Total Residential Energy Efficiency	37,762,576	95,571,615	50,174,697	TBD	TBD
Low-income Weatherization Savings as % of Residential Energy Efficiency	2.8%	2.1%	3.9%	TBD	TBD

Even if one assumes that expenditures are being distributed equitably, if the savings resulting from those expenditures are not, a number of adverse results will appertain. First, this will reduce the extent to which the program achieves bill reductions (associated with the usage reduction) for low-income customers. Spending money without maximizing the resulting savings may not generate the bill reductions (and thus the burden reductions) that would be associated with improved affordability. Second, if savings are disproportionately low, this means that low-income customers are paying for a program from which they are not receiving corresponding benefits. Third, if savings are disproportionately low, low-income customers remain the customers who bear a higher portion of fixed costs as the usage of other non-low-income customers is reduced. In each of these instances, the spending on energy efficiency arguably impedes rather than facilitates the achievement of CETA's equity goals.

Q. DO PSE'S INVESTMENTS IN OTHER CLEAN ENERGY TECHNOLOGIES SUCH AS RENEWABLE ENERGY AND DIRECT ENERGY RESOURCES ALSO REQUIRE A DEDICATED LEVEL OF LOW-INCOME INVESTMENTS?

A. Yes. While clearly renewable resources through Distributed Energy Resource (DER) investments would have a separate budget from Low-Income Weatherization, there should also be dedicated low-income investments within that budget.

D. Workforce Development Opportunities

Q. HOW DOES PSE ADDRESS CLEAN ENERGY JOB DEVELOPMENT IN ITS CURRENT CEIP?

A. PSE establishes as one of its objectives an "increase in quality and quantity of clean energy jobs." CEIP, *supra*, at 227. PSE states that it will measure an "increase [in the]

quantity of jobs" based on: (1) number of jobs created by PSE; (2) programs for residents of highly impacted and vulnerable populations; (3) number of local workers in jobs for programs; and (4) number of part-time and full-time jobs by project. CEIP, *supra*, at 227. It intends to measure an "increase [in the] quality of jobs" based on: (1) the range of wages paid to workers; (2) additional benefits offered; and (3) demographics of workers. *Id.*; *see also id.* at 75. But the CEIP is devoid of any specific actions that PSE will take to increase the diversity of the clean energy workforce. *See* CEIP, *supra*, at 74–76.[40]

Q. CAN PSE USE ITS INCREASED LOW-INCOME WEATHERIZATION SPENDING TO PROMOTE CLEAN ENERGY JOBS?

A. Yes, but this outcome will be achieved only if specific attention is paid to generating it.

While the U.S. Bureau of Labor Statistics (BLS) does not track data on employment within the part of the labor force devoted to energy efficiency, the Energy Efficiency and Renewable Energy Office (of the Department of Energy), in collaboration with the Energy Futures Initiative, has been publishing such data for more than five years. In 2020, the U.S. Energy Employment Report (USEER) reported that energy efficiency employers were having difficulty finding qualified candidates to fill jobs in the industry.

In order to address the apparent shortage of energy efficiency workers while simultaneously promoting diversity in the sector, PSE should incorporate workforce development into its Low-Income Weatherization programs.

[40] Indeed, PSE seems to place the entire responsibility of promoting workplace diversity on its contractors. CEIP, *supra*, at 90 ("RFP responses shall also include any written diversity commitments, plans, or policies."); *see also* CEIP, *supra*, at 89 ("PSE encourages all bidders able to meet the requirements of this All-Source RFP to participate, including bidders representing minority-, women-, disabled- and veteran-owned businesses. PSE encourages bidders interested in partnering with PSE to support supplier diversity through inclusive, competitive procurement processes.").

Q. IS THERE CURRENTLY A LACK OF WORKPLACE DIVERSITY?

A. While I do not have data specific to the diversity of the energy efficiency sector in Washington state, there is a commonly recognized lack of diversity in the energy efficiency workplace nationally. According to the National Renewable Energy Laboratory (NREL) of the U.S. Department of Energy, "women and Black Americans are notably underrepresented when compared to national workforce averages, with Black workers representing 8% of the efficiency workplace, compared with 12% of the national workforce; and women representing only 25% of the efficiency workforce, compared with 47% of the national workforce."[41] One study reports that "while Hispanic workers are better represented in this sector, their employment is concentrated in lower-wage, lower-skilled positions. Ethnic and racial diversity decrease in higher-paying positions further up the career ladder."[42]

According to NREL, two of the three most common reasons for difficulties in finding qualified candidates are the lack of technical skills and the lack of industry-specific knowledge. In addition, NREL notes that workers find it difficult to establish "green credentials" in order to seek jobs:

> Credentials and certification programs provide effective pathways for workers to enter or advance within the high-performance building sector. These certifications allow individuals to distinguish themselves among the workforce. However, additional effort to build awareness of green credentials and help new

[41] Truitt et al., NREL, U.S. Department of Energy, *Building the Efficiency Workforce* (August 2020) at 11 (hereafter "Efficiency Workforce").

[42] Shoemaker et al., American Council for an Energy Efficiency Economy, *Expanding Opportunity through Energy Efficiency Jobs: Strategies to Ensure a More Resilient, Diverse Workforce* (October 2020) (hereafter "Expanding Opportunity").

entrants navigate the many options for obtaining credentials is needed to grow the efficiency workforce.[43]

Q. WILL INCREASING THE DIVERSITY OF PSE'S ENERGY EFFICIENCY WORKFORCE HAPPEN WITHOUT "SPECIFIC ACTIONS" DIRECTED TOWARD ACHIEVING THAT OUTCOME?

A. No. As NREL concluded, "addressing energy efficiency employers' challenges in finding skilled workers will take an intentional effort to attract more people to the field, improve their skills, and make entry to the field more straightforward."[44] The "intentional effort" required to address workplace diversity in PSE's clean energy agenda should be set forth in PSE's "specific actions."

Q. WHAT TYPES OF ACTIONS SHOULD PSE CONSIDER AS PART OF ITS WORKFORCE DEVELOPMENT EFFORTS?

A. Simply creating more clean energy jobs will not address the lack of diversity in the clean energy labor force. Instead, PSE's "intentional efforts" should include, at a minimum:

- An identification of, and support for, training programs such internships and apprenticeships offered by minority-owned firms delivering energy efficiency programs;
- An identification of, and support for, partnerships with community-based workforce development organizations to develop curricula that meet the needs of local participants and integrate clean energy technologies (both energy efficiency and renewables) into existing education programs.

[43] Efficiency Workforce, *supra*, at 11.

[44] Efficiency Workforce, *supra*, at 12.

- Providing financial support to students who participate in training and education programs.
- Co-deliver training for energy efficiency and renewable technologies.
- Partner with local unions either to develop new apprenticeship programs, or to add clean energy content to existing apprenticeship training programs.

PSE should also promote its workforce development initiative to people living in named communities. Through this effort, PSE should seek to ensure that people from named communities who are trained through PSE's workforce development efforts are matched with opportunities to deliver services in their own communities. In this manner, PSE can not only expand the clean energy sector that will be integral to Washington's transition to clean energy, but it can also build a corps of community liaisons or ambassadors who may be able to deliver services more effectively in underserved areas. Use of "trusted messengers"—a term often used in the delivery of services in low-income and hard-to-reach neighborhoods and populations—in the delivery of the services will not only promote equity in the delivery of clean energy services but will also promote equity in the workers who will benefit from a clean energy economy.

E. Projecting and Tracking the Effects of Specific Actions

Q. DOES CETA REQUIRE PSE TO TRACK THE EXPECTED AND ACTUAL DISTRIBUTIONAL EFFECTS OF ITS SPECIFIC ACTIONS?

A. Yes. Several provisions of CETA and its implementing WUTC regulations make clear that PSE must track the expected and actual distributional effects of its specific actions.

With respect to all specific actions, PSE's CEIP must contain a narrative description of how the specific actions are consistent with CETA's equity mandates. WAC 480-100-640(6)(b). This description must include:

- "An assessment of current benefits and burdens on customers, by location and population" (WAC 480-100-640(6)(b)(i));
- "the projected impact of specific actions on the distribution of customer benefits and burdens during the implementation period" (WAC 480-100-640(6)(b)(i)); and
- "A description of how the specific actions in the CEIP mitigate risks to highly impacted communities and vulnerable populations" (WAC 480-100-640(6)(b)(ii)).

With respect to PSE's energy efficiency target, PSE is required not only to set forth in the CEIP the projected impact of its specific actions on the distribution of customer benefits and burdens, but also to provide the "forecasted distribution of energy and nonenergy. . . benefits." WAC 480-100-640(3)(a)(i).

In other words, PSE's CEIP must state the outcomes expected as a result of each of its specific actions, identifying not only the total aggregated benefits expected, but also who will receive more, and who will receive fewer benefits, and how each proposed action will address current disparities affecting named communities in particular. These requirements also necessarily imply that PSE must track and measure the distributional impacts attributable to each of its proposed actions. Only in this fashion can the actual outcomes be compared with the expectations to determine whether the expected outcomes have been realized.

Q. WHY IS IT IMPORTANT FOR PSE TO PREDICT AND TRACK THE DISTRIBUTIONAL EFFECTS OF ITS SPECIFIC ACTIONS?

A. CETA requires an identification of who PSE intends to target with its energy efficiency investments, an identification of what outcomes will be experienced by those targeted populations, and establishing the link between what PSE proposes to *do* for each targeted population and what PSE expects to *accomplish* for each targeted population. In other words, CETA requires that PSE engage in an adequate and appropriate targeting of its energy efficiency investments. What population do you propose to reach? What outcomes do you expect to achieve for that population? And how do your specific actions result in those specific outcomes for that specific population?

Including this information is a critical component of accountability. PSE must make clear precisely how it believes its specific actions will promote an equitable distribution of benefits and reduction of burdens, so that if any specific actions fall short, the customers and communities they are intended to benefit can hold PSE to account and call for changes going forward.

CONCLUSION

Q. PLEASE SUMMARIZE THE RECOMMENDATIONS YOU MAKE IN YOUR TESTIMONY.

A. With respect to PSE's designation of Vulnerable Populations, the WUTC should direct PSE to modify its designation methodology for future CEIPs as follows:

- for all vulnerability factors where it is possible for PSE to obtain individual customer data, designate groups of similarly situated individual customers who share a particular vulnerability factor as Vulnerable Populations, and designate

entire census block groups as Vulnerable Populations based on a high geographic concentration of individuals with that vulnerability factor only when it is not possible to obtain individual customer data;

- Evaluate vulnerability factors to assess whether some factors are measuring the same underlying attribute, and consolidate factors where this is the case;
- Include as vulnerability factors deep poverty, housing quality, and death and illness from extreme heat;
- Consider the synergistic impacts of some vulnerability factors that render people with multiple vulnerabilities significantly worse off than people with just one;
- Designate Vulnerable Populations wherever they are warranted, rather than arbitrarily restricting Vulnerable Population status to only the top tercile experiencing a particular vulnerability factor; and
- More heavily weight factors like energy burden that are leading indicators of vulnerability.

The WUTC should further direct PSE to begin gathering data immediately to enable it to use this new method for designating Vulnerable Populations in the next CEIP.

For this CEIP as well as future CEIPs, the WUTC should direct PSE to include in its list of Vulnerable Populations:

- Any census block group that has the highest score for any one of the categories of commonly grouped vulnerability factors:
    - Environmental exposures (heat islands, death from extreme heat, illness from extreme heat);

- Sensitive populations (disability, cardiovascular disease, low birth weights, higher rates of hospitalization, home care);
- Energy security/insecurity (arrearage/disconnections, estimated energy burden, housing burden);
- Other socioeconomic factors (access to digital/internet resources, access to food, access to health care, educational attainment level, historical redline influence, linguistic isolation, race, transportation expense, unemployment, poverty, deep poverty, renter status, seniors with fixed income, housing quality);

- Any census block group that PSE identified as "high needs" or "underserved" in the most recent Biennial Conservation Plan;
- Any census block group with an average home energy burden exceeding 6% of income for households with annual income less than 200% of the federal poverty level;
- Any census block group in a census tract that is a Qualified Census Tract as defined by HUD for purposes of the Low-Income Housing Tax Credit program; and
- Any census block group in a census tract that is a "community in economic distress" as defined by the U.S. Department of Treasury for purposes of the New Markets Tax Credit program.

With respect to PSE's assessment of the disparities, benefits, and burdens impacting customers and named communities, I recommend that the WUTC direct PSE to apply its

home comfort CBI to all of its programs and specific actions, and to adopt additional metrics to measure:

- Arrearages;
- Disconnections for nonpayment;
- Indoor air quality;
- Housing quality; and
- Health impacts from extreme heat.

With respect to specific actions, for all DER and DR programs, I recommend that the WUTC direct PSE to develop a Geo-Targeting Pilot to geo-target specific actions to particular named communities in order to address the particular vulnerabilities that led to each community's designation as highly impacted or vulnerable.

For PSE's energy efficiency investments, I recommend that the WUTC direct PSE to:

- Implement an income-qualified Payment-Troubled Targeting Program to intentionally target energy efficiency investments to the customers who need them most, whether or not they are in named communities, using targeting factors based on PSE's own records including high energy usage and intensity, high arrearages, broken or defaulted deferred payment arrangements, and disconnection for nonpayment;
- Increase PSE's funding for low-income weatherization programs to:
  - $8,615,626.56 in 2023;
  - $9,094,272.48 in 2024;
  - $10,051,564.32 in 2025; and

- Incorporate a workforce development initiative into PSE's low-income weatherization programs to help meet increasing demand for energy efficiency services, to diversify the workforce, and to cultivate ambassadors from named communities by taking actions including: supporting training programs offered by minority-owned firms delivering energy efficiency, supporting partnerships with workforce development organizations to develop clean energy curricula, financially supporting students participating in clean energy training, co-delivering training for energy efficiency and renewable technologies, partnering with unions to develop clean energy apprenticeships or add clean energy to existing programs, and promoting PSE's workforce development initiatives to people living in named communities.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.