3 Customer Benefit Indicators

PSE PUGET SOUND ENERGY

Chapter Three: Customer Benefit Indicators (CBI), Highly Impacted Communities and Vulnerable Populations

Customer benefit indicators

The Clean Energy Transformation Act (CETA) creates an inclusive approach to clean energy. It also requires that all customers benefit from the transition to the 2030 carbon-neutral standard and the 2045 requirement for non-emitting and renewable electric resources. Identifying, measuring, and applying customer benefits is a new part of the electric resource planning and resource acquisition process beginning in 2021. By including customer benefits, CETA ensures that while PSE pursues the energy supply targets to be carbon-neutral by 2030 and carbon-free in 2045, we do so in a way that benefits customers and reduces burdens. CETA's overall goal is to meet the targets at the lowest cost while maximizing customer benefits.

The 2021 Clean Energy Implementation Plan includes customer benefit indicators, shown on Table 3-1, based on our collected public participation data.

Table 3-1: Customer Benefit Indicators and Metrics

CETA Category	Customer benefit indicator	Metric
Energy benefits Non-energy benefits Burden reduction	Improved participation from named communities	Count and percentage of participation by PSE customers within named communities
Non-energy benefits	Increase in clean energy jobs	Number of jobs created by PSE programs by residents of named communities
Non-energy benefits	Improved home comfort	Dollar per kilowatt-hour in benefits for program calculated using indoor air temperature, indoor air quality, and lighting quality
Burden reduction	Reduced cost impacts	Percentage of income spent on electricity bills for PSE customers in highly impacted communities and vulnerable populations
Cost reduction	Affordability of clean energy	Percentage of income spent on electricity bills for PSE customers
Environment	Reduced greenhouse gas emissions	Metric tons of annual CO2 emissions form PSE resources
Environment, risk reduction	Reduction of climate change impacts	Reduced peak demand
Public health	Improved outdoor air quality	Regulated pollutant emissions (Sox, NOx, PM2.5) from PSE resources Reduction of particulates from resources in non-attainment areas
Public health	Improved community health	Health factors like mortality, hospital admittance, work loss days

CETA Category	Customer benefit indicator	Metric
Energy security Resiliency	Decrease frequency and duration of outages	Number of outages, total hours of outages and total backup load served during outages
Risk reduction Energy security Resiliency	Increased resiliency	Number of customers who have access to emergency power in home or at community center

The 2021 Integrated Resource Plan (IRP) used an initial set of customer benefit indicators developed with only limited feedback from the IRP stakeholders group.[19] Updates to the customer benefit indicators in this Clean Energy Implementation Plan (CEIP) benefit from the public participation processes and input as required by CETA to create this Clean Energy Implementation Plan. This public participation information will also inform future IRPs and 10-year Clean Energy Action Plans (CEAP). PSE is including customer benefits in the electric resource planning and resource acquisition decisions made after the filing of the 2021 IRP on April 1, 2021, through the following mechanisms:

Applying customer benefit indicators to energy efficiency

The calculations used to establish the cost-effectiveness of different energy efficiency programs include non-energy impacts, which are benefits not included as energy or cost benefits but can be estimated as financial impacts and included in the cost-effectiveness calculation. Non-energy impacts (NEIs) are the value to the participant (or the utility) of benefits we did not include in our avoided energy or capacity costs. We are considering an expanded list of non-energy impacts for future conservation goals (see Table 3-2). Many of these also align with the customer benefit indicators used across the actions in the CEIP. As more NEIs can be measured and used in the cost-effectiveness calculation, we will add to the cost-effectiveness evaluations of different programs.

Energy efficiency measures naturally overlap with many of PSE's customer benefit indicators (CBIs) found in this CEIP. When customers use less energy, fewer carbon-emitting fossil fuels are mined and burned. Air sealing and insulation, used to reduce heating and cooling needs, also improves home comfort by blocking noise and drafts. Efficient upgrades to homes, offices, and infrastructure create clean energy jobs for the workforce. And of course, the less energy a customer uses, the less they pay in utility charges. Many of these benefits are already quantified and accounted for in PSE's resource planning, such as adding the social costs of greenhouse gas to our avoided cost calculations.

In the 2022–23 Biennial Conservation Plan (BCP), PSE is taking steps to further quantify and include the monetary benefits of energy efficiency by adding to our list of NEIs. Before this, PSE typically used a narrow range of NEIs, including water and sewer savings, air pollution avoided using supplemental fuels, and NEIs developed by the Regional Technical Forum. This narrow list was used as part of the determination of the conservation goal. In 2020, PSE and other Washington State investor-owned

[19] Timing of UTC rules and Draft IRP: The WUTC rules for the CEIP were completed in January 2021 in the midst of the ongoing 2021 IRP process. The 2021 IRP was filed in April 2021. Because of the short time period between these two products, stakeholder engagement on customer benefit indicators was limited

utilities commissioned the creation of a database of NEIs from across the nation and a methodology that transferred a benefit from one utility jurisdiction to another; this enabled the expanded use of NEIs into different categories of benefits.

The result of this work to expand the use of NEIs will begin to show up in our 2024–2025 BCP. Categories of NEIs that PSE adopted from this project include operations and maintenance savings, health and safety impacts, indoor and outdoor air quality, financial impacts from payment assistance or arrearages, health care costs, and fire risk reduction. Table 3-2 shows a list of draft CBIs we propose for PSE's CEIP, along with a list of new NEI categories we will use to account for the value of energy efficiency projects in future BCPs.

Table 3-2 Mapping NEIs to CBIs

Draft CEIP customer benefit indicators	Potential 2022-23 NEIs
Reduction of climate change impacts	Quantified indoor air quality values
Improved outdoor air quality	Reduced PM 2.5 particulates
Improved community health	Reduced health care costs
Affordability of clean energy	Quantified HVAC and insulation costs for income-eligible customers
Reduced cost impacts	Debt/arrearages reductions
Improved home comfort	Thermal comfort/lighting quality
Increased resiliency	Reduced fire risk/insurance costs
Greenhouse gas reduction Increase in clean energy jobs Decrease in outages Increased accessibility	These draft CBIs are not explicitly addressed in new NEIs but are accounted for in avoided costs of capacity and the social cost of GHG or include areas of future work.

Many of these expanded NEIs fall within the customer benefit categories outlined in CETA, and within the customer benefit indicators PSE has identified in this 2021 CEIP. Not all these new NEIs can be quantified at this point. As a result, we expect we will continue to evaluate and adopt these new NEIs in the coming years. PSE will provide a separate report to describe the monetary value received as we integrate these NEIs into our cost-effectiveness calculations in future BCPs and annual reports. PSE will continue to develop quantified NEIs and incorporate them into the cost-effectiveness calculations and align them with customer benefit indicators.

Apply customer benefit indicators to demand response

PSE will issue a Targeted DER/DR RFP in early 2022 to meet the target for demand response. This Targeted RFP will include a section for bidders to describe and illustrate how their bid best

meets the customer benefit indicator categories, like the 2021 All-Source RFP, as described in Chapter 4, Specific Actions. We will evaluate the responses based on the bids received and will consider them to create a short list and contracts.

Apply customer benefit indicators to renewable energy

Utility-scale resources through the 2021 All-Source RFP

On June 30, 2021, PSE issued an All-Source RFP seeking any resource that could meet the CETA or capacity need. The All-Source RFP requires all responses include an equity plan that explains how the proposal will affect each of the customer benefit indicator categories: distribution of energy and non-energy benefits in highly impacted communities and vulnerable populations, reduction of burdens to highly impacted communities and vulnerable populations, long- and short-term public health and environmental impacts, and energy security and resiliency. Proposals to the All-Source RFP must also note whether respondents are located in a highly impacted community and whether they or any of their suppliers for the project are women -, minority-, disabled-, or veteran-owned businesses. RFP responses shall also include any written diversity commitments, plans, or policies.[20]

In Phase 1 of the All-Source RFP evaluation, which starts with the bid deadline on September 1, 2021, and continues into Q1 2022, responses will include a qualitative assessment based on the number of customer benefit indicator categories each proposal improves.[21] Respondents will have the opportunity to update their equity plans in January 2022 to address the customer benefit indicators in the CEIP more specifically.[22]

In Phase 2 of the All-Source RFP evaluation, PSE will perform a more in-depth qualitative assessment of the customer benefit indicators. In this additional due diligence, PSE will seek more information, including the extent to which the proposals may provide benefits or burdens and plans to create benefits or mitigate burdens.

Distributed energy resource through the 2021 CEIP and Targeted RFP:

In the first CEIP, PSE is using the customer benefit indicators to evaluate and select the distributed energy resource programs and concepts that maximized benefits to customers. PSE developed a scorecard to understand how each program reflected each customer benefit indicator. For this 2021 draft CEIP, PSE does not have the baseline data established to reflect the impact of each program on the indicators. Therefore, the evaluation was qualitative and based on the degree of influence. In this exercise, PSE assessed each DER program or concept and determined where the customer benefit has none or minimal impact, some impact, or a direct impact on each customer benefit indicator.

[20] PSE All-Source RFP, Exhibit B
[21] PSE All-Source RFP, Exhibit A
[22] PSE All-Source RFP, Section 3

For this draft CEIP, the scorecard solely focused on distributed energy resources modeled, solar and battery storage, and therefore the results showed similar impacts based on the resource type. Table 3-3 shows how specific concepts were scored across all the indicators. For each concept, we gave a score of 0, 1, or 2 to each indicator. We calculated the total score for each concept and ranked the concepts according to the score.

Table 3-15. Scorecard for customer benefit indicators for select DER programs/concepts

CBI	Reduced greenhouse gas emissions	Reduction of climate change impacts	Improved outdoor air quality	Improved community health	Affordability of clean energy	Reduced cost impacts	Increase in clean energy jobs	Improved participation from named communities	Decrease in time and duration of outages	Increased resiliency	Improved home comfort
Rubric	0 - May produce more annual metric tons of CO2	0 - Increases impacts of climate change	0 - May produce more annual metric tons of NOx, SOx, and PMP2.5	0 - % increase	0 - non-measurable % decrease	0 - measurable risk of % increase	0 - No to minimal impact to local jobs or training	0 - No removal of barriers to enable more participation	0 - no discernable impact or decrease	0 - no to minimal impact	0 - no impact
[1, 2, 3]	1 - Not likely to reduce annual metric tons of CO2	1 - Does not mitigate	1 - Not likely to reduce annual metric tons of NOx, SOx, and PMP2.5	1 - no discernable % increase/ decrease	1 - measurable % decrease, but only for targeted or participating customers	1 - non-measurable % increase/ decrease	1 - low impact to local jobs (f/t) or training OR only creates short term jobs	1 - Some removal/mitigation of barriers across all/any customer types, but minimal for most impacted	1 - May help to mitigate risk or lessen impact of potential number and/or duration of outages	1 - provides resources to support future resiliency or educates customers about resiliency	1 - minimal impact
	2 - Reduces annual metric tons of CO2	2 - Can measurably mitigate	2 - Reduces annual metric tons of NOx, SOx, and PMP2.5	2 - % decrease	2 - measurable % decrease for all customers	2 - measurable % decrease	2 - Measurable impact to local f/t job and training	2 - Removal/ mitigation of barriers for any/all and named communities	2 - Directly decreases number and/or duration of outages	2 - provides direct resiliency	2 - significant impact
3rd Party Customer-Sited Distributed Battery PPA	2	2	2	2	1	1	0	1	2	2	0
3rd Party Utility-scale Distributed Battery PPA	2	2	2	2	0	0	0	0	2	2	0
C&I Battery Install Incentive	1	1	1	1	1	1	1	1	2	2	0
C&I Space Leasing for Batteries	2	2	2	2	1	2	1	1	2	2	0
Multi-Family Unit Battery Program	2	2	2	2	0	1	1	2	2	2	0
PSE Mobile Batteries	2	2	2	2	0	0	0	0	1	2	0
PSE Substation Batteries	2	2	2	2	0	0	0	0	1	2	0
PSE Utility-Scale Distributed Battery Stations	2	2	2	2	0	0	0	0	2	2	0
Residential Battery Install Incentive	1	1	1	1	1	1	2	1	2	2	1
Residential PSE Battery Leasing	2	2	2	2	1	1	2	1	2	2	1
Residential PSE Battery Leasing - Low Income	2	2	2	2	1	1	2	2	2	2	1
PSE Community Solar	2	2	2	2	0	1	1	1	1	1	0
PSE Community Solar - Low Income	2	2	2	2	1	2	1	2	1	1	0
3rd Party Distributed Solar PPA (or Solar Lease)	2	2	2	2	1	1	1	1	1	1	0
C&I Roof-top Solar Incentive	2	2	2	2	1	1	2	1	1	1	0
C&I Roof-top Solar Leasing	2	2	2	2	1	2	2	1	1	1	0
Multi-Family Solar Partnership	2	2	2	2	1	2	1	2	1	1	0
Multi-Family Roof-top Solar Incentive	2	2	2	2	1	1	1	1	1	1	0
PSE Customer-Sited Solar+Storage Offering	2	2	2	2	1	2	2	1	2	2	1
Residential Roof-top Solar Leasing	2	2	2	2	1	2	2	1	1	1	0
Residential Roof-top Solar Leasing - Low Income	2	2	2	2	1	2	2	2	1	1	0
C&I Battery BYO	1	1	1	1	1	2	1	1	2	2	0

Conversations and feedback from stakeholders guided how we prioritized specific indicators above others. PSE initially prioritized the indicators based on the synthesis shown in Figure 3-4. With this prioritization, we weighted the indicators twice the value for their indicator score. For example, reducing greenhouse gas emissions was a prioritized customer benefit indicator; therefore, the scoring impact reflects a 0, 2, or 4 instead of 0, 1, 2, and is reflected on the scorecard.

Table 3-4: Customer Benefit Indicators and Priority

Draft customer benefit indicator	Prioritized
Reduced greenhouse gas emissions	X
Improved outdoor air quality	X
Affordability of clean energy	X
Reduced cost impacts	X
Increased clean energy jobs	X
Decreased frequency and duration of outages	
Improved participation from named communities	
Improved home comfort	
Improved community health	
Reduced of climate change impacts	
Improved fish and wildlife habitat	
Increased resiliency	

PSE continued to listen, contemplate, and integrate feedback from stakeholders. From this feedback, we learned prioritization was one point of interest and heard a range of feedback on the subject. Some stakeholders expressed concern about emphasizing specific indicators and how that may diminish the importance of the non-prioritized indicators. Stakeholders also suggested PSE should prioritize an indicator in each category, as opposed to across all indicators. By taking this advice, we captured a priority of indicators without losing the impact of each category.

To develop the DER programs and actions, PSE used stakeholder feedback to create an additional Suite five. This new Suite five allowed us to compare weighted (prioritized) and unweighted customer benefit indicators. Our purpose was to understand the impact of weighted and unweighted customer benefit indicators on the DER programs and concepts. By using unweighted customer benefit indicators, the results of this comparison showed the addition of two programs as highlighted in Table 3-5, a multi-family unit battery program and a C&I rooftop solar leasing program. Table 3-5 shows the weighted versus unweighted comparison and which programs we selected for the CEIP portfolio.

Table 3-5: DER Concept Score and Selection Using Weighted vs. Unweighted[23]

DER Concept	Unweighted CBI Score	Weighted CBI Score	CEIP portfolio w/ Unweighted CBI	CEIP portfolio w/ Weighted CBI
Residential PSE Battery Leasing - Income-eligible	25	35	X	X
PSE Customer-Sited Solar+Storage	25	36	X	X
Residential PSE Battery Leasing	24	34	X	X
Multi-Family Unit Battery Program	22	30	X	X
C&I Space Leasing for Batteries	21	31	X	X
Multi-Family Solar Partnership	21	30	X	X
Residential Rooftop Solar Leasing - Income-eligible	21	31	X	X
Third-party Customer-sited Distributed Battery PPA	20	28	X	X
Residential Battery Install Incentive	20	28	X	X
PSE Community Solar - Low Income	20	29	X	X
C&I Rooftop Solar Incentive	20	29	X	X
Residential Rooftop Solar Leasing	20	30	X	X
C&I Rooftop Solar Leasing	19	29		X
C&I Battery Install Incentive	18	25	X	X
Third-party Distributed Solar PPA (or Solar Lease)	18	26		X
Multi-family Rooftop Solar Incentive	18	26		X
C&I Battery BYO	18	26		X
PSE Community Solar	17	24		
Third-party Utility-scale Distributed Battery PPA	13	19		
PSE Utility-scale Distributed Battery Stations	13	19		
PSE Mobile Batteries	12	17		
PSE Substation Batteries	11	16	X	X

The CEIP specific actions related to distributed energy programs and concepts guide PSE on the types of programs to request in the Targeted DER/DR RFP. PSE will issue a Targeted DER/DR RFP in early 2022 to meet the target for distributed energy resources. This Targeted RFP will include a section for bidders to describe and illustrate how their bid best meets the customer benefit indicator categories, like the 2021 All-Source RFP. We will consider and evaluate the responses from bidders to create the shortlist and contracts. In this case, we use customer benefit indicators in both the CEIP modeling and the resource acquisition process.

Baseline data development for customer benefit indicators

PSE will address baseline data in the 2021 Final CEIP. This information will be used to describe the forecasted distribution of energy and non-energy costs and benefits.[24] PSE will continue to understand

[23] Concepts with a red "X" denote they were not selected in the DER preferred portfolio
[24] WAC 480-100-640(3)(a)(i), 3(a)(ii) and 3(a)(III)

the data currently available and data that requires additional sources. These additional data sources may require working with a third-party consultant.

Stakeholder input on customer benefit indicators

This section explains the process PSE staff conducted to collect and synthesize input from each audience to develop the customer benefit indicators. See Chapter 6, Public Participation for more information about the public participation we undertook to create the 2021 draft CEIP.

The 2021 CEIP includes customer benefit indicators informed by the broad participation required under CETA. As indicated in the Public Participation Plan (see Appendix C), PSE collected input from the following audiences to develop the draft CBIs:

- Community-based organizations that serve vulnerable populations among PSE customers
- PSE residential customers
- PSE business customers
- PSE's inaugural Equity Advisory Group (EAG)
- PSE's other advisory groups, including IRP stakeholders, Low-income Advisory Committee (LIAC), and Conservation Resource Advisory Group (CRAG)

Project staff collected input from different audiences using similar questions in different formats suitable for each audience. This data is shown in Table 3-6.

Table 3-6: Overview of Outreach for Customer Benefit Indicators

Audience	Input Format	Quantity
Residential customers	Residential customer survey submissions	921
Business customers	Business customer survey submissions	194
Vulnerable populations	CBO meetings	7
Equity Advisory Group	EAG meetings	9
Integrated Resource Plan Stakeholders	IRP meetings	5
Low Income Advisory Committee	LIAC meetings	3
Conservation Resource Advisory Group	CRAG meetings	3

The goal of public participation in CBI development is to understand the challenges that utility customers face regularly and the benefits that could address those challenges. The resulting CBIs represent a synthesis of stakeholder input and opportunities to address challenges via electric system planning and implementation.

PSE staff noted the following themes across different stakeholder audiences and used this input to develop customer benefit indicators.

- **Environment:** Reduce greenhouse gas emissions and the effects of climate change

- **Public health:** Increase air quality and improve community wellness
- **Affordability:** Decrease the amount of income spent on electricity and empower low-income populations to participate in clean electricity programs
- **Economic:** Increase the number of local clean energy jobs and make them accessible to vulnerable populations
- **Accessibility:** Empower customers to participate in clean electricity programs regardless of income level or homeownership status
- **Clean electricity participation**: Make the benefits of solar energy available to named communities
- **Resiliency:** Ensure a resilient clean electricity system
- **Comfort and satisfaction:** Build a clean electricity system that customers know they can depend on and reflects their environmental stewardship

Advisory group process: Meetings

Collect input

Project staff met with PSE's four advisory groups in May and June 2021. We asked each advisory group to suggest potential benefits they would like to see in the clean energy transition based on their experience and subject matter expertise. We also asked them to indicate the priority of the potential benefit. The EAG and IRP provided a low, medium, high, and highest priority scale for their benefits. The CRAG and LIAC simply indicated if the benefit was a priority or not.

Code and summarize input

Project staff reviewed the suggested benefits and organized them into different codes to compare similar ideas from other advisory groups and get a sense of the frequency of common themes.

Develop and apply CBIs

Project staff developed CBIs that could be used to monitor progress toward achieving the benefits described by the input. We applied one CBI to each suggested benefit.

Prioritize CBIs among advisory group sources

Project staff counted the number of times a CBI occurred in each advisory group's input with a priority indicator. We considered CBIs that were high priorities and common among multiple advisory groups higher on the priority list. The comprehensive look at the input received from advisory groups on customer benefit indicators is in Table 3-7.

Table 3-7: Advisory Groups—Input for CBIs

Proposed Customer Benefit Indicator	Advisory Group Source
Non–energy—Decreased income spent on electricity	EAG LIAC CRAG
Reduction of cost—Reduced energy bills	IRP CRAG
Public Health—Improved air quality	EAG LIAC IRP CRAG
Public Health—Improved community wellness	EAG CRAG
Security and resiliency—Decreased time and duration of outages	EAG IRP CRAG
Economic—Increased clean energy jobs	EAG LIAC
Economic—Lower unemployment	EAG IRP
Non-energy—Improved sense of self–sufficiency	EAG
Non-energy—Increased sense of provide and shared values	EAG IRP
Accessibility—Improved awareness and education	IRP CRAG
Environment—Reduced greenhouse gas emissions	LIAC IRP
Accessibility—Renters	IRP
Accessibility—Vulnerable Populations	IRP
Environment—Decreased wildfires	IRP CRAG
Environment—Improved siting	IRP
Public Health—Decreased rates of asthma	IRP
Public Health—Improved water quality	IRP
Non-energy—Improved home comfort	CRAG

Residential customer process: Online survey

Collect input

Project staff distributed an online community survey to PSE customers in May 2021. See Chapter 7, Tracking and Reporting, for more information about survey distribution methods and respondent demographics.

The survey asked respondents to do the following:

- Indicate the importance of eight benefit categories
- Suggest benefits customers would like to see in the clean energy transition for each category.

We also asked customers to provide demographic information. For details on distribution and response rates, review Chapter 6, Public Participation.

Code and summarize input

Project staff reviewed the suggested benefits and organized them into different codes to compare similar ideas from other survey respondents and get a sense of the frequency of common themes.

Develop and apply CBIs

Project staff developed CBIs that could potentially be used to monitor progress toward achieving the benefits described by the input themes. We applied one CBI to each suggested benefit theme.

Prioritize benefit categories based on input from vulnerable populations and all customers

Project staff analyzed the responses that indicated the importance of the eight benefit categories. We compared the responses from demographics in the working definition for vulnerable populations to all survey responses.

The responses from vulnerable population groups were predominantly aligned with the responses from all customers. All demographic segments held the same categories in their top-three most important, but they were in a different order in some cases. The remaining five categories were all aligned in the same order.

Project staff determined that the total results of the survey represented a good synthesis of the priorities of all analyzed segments.

Prioritize CBIs

Project staff counted the frequency of each comment code applied to the benefits suggested in survey responses. We considered the codes in the highest third of frequencies a higher priority.

Since each code was associated with a benefit category, project staff ordered the codes according to the category’s priority determined in the previous step and then ordered them by code frequency. This process gave staff an idea of the most common ideas in each category in the context of the category's relative importance. The team then identified the CBIs associated with the higher priority benefits for each category; this is shown in Table 3-8.

Table 3-8: Residential Customers—Input for CBIs

Proposed draft customer benefit indicator
Environment – Reduced greenhouse gas emissions
Environment – Decreased fossil fuel extraction
Public Health – Improved air quality
Public Health – Decreased rates of asthma
Public Health – Improved community wellness
Non–energy – Decreased income spent on electricity
Accessibility – Improved participation from named communities
Reduction of cost – reduced barrier to participation
Economic – Increased clean energy jobs
Non–energy – Decreased income spent on electricity
Non–energy – Improved sense of self–sufficiency
Reduction of cost – reduced barrier to participation
Security and resiliency – Decreased time and duration of outages
Non–energy – Increased sense of pride and shared values

Business customer process: Online survey

Collect input

Project staff distributed a survey in May 2021 to PSE small and medium business customers and major accounts customers. See Chapter 6, Public Participation, for more information about survey distribution methods and respondent demographics.

The survey asked respondents to do the following:

- Indicate the importance of eight benefit categories
- Suggest benefits business customers would like to see result in the clean energy transition for each category.

We also asked customers to provide information about their business. For details on distribution and response rates, review Chapter 6 on public participation.

Code and summarize input

Project staff reviewed the suggested benefits and organized them into different codes to be able to compare similar ideas from different survey respondents and get a sense of the frequency of common themes.

Develop and apply CBIs

Project staff developed CBIs that could potentially be used to monitor progress toward achieving the benefits described by the input themes. We applied one CBI to each suggested benefit theme.

Prioritize benefit categories based on input from small and medium business customers and major accounts customers

Project staff analyzed the responses that indicated the importance of the eight benefit categories. The project team compared the responses of small and medium businesses to major accounts customers.

The responses from small and medium businesses were more focused on affordability and economic benefits than major accounts customers, but both held affordability and environment in their top three categories.

Project staff determined that the total results of the survey represented a good synthesis of the priorities of both small and medium businesses and major accounts customers.

Prioritize CBIs

Project staff counted the frequency of each comment code applied to the benefits suggested in survey responses. We considered the codes in the highest third of frequencies higher priority.

Since each code was associated with a benefit category, Project staff ordered the codes according to the category's priority determined in the previous step and then ordered them by code frequency. This process gave staff an idea of the most common ideas in each category in the context of the category's relative importance. Staff then identified the CBIs associated with the higher priority benefits for each category, and the results are shown in Table 3-9.

Table 3-9: Business Customers—Input for CBIs

Proposed draft customer benefit indicator
Reduction of cost—Reduced energy bills
Environment—Reduced greenhouse gas emissions
Environment—Decreased fossil fuel extraction
Economic—Increased clean energy jobs
Economic—Lower unemployment
Public Health—Improved community wellness
Public Health—Improved air quality
Security and resiliency—Increased resiliency
Security and resiliency—Decreased time and duration of outages
Accessibility—Improved participation from named communities
Non-energy —Decreased income spent on electricity
Reduction of cost—Reduced barrier to participation
Non-energy—Improved sense of self–sufficiency
Non-energy—Increased sense of pride and shared values

Community-based organization process: Go-to-you meetings

Collect input

Project staff attended standing meetings with seven community-based organizations (CBO) between May and July 2021.[25] The locations of and communities served by the organizations are listed below in Table 3-10.

Figure 3-10: Community-Based Organizations

CBO Name	County	Population Served
The Rainbow Center	Pierce	LGBTQIA+
Provail	King	People with disabilities
NAACP Bremerton	Kitsap	Black/African American
Boys and Girls Club Skagit County	Skagit	Youth
WWU's Institute for Energy Studies	Whatcom	Students, low-income
Opportunity Council of Island County	Island County	Low-income, seniors
Island Senior Resources	Island County	Low-income, seniors

The project team asked meeting participants to suggest potential resulting benefits they would like to see in the clean energy transition based on their experience. Due to time constraints, these participants did not indicate a priority for their benefits.

Code and summarize input

Project staff reviewed the suggested benefits and organized them into different codes to be able to compare similar ideas from different advisory groups and get a sense of the frequency of common themes.

Develop and apply CBIs

Project staff developed CBIs that could be used to monitor progress toward achieving the benefits described by the input. We applied one CBI to each suggested benefit and the results are shown in Table 3-11.

Table 3-11: Community Based Organization—Input for CBIs

Proposed draft customer benefit indicator
Non–energy – Decreased income spent on electricity
Economic – Increased clean energy jobs
Non–energy – Improved sense of self–sufficiency
Environment – Decreased fossil fuel extraction
Public Health – Improved community wellness

[25] PSE acknowledges that this does not represent all perspectives, but consistent with CETA, an attempt to engage groups that do not normally participate in the typical electric resource planning process.

Proposed draft customer benefit indicator
Security and resiliency – Increased resiliency
Economic – Reduced Energy burden
Non–energy – Improved home comfort
Accessibility – Improved awareness and education
General – Addressed by collective CBIs
Public Health – Improved air quality
Reduction of cost – Reduced energy bills
Accessibility – Improved participation from named communities
Accountability – Customers and Investors
Economic – Lower unemployment
Environment – Addressed by collective CBIs
Environment – Improved siting and mitigation
Non–energy – Increased sense of pride and shared values
Security and resiliency – Decreased time and duration of outages

CBI alignment among sources

Project staff took the CBI input identified from the advisory groups, the residential survey, and the business survey and divided them into top-third, middle-third, and bottom-third based on the previous prioritization process. Project staff highlighted CBIs that occurred more than once among the top-third areas. Then, Project staff compared this to the list of CBIs developed from meetings with CBOs. Table 3-12 shows the results of this comparison.

Table 3-12: Customer Benefit Indicator by Source

Customer Benefit Indicator	Sources
Non-energy—Decrease in income spent on electricity	Advisory Groups General Survey CBOs
Reduction of cost—reduce energy bills	Advisory Groups Business Survey CBOs
Public Health—Improved air quality	Advisory Groups General Survey CBOs
Public Health—Improved community wellness	Advisory Groups General Survey CBOs
Economic—Increase in clean energy jobs	Advisory Groups Business Survey CBOs
Environment—Reduced greenhouse gas emissions	General Survey Business Survey

Customer Benefit Indicator	Sources
Environment—Decrease in fossil fuel extraction	General Survey Business Survey CBOs
Security and resiliency—Decrease in time and duration of outages	Advisory Groups
Public Health—Decreased rates of asthma	General Survey
Economic—Lower unemployment	Business Survey
Non-energy—Improved sense of self-sufficiency	CBOs
Security and resiliency—Increased resiliency	CBOs

To determine the customer benefit indicators for this draft CEIP, this table was circulated to all the advisory groups, including the EAG, for feedback on whether the list represented the benefits customers wanted to see in this transition and if there were any gaps in the list. PSE also received proposed customer benefit indicators from a joint stakeholder group for our consideration. PSE recognizes the customer benefit indicators will continue to evolve as we consider the list from the joint stakeholder group and feedback from other stakeholders between the draft and final CEIP.

Highly Impacted communities and vulnerable populations

CETA requires utility resource plans to ensure that all customers benefit from the transition to clean energy. CETA specifically identifies vulnerable populations and highly impacted communities as groups that should benefit from the equitable distribution of energy and nonenergy benefits and reduction of burdens. PSE has invested considerable effort in understanding and identifying customers who may belong to these named communities through customer outreach, collaboration with the EAG, and demographic analysis of the service territory.

This section discusses how we characterize vulnerable populations and highly impacted communities in the 2021 CEIP. The work in this section builds on our initial investigations into defining vulnerable populations and highly impacted communities documented in the 2021 IRP Appendix K, Customer Benefits Assessment[26]. Since the publication of the 2021 IRP, PSE has had numerous opportunities to engage with the EAG, the Washington State Department of Health, the WUTC, customers, and other internal and external stakeholders. This effort provided valuable insight into the identification of vulnerable populations and highly impacted communities. Therefore, the characterization of vulnerable populations, and to a lesser degree, highly impacted communities, has changed from the 2021 IRP to the 2021 draft CEIP, and PSE expects the characterization to continue to evolve as more data, new perspectives, and industry best practices continue to emerge.

[26] 2021 IRP Appendix K, Economic, Health and Environmental Benefits Assessment of Current Conditions: https://pse-irp.participate.online/2021-irp/reports https://pse-irp.participate.online/2021-irp/reports https://pse-irp.participate.online/2021-irp/reports https://pse-irp.participate.online/2021-irp/reports

Definitions

Named populations include vulnerable populations and highly impacted communities, each with a specific definition from the CETA rulemaking:

HIGHLY IMPACTED COMMUNITIES. A community designated by the Department of Health based on the cumulative impact analysis required by RCW 19.405.140 or a community located in census tracts that are fully or partially on "Indian country," as defined in 18 U.S.C. Sec. 1151.

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

Vulnerable Populations

Vulnerable populations' attributes describe disproportionate cumulative risk from burdens due to:

- Adverse socioeconomic factors including unemployment, high housing and transportation costs relative to income, access to food and health care, linguistic isolation; and
- sensitivity factors, such as low birth weight and higher rates of hospitalization.

PSE held a series of meetings with our Equity Advisory Group (EAG) to develop a more comprehensive understanding of vulnerable populations. The collaboration with the EAG informs and directs PSE's work to define, locate, and measure engagement and support for customers to ensure equitable implementation of the CEIP.

The CETA provides a list of primary attributes to define vulnerable populations divided into two classifications: sensitivity factors and socioeconomic factors. Sensitivity factors represent impacts to populations from adverse conditions and have some overlap with highly impacted community factors. Two examples cited in the legislation are low birth weight and increased rates of hospitalization. Socioeconomic factors are attributed mainly to a lack of resources to meet basic needs such as access to food and health care, and high transportation costs. Table 3-13 gives a list of primary factors identified by PSE.

Table 3-13: Factors by Sensitive Populations/Socioeconomic

Factors	Sensitive Populations (SP) Socioeconomic (SE)
Cardiovascular Disease	SP
Low Birth Weight	SP
Housing Burden	SE
Linguistic Isolation	SE
Poverty	SE
Transportation Expense	SE
Unemployment	SE

The EAG expanded the primary list adding factors derived from their collective experience and interactive sessions with PSE. The expanded list is in the Table 3-14 below:

Table 3-14: Expanded Factors by Sensitive Populations/Socioeconomic

Factors	Sensitive Populations (SP) Socioeconomic (SE)
Disability	SP
Cardiovascular Disease	SP
Low Birth Weight Rates	SP
Higher rates of Hospitalization	SP
Heat Islands	SP
Home Care	SP
Mental Health/Illness	SP
Arrearage/Disconnections	SE
Access to Digital/Internet Resources	SE
Access to Food	SE
Access to Health Care	SE
Educational Attainment Level	SE
Estimated Energy Burden	SE
Historical Red Line Influence	SE
Housing Burden	SE
Linguistic Isolation	SE
Poverty	SE
Race (People of Color/Black, Indigenous, and People of Color)	SE
Renter vs. Owner	SE
Seniors with fixed income	SE
Transportation Expense	SE
Unemployment	SE

The gray-shaded factors in the table reflect that PSE is either still pursing data resources that will provide metrics to apply to its customer base; or, in the case of historical red line influence, determine how to apply the available information to the present distribution of vulnerable populations within our service area.

PSE will integrate data from several different types of resources. We list most in Table 3-15 except those resources we are still pursuing. We report the data at varied scales ranging in size from county to individual customer. Census block groups provide one helpful scale for PSE to consider vulnerable populations within our service area. Census block groups range between 600 to 3,000 people and serve as a good proxy for neighborhoods. Some data is available at the census tract level, while other data may be available at the customer level. PSE will aggregate our individual customer data to this scale and characterize neighborhoods within our service area across the breadth of factors identified in collaboration with the EAG. Ideally, all data would be available at the neighborhood or individual scale. For those factors where data is not yet available at that scale, PSE will generalize from larger scales until we can locate or develop a better unit of measure. A definition of each expanded factor is listed in Table 3-16.

Table 3-15: Expanded Factors by Data Resource/Scale

Factors	Data Resource	Data Scale
Disability	American Community Survey 2019	Census Block Group
Cardiovascular Disease	Washington State Department of Health	Census Tract
Low Birth Weight Rates	Washington State Department of Health	Census Tract
Higher rates of Hospitalization	Washington State Department of Health	County
Heat Islands	TBD	TBD
Arrearage/Disconnections	PSE Customer Information System	Customer Level
Access to Digital/Internet Resources	PSE Customer Information System	Customer Level
Access to Food	USDA Food Access Research Atlas	Census Tract
Access to Health Care	Washington State Department of Health	County
Educational Attainment Level	Purchased Market Research Data	Customer Level
Estimated Energy Burden	Multiple Resources/Customer Level	Customer Level
Historical Red Line Influence	Seattle Civil Rights and Labor Project UW	Varied Scales
Home Care	TBD	
Housing Burden	American Community Survey 2019	Census Tract
Linguistic Isolation	American Community Survey 2019	Census Block Group
Mental Health/Illness	TBD	
Poverty	American Community Survey 2019	Census Block Group
Race (People of Color/ Black, Indigenous, and People of Color))	American Community Survey 2019	Census Block Group
Renter vs. Owner	Purchased Market Research Data	Customer Level
Seniors with fixed income	Purchased Market Research Data	Customer Level
Transportation Expense	American Community Survey 2019	Census Block Group
Unemployment	American Community Survey 2019	Census Block Group

The data for vulnerable population factors are distributed at various numeric scales across PSE's service area block groups. As the Department of Health does with its highly impacted communities

metrics[27], PSE rescaled the distributions of values across the metrics to a standard scale such as 1–5, where one represents the lowest frequency of the factor and five represents the highest frequency of the factor. This method makes the factors easier to interpret for a variety of users. Thus, for a given block group within PSE's electric service area, each factor will receive a score of 1–5. Some metrics such as access to food and historical red line influence may be qualitative. We will flag these metrics with 0 or 1, where 0 indicates an absence of the condition and one indicates the condition is present.

Table 3-16: Expanded Factors Definition

Factors	Definition
Disability	Percentage of HHs reporting a member with disability
Cardiovascular Disease	Rate of death from cardiovascular disease
Low Birth Weight Rates	Rate of low birth weight
Higher rates of Hospitalization	Rate of hospitalization
Heat Islands	TBD
Arrearage/Disconnections	Percentage of customers in arrearage/disconnected per block group
Access to Digital/Internet Resources	Percentage of low digital engagement customers
Access to Food	Low income and low access food flag
Access to Health Care	Percentage of population with primary care provider
Educational Attainment Level	Percentage of customers with less than or high school education
Estimated Energy Burden	Percentage of energy burdened customers
Historical Red Line Influence	TBD
Home Care	TBD
Housing Burden	Percentage of population paying more than 30% income for housing
Linguistic Isolation	Percentage of households with limited English proficiency
Mental Health/Illness	TBD
Poverty	Percentage of households in Poverty
Race (People of Color/BIPOC)	Percentage of households identifying as BIPOC
Renter vs. Owner	Estimated percentage of customers renting
Seniors with fixed income	Estimated percentage of customers over 65 at 80% or lower AMI
Transportation Expense	Percentage of households with greater than 35-minute commute
Unemployment	Percentage of households experiencing unemployment

Table 3-17 below reports the distribution of vulnerable populations, or scale of vulnerability, across PSE's electric service area. Census block groups within this geography identified with a four or five represent the highest frequency of the metric, while those with a one or a two represent lower frequencies of the metric.

[27] Washington State Department of Health - Washington Tracking Network, A source for Environmental Public Health data: https://fortress.wa.gov/doh/wtn/WTNIBL

Table 3-17: Scale of Vulnerability Across PSE's Electric Service Area[28]

Factors	Scale of Vulnerability by Quintile Across PSE's Electric Service Area					Distribution of Flagged Factors	
	1	2	3	4	5	0	1
Disability**	19%	42%	33%	5%	1%		
Cardiovascular Disease**	20%	20%	19%	22%	19%		
Low Birth Weight Rates**	82%	0%	2%	6%	9%		
Higher rates of Hospitalization***							
Heat Islands***							
Arrearage	66%	24%	6%	2%	1%		
Disconnections	82%	15%	3%	0.5%	0.1%		
Access to Digital/Internet Resources	70%	27%	2%	0.8%	0.1%		
Access to Food (lack of vehicle)	—	—	—	—	—	84%	16%
Access to Food (half mile urban)	—	—	—	—	—	76%	24%
Access to Health Care*	—	—	—	—	—		
Educational Attainment Level	48%	42%	8%	2%	1%		
Estimated Energy Burden	89%	10%	0.7%	0%	0.1%		
Historical Red Line Influence***							
Home Care***							
Housing Burden Owner**	4%	46%	42%	7%	1%		
Housing Burden Renter**	4%	23%	52%	19%	1%		
Linguistic Isolation**	71%	20%	6%	1%	1%		
Mental Health/Illness							
Poverty**	71%	24%	4.4%	0.3%	0.5%		
Race (People of Color/BIPOC)	43%	31%	17%	7%	1%		
Percent Renters	85%	12%	2%	0.7%	0.1%		
Seniors with fixed income	71%	25%	3%	0.8%	0.1%		
Transportation Expense	18%	39%	30%	11%	1%		
Unemployment**	29%	52%	15%	2%	1%		

PSE will locate higher concentrations of vulnerable populations for those census block groups with a four or five for a given metric. In some cases, we may identify multiple factors at this level indicating a vulnerable geography. From the preliminary results noted in Table 3-17, it appears most census blocks within PSE's electric service area have lower levels of vulnerability. For these census block groups identified with a one or a 2, there may be other indicators available at the individual customer level,

[28] ** The data set referenced from the Washington Department of Health reported results from 2016 at the county level. Across the eight counties where PSE provides electric service, an average of 73 percent of the population reported having access to health care with about a 6 percent variance across the eight 8 counties. PSE will continue to pursue finer scale and more recent data that will provide a more rigorous measure of this metric.*
***Census tract level data*
****PSE is pursing data resources that will provide metrics for these factors*

such as energy burden, that are an indicator to identify customers who may also be experiencing stressors from additional vulnerability factors.

Highly Impacted Communities

Highly impacted communities (HICs) are defined by the Washington Department of Health Cumulative Impact Analysis (CIA) and identified as census tracts with an overall score on the Environmental Health Disparities (EHD)[29] map of nine or ten, or any census tract with tribal lands.[30] The EHD map ranks communities based on the risks they face, from environmental burdens and vulnerabilities to the impacts of climate change. The criteria used to determine these risks are displayed in Figure 3-1. The risks are calculated using the various criteria shown which creates a final composite score for each census tract. Census tracts with a score of nine or ten are identified as highly impacted.

[29] / *https://fortress.wa.gov/doh/wtn/WTNIBL*
[4] / *https://www.doh.wa.gov/DataandStatisticalReports/WashingtonTrackingNetworkWTN/ClimateProjections/CleanEnergyTransformationAct*

Figure 3-1: Environmental Health Disparities Map: Technical Report Prepared by Washington State Department of Health. Seattle; 2019.

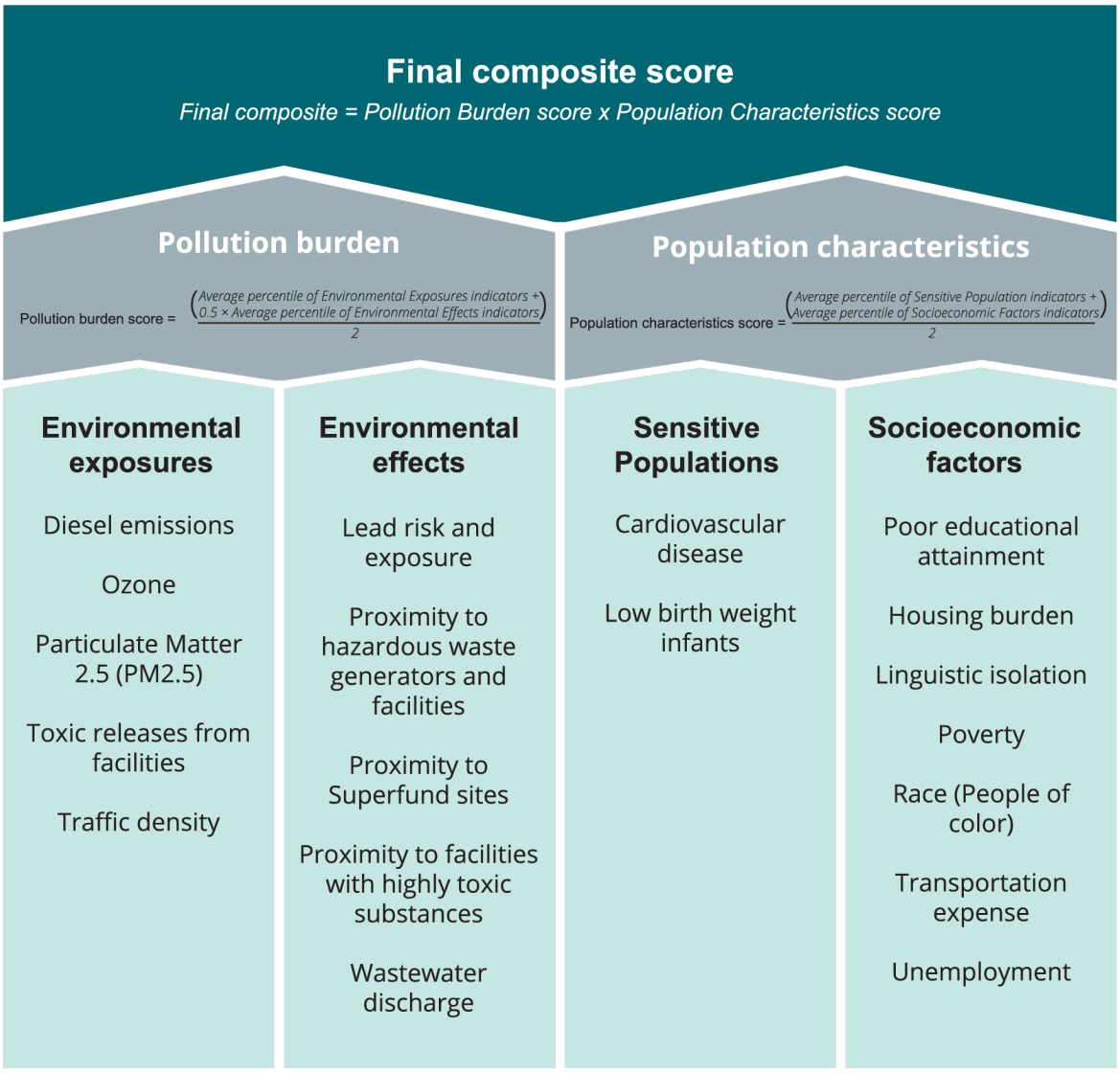
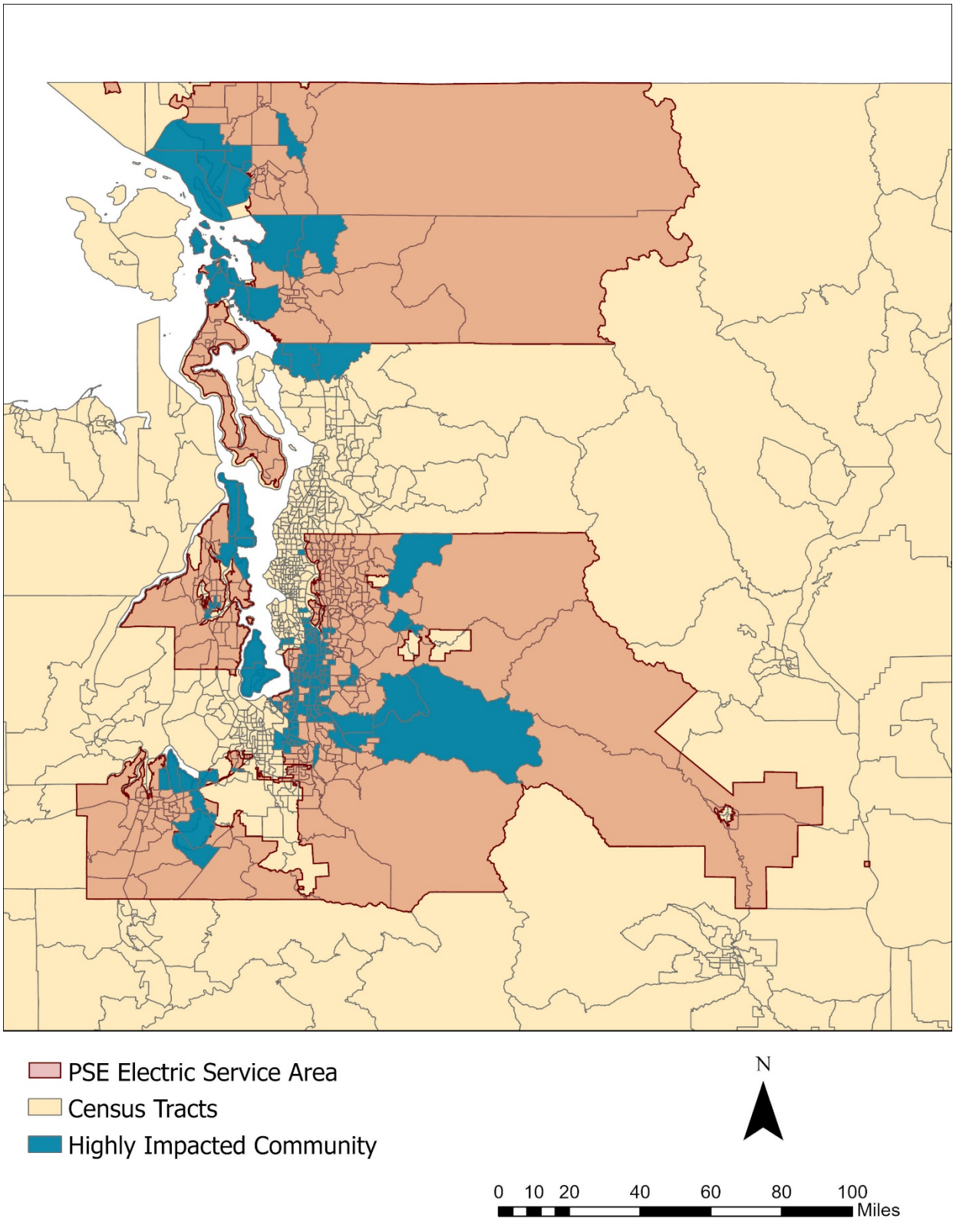


Figure credit: University of Washington Department of Environmental & Occupational Health Sciences. Washington.

Using the EHD map as the basis for identifying HICs results in a geographic representation of where the communities exist within PSE's service area. Figure 3-2 shows the highly impacted communities in PSE's electric service area. The CIA has identified 164 census tracts in PSE's service area as highly impacted communities. PSE notes that some census tracts identified as highly impacted communities identified by the CIA are adjacent to and not within PSE's electric service area. PSE has notified the Department of Health of this inconsistency, and we await further refinement of the CIA by the Department.

Figure 3-2: Highly Impacted Communities



How the clean energy transformation will make lives better for vulnerable populations and highly impacted communities

This CEIP will use the highly impacted communities designation and vulnerable populations factors to ensure the equitable distribution of benefits by:

- identifying the existing disparities in benefits and burdens between customers,
- tracking and measuring progress over time,
- including as a criterion when developing and implementing customer programs, and
- providing guidance on targeted education and awareness to customers.

Equitable Clean Energy Future

With CETA's intent in ensuring the equitable distribution of benefits, identifying named communities allows PSE to track and report on the progress toward a more equitable future. First, PSE will use these designations to understand the disparities within PSE customer groups. A snapshot of existing customer disparities was reflected in the 2021 IRP, Appendix K[31], to show the difference between various attributes and identify areas where highly impacted communities and vulnerable populations are experiencing a disproportionate burden or benefit in PSE's territory. PSE will continue to evaluate and analyze this data over time and use the information to create and implement new or existing customer programs. Before the 2023 CEIP progress report, PSE will identify and use metrics to monitor the benefits and burdens on vulnerable populations and highly impacted communities through this clean energy transition. In collaboration with the EAG and stakeholders, PSE will define the metrics to track and provide results to the EAG for continued dialogue on progress within these named communities. See Chapter 7, Tracking and Reporting; Appendix H, Customer Benefit Indicator Metrics and Future IRP - Economic, Health, and Environmental Benefits Assessment. An example of this tracking is monitoring the participation rates of PSE customers within a designated highly impacted community. PSE could track the number of participants over time and compare to the broader PSE territory. This information would help identify any gaps in program participation and guide PSE toward targeting the program in a particular area.

These named community designations also assist PSE to create and implement customer programs.

- Vulnerable population factors help shape and design customer programs, based on the factors identified. PSE would look to create programs that provide opportunities for vulnerable populations, like weatherization or distributed storage projects for low-income or multi-family housing areas. An example of this is using one of the vulnerable population factors of poverty, and PSE designing a program that alleviates these existing burdens and still allows for customers experiencing poverty to participate in the clean energy transition. PSE will work with

[31] 2021 IRP Appendix K, Economic, Health and Environmental Benefits Assessment of Current Conditions: https://pse-irp.participate.online/2021-irp/reports

stakeholders to identify some of the burdens of participation for vulnerable populations, and begin to create a program that reduces barriers and provides increased benefits to customers.

- Highly impacted communities help determine the location of potential PSE customer programs. Because these are geographic factors, PSE may look to target specific areas of highly impacted communities for program implementation. One example of this is choosing a specific location within PSE's service territory to initiate an income-eligible community solar project, or income-eligible solar incentive program. By using this highly impacted community mapping, PSE will work directly with customers in the identified area to begin program design and implementation. (See Chapter 4, Specific Actions for additional programs)

Communication

A burden PSE heard from stakeholders with a resounding voice was the need for an increase in outreach, education and awareness toward highly impacted communities and vulnerable populations. To begin our targeted communication effort, designating specific communities helps to identify where and how messages are created and delivered. By knowing the factors for vulnerable populations, PSE may adjust and update our marketing and communication efforts, especially for vulnerable populations who may not be aware of the customer programs PSE offers. Knowing who participates in PSE's existing programs is one way to identify where the gaps exist. Mapping participation rates between vulnerable populations and the general customer population will illuminate the disparities and thus raise the question, "What are the barriers?" Much like program implementation, designating highly impacted communities can target specific areas for increased outreach and education. The geographic nature of highly impacted communities gives PSE a visual of where specific highly impacted communities reside, and where to concentrate marketing and personnel. For example, PSE may use the factor of linguistic isolation to revamp its marketing and communication strategy to cater to customers who may not speak English. PSE could work with community-based organizations to develop material for customers in their home language, as well as develop workshops and open houses in a non-English language.

Designating highly impacted communities and vulnerable populations informs PSE, the EAG, and stakeholders on the existing disparities, and indicates where PSE may focus efforts to engage with named communities. This effort provides a pathway forward to diminish disparities and increase participation in programs and clean energy opportunities provided by PSE. This approach also allows PSE to target clean energy investments within specific communities and create opportunities that engage customers who have historically been unable to participate and underrepresented in the customer programming process.