



ECONOMIC, HEALTH AND
ENVIRONMENTAL BENEFITS
ASSESSMENT OF CURRENT
CONDITIONS
APPENDIX J



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1. Introduction

The Clean Energy Transformation Act (CETA) requires utility resource plans to ensure all customers benefit from the transition to clean energy. To achieve this goal, we conduct an economic, health, and environmental benefits assessment (assessment) every two years with each Integrated Resource Plan (IRP) and Electric Progress Report. This assessment identifies and quantifies the existing conditions for all customers and identifies disparate impacts to communities within and around PSE's service territory related to resource planning. The assessment subsequently informs development and updates to the utility's Clean Energy Action Plan (CEAP) and Clean Energy Implementation Plan (CEIP).

This assessment addresses the following areas, as defined in WAC 480-100-620 (9):¹

- Energy and non-energy benefits and reduction of burdens to vulnerable populations and highly impacted communities
- Energy security risk
- Long-term and short-term public health and environmental benefits, costs, and risks

We created two primary sections in the assessment to evaluate the equitable distribution of burdens and benefits.

- The first section, Named Communities, discusses how we characterize Vulnerable Populations (VPs) and Highly Impacted Communities (HIC), collectively referred to as Named Communities in the 2023 Electric Report, and the methodology we used to identify communities with higher concentrations of vulnerability factors and environmental burdens in PSE's service area.
- The second section, Customer Benefit Indicators, describes the data we use to measure current disparities in Named Communities. Customer Benefit Indicators (CBIs) are quantitative or qualitative attributes of resources or related distribution investments associated with customer benefits described in RCW 19.405.040 (8).² Customer Benefit Indicators will help us ensure an equitable transition to clean energy. This section describes how CBIs have evolved since the 2021 Integrated Resource Plan. (2021 IRP). We will present updates to our CBI metrics in the upcoming CEIP Biennial Update scheduled for release in the fourth quarter of 2023.

This assessment is rooted in the 2021 IRP and provides an update to that analysis. The 2021 IRP was our first attempt to identify Named Communities within PSE's service area and measure disparities in these communities. Since publishing the 2021 IRP, our methods have evolved significantly. The drivers of this evolution are twofold:

- Washington Department of Health (DOH) completed a Cumulative Impact Analysis.³ This report designated communities highly impacted by climate change and fossil fuel pollution across Washington State.

¹ [WAC 480-100-620 \(9\)](#)

² [RCW 19.405.040 \(8\)](#)

³ [Clean Energy Transformation Act – Cumulative Impact Analysis | Washington State Department of Health](#)



- We completed our first CEIP in 2021 with guidance from a new Equity Advisory Group (EAG) and other public participation processes. The 2021 CEIP established CBIs and metrics for measuring these CBIs, and identified metrics to designate vulnerable populations in PSE’s service area.

This assessment continues to build on the work completed in the 2021 CEIP to identify and measure equity for more equitable outcomes.

1.1. Purpose of the Assessment

Resource planning is a generalized and forward-looking planning process. This process forecasts new electric resource additions we will need to meet customer demand in the next twenty or more years. This 2023 Electric Progress Report (2023 Electric Report), a two-year update to the 2021 IRP, considers equity from two specific angles. First, we build a resource plan to enable more equitable customer outcomes. Second, we assess our progress toward achieving an equitable clean energy transition to learn where we currently stand. These two angles provide the context for designing specific programs and actions, which we will identify in subsequent CEIP processes.

To evaluate the relative potential for equitable energy outcomes in each electric portfolio for the report, we developed the portfolio benefit analysis tool, described in [Chapter Three: Resource Plan](#) and [Chapter Eight: Electric Analysis](#). This tool uses forward-looking metrics to predict which generating resources we need to enable more equitable customer energy outcomes.

This economic, health and environmental benefits assessment requires backward-looking, observational metrics. These data measure our progress toward achieving an equitable clean energy transition. In contrast to the predictive nature of electric resource planning, the metrics we used in this assessment are observed characteristics of our utility, such as counts of customers with installed distributed generation. These data include specific implementation details such as location and form factor.

2. Named Communities

The Clean Energy Transformation Act requires utility resource plans to ensure all customers benefit from the transition to clean energy. The act identifies explicitly vulnerable populations and highly impacted communities as groups that should benefit from the equitable distribution of energy and non-energy benefits and the reduction of burdens. Throughout the 2021 CEIP and 2023 Electric Report development processes, we worked to understand and identify customers who may belong to these named communities through customer outreach, collaboration with the EAG, and demographic analysis of our service territory.

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



- Highly Impacted Communities are communities designated by the Department of Health based on the cumulative impact analysis required by RCW 19.405.140⁴ 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 is a term defined by CETA as 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.

This section discusses how we characterize named communities for the electric progress report.

2.1. Vulnerable Populations

The CETA statute and rulemaking provide some guidance on characterizing vulnerable populations, stating that vulnerable populations experience disproportionate cumulative risk from environmental burdens due to socioeconomic and sensitivity factors. However, identifying and classifying the socioeconomic and sensitivity factors was left to the utilities' discretion. We worked with our EAG to identify attributes that may result in increased vulnerability, then aggregated the impacts of these attributes to characterize PSE's service area into three levels of vulnerability. For a complete description of the attributes and methods used to characterize vulnerable populations, please refer to Chapter Three⁵ of the 2021 CEIP.

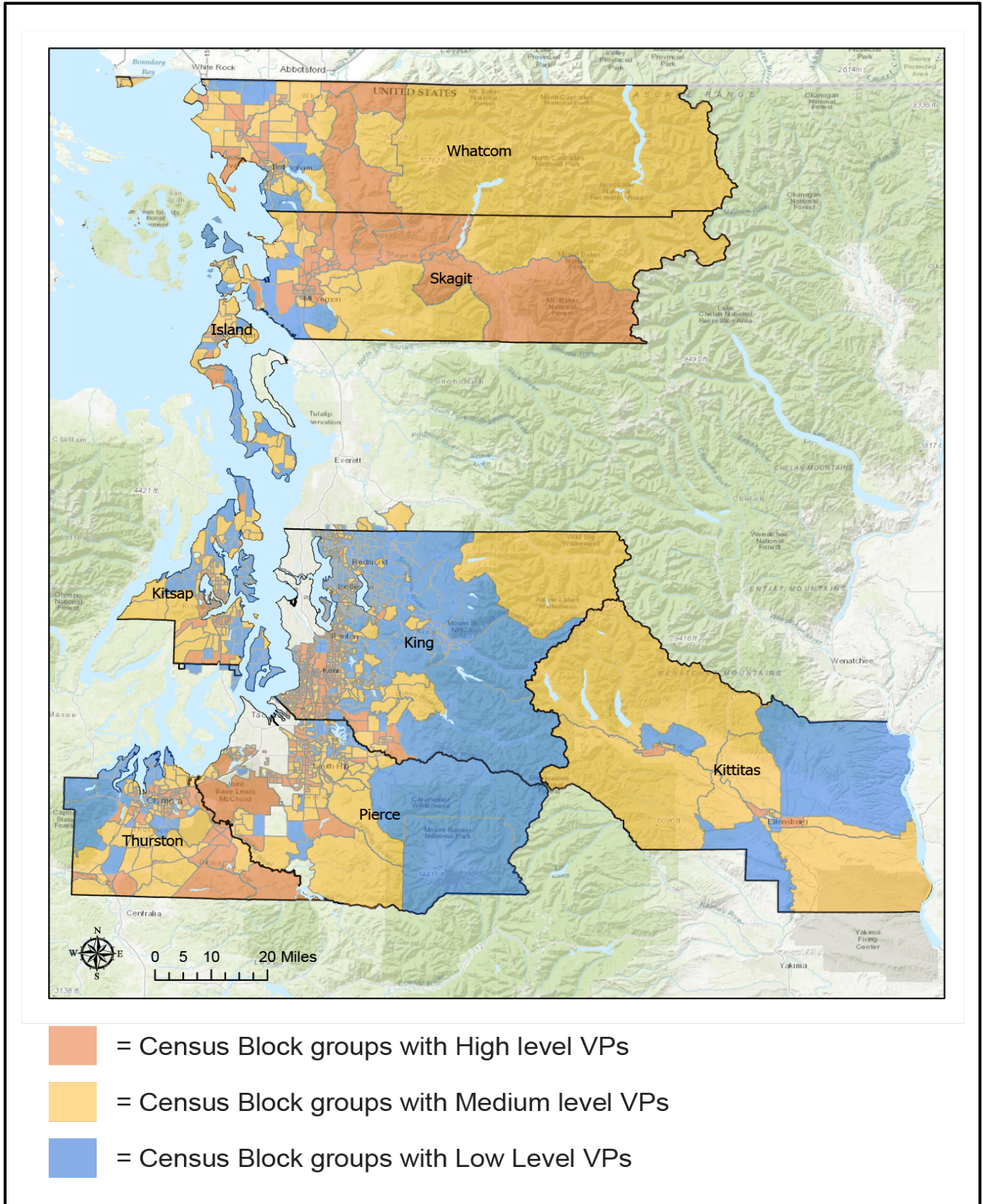
Figure J.1 is a map of vulnerable populations by census block group within PSE's electric service area created as part of the 2021 CEIP. The map illuminates the areas where customers in PSE's service area have high, medium, and low levels of vulnerability. This geographic representation indicates where we should focus outreach or program implementation efforts.

⁴ [RCW 19.405.140](#)

⁵ [2021 CEIP Chapter Three: Highly Impacted Communities and Vulnerable Populations, and Customer Benefit Indicators](#)



Figure J.1: Vulnerable Populations by Census Block Groups within PSE Electric Service Area





2.2. Highly Impacted Communities

Highly impacted communities are defined by the Washington Department of Health Cumulative Impact Analysis and identified as census tracts with an overall score on the Environmental Health Disparities Map⁶ of nine or ten or any census tract with tribal lands.⁷ The cumulative impact analysis identified 164 census tracts in our service area as highly impacted communities, of which 72 are on tribal lands, about 44 percent.

The Department of Health periodically releases a new Cumulative Impact Analysis as the Environmental Health Disparities Map is updated or new information becomes available. The highly impacted communities identified in this report are consistent with those characterized as part of the 2021 CEIP in Chapter Three⁸. We used a cumulative impact analysis from March 2021 in the 2021 CEIP. The Department of Health updated the cumulative impact analysis with the most recent results available from August 2022. We reviewed the most recent cumulative impact analysis results and observed 159 census tracts characterized as highly impacted communities, five fewer than March 2021 analysis. We maintained the highly impacted community results of the March 2021 cumulative impact analysis to preserve consistency between the 2021 CEIP and this report. We plan to explore updating our characterization of named communities as we continue to learn and evolve our methods to measure and implement equitable outcomes.

Figure J.2 presents the census tracts across PSE's service area characterized as highly impacted communities. Highly impacted communities and vulnerable populations encompass various factors to define a specific community. Some PSE customers may overlap categories and fall into either or both groups. Figure J.3 shows the overlap between highly impacted communities and the vulnerable populations within PSE's service areas. Table J.1 shows the approximate number of PSE customers who fall within each group described in this section and is consistent with data published as part of the 2021 CEIP.

⁶ [Information by Location | Washington Tracking Network \(WTN\)](#)

⁷ [Clean Energy Transformation Act – Cumulative Impact Analysis | Washington State Department of Health](#)

⁸ [2021 CEIP Chapter Three: Highly Impacted Communities and Vulnerable Populations, and Customer Benefit Indicators](#)



Figure J.2: Highly Impacted Communities Census Tracts in PSE Electric Service Area

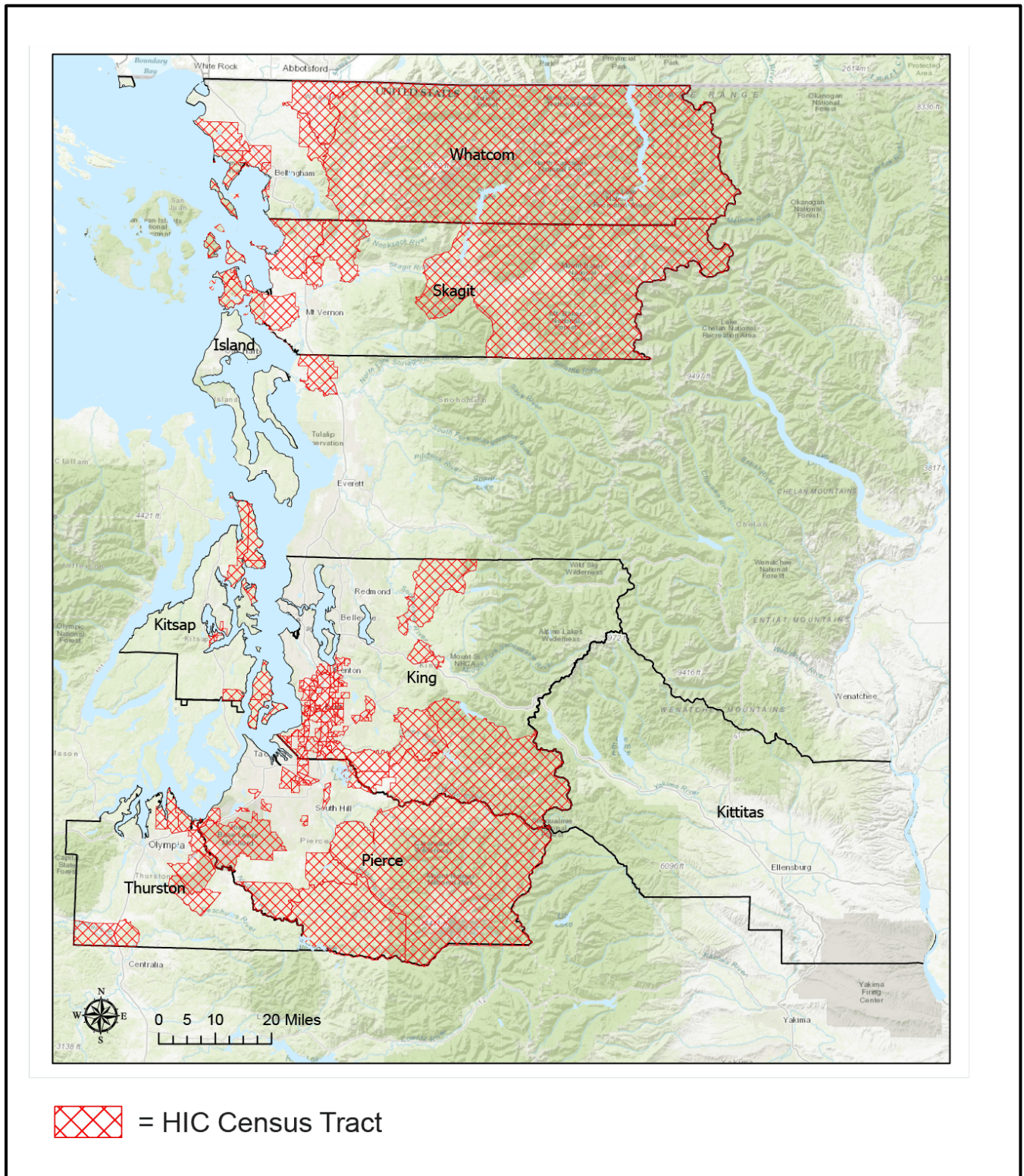




Figure J.3: Combined Vulnerable Populations and Highly Impacted Communities in PSE Electric Service Area

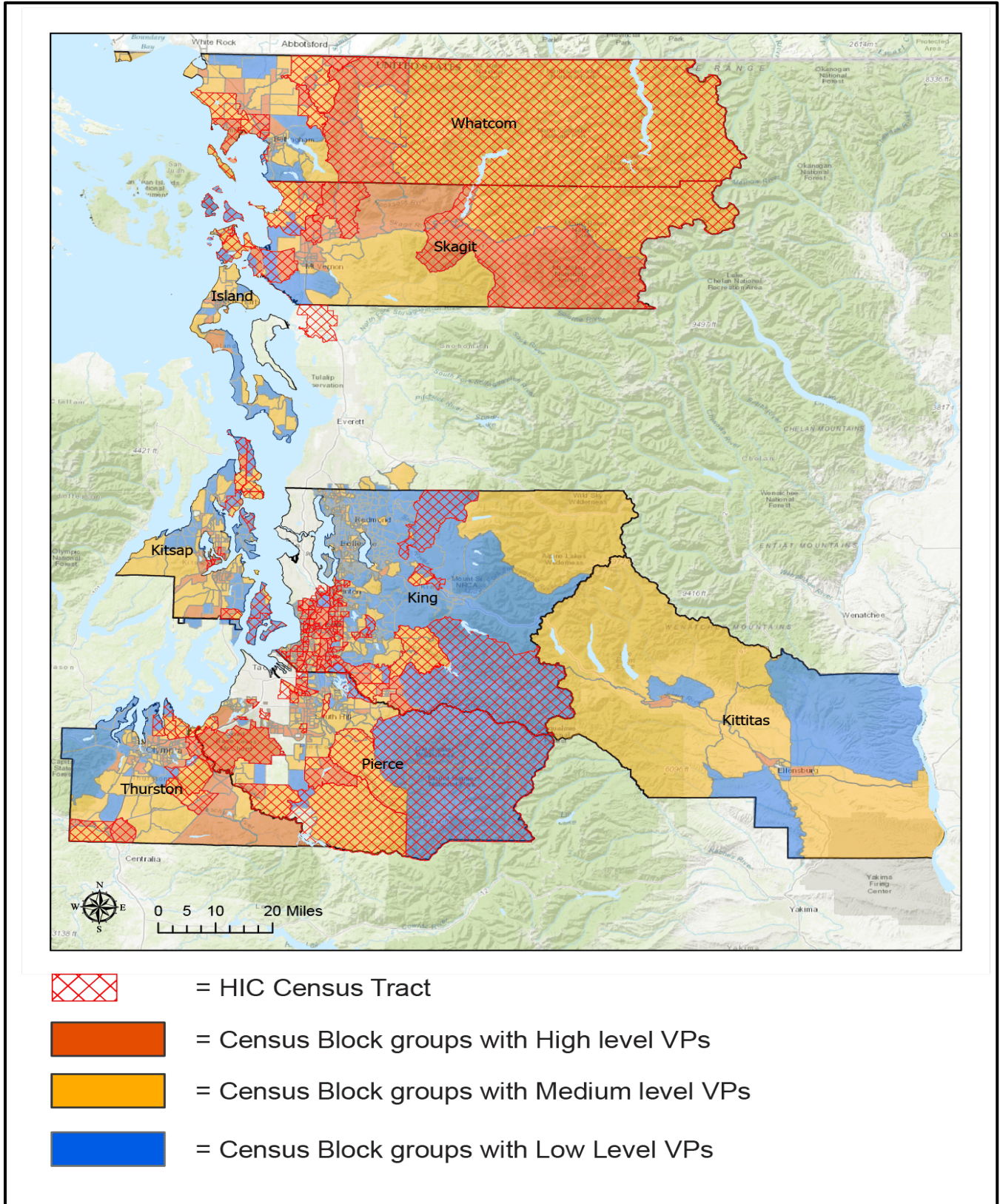




Table J.1: Number and Percentage of PSE Customers in Highly Impacted Communities and Vulnerable Populations

Customer count (PSE's electric customers)	Customers in highly impacted communities	Customers in vulnerable populations Low	Customers in vulnerable populations in Medium	Customers in vulnerable populations High
1,147,383	310,991 (27%)	333,869 (29%)	387,228 (34%)	426,286 (37%)

3. Customer Benefit Indicators

In this assessment, we measure disparities in our existing programs and resources using CBIs. We used specific metrics for each CBI to track and measure the impact of programs on the progress toward ensuring all customers benefit due to the clean energy transformation.

In the 2021 IRP⁹, we presented a selection of metrics for this assessment which were our estimates of the characteristics we thought contributed to the equitable distribution of burdens and benefits. Since then, we established the EAG, published the 2021 CEIP, and engaged interested parties about incorporating and measuring equity across PSE's business. In this assessment, we present the CBIs, and accompanying metrics, developed in the 2021 CEIP¹⁰ as a replacement for the metrics initially published in the 2021 IRP. Table J.2 defines these metrics.

Table J.2: Customer Benefit Indicators and Metrics

CETA Category	Indicator	Metric	Data Source	Expected Burdens Reduced
Energy Benefits Non-energy Benefits Burden Reduction	Improved participation in clean energy programs from highly impacted communities and vulnerable populations	Increase the number and percentage of participation in energy efficiency, demand response, and distributed resource programs or services by PSE customers within highly impacted communities and vulnerable populations. Increase the percentage of electricity generated by distributed renewable energy projects	Internal PSE data in which PSE measures the number of programs related to all customers and PSE customers within named communities.	Lack of awareness and education Cost of participation and economic barriers Costs and potential bill increases
Non-energy Benefits	Increase in quality and quantity of clean energy jobs	Increase quantity of jobs based on: <ul style="list-style-type: none"> Number of jobs created by PSE programs for residents of highly 	Unavailable currently. This information will be available in the future as PSE contracts with vendors and collects this information.	Access to high-quality jobs in clean energy

⁹ Appendix K: Economic, Health and Environmental Assessment of Current Conditions; 2021 Integrated Resource Plan

¹⁰ 2021 CEIP Chapter Three: Highly Impacted Communities and Vulnerable Populations, and Customer Benefit Indicators



CETA Category	Indicator	Metric	Data Source	Expected Burdens Reduced
		impacted and vulnerable populations <ul style="list-style-type: none"> Number of local workers in jobs for programs Number of part-time and full-time jobs by project Increase the quality of jobs based on: <ul style="list-style-type: none"> Range of wages Additional benefits Demographics of workers 		
Non-energy Benefits	Improved home comfort	Increased non-energy benefits in Energy Efficiency Programs, measured in net present value (NPV) dollars.	Internal PSE data calculated as non-energy impacts within the BCP process.	Lack of awareness and education Cost of participation and economic barriers
Burden reduction	Increase in culturally- and linguistically-accessible program communications for named communities	Increase outreach material available in non-English languages	Internal PSE data that quantifies the number of non-English language materials used by PSE.	Lack of awareness and education
Cost Reduction Burden Reduction	Improved affordability of clean energy	Reduce median electric bill as a percentage of income for residential customers Reduce median electric bill as a percentage of income for residential customers who are also energy-burdened	Internal PSE data in which PSE measures the affordability of clean energy related to all customers and PSE customers within named communities. We may also use the Department of Energy's Lead tool. ¹¹	Cost of participation and economic barriers
Environment	Reduced greenhouse gas emissions	Reduce PSE-owned electric operations metric tons of annual CO _{2e} emissions. Reduce PSE contracted electric supply metric tons of annual CO _{2e} emissions.	Publicly available data on PSE CO _{2e} emissions. ¹²	Adverse climate impacts of CO _{2e} emissions
Environment Risk Reduction	Reduction of climate change impacts	Increase in avoided emissions times the social cost of carbon	Public data on the social cost of carbon as defined by the WUTC ¹³ and data on PSE's	Adverse climate impacts of CO _{2e} emissions

¹¹ [Low-income Energy Affordability Data \(LEAD\) Tool](#)

¹² [PSE Greenhouse Gas Policy Statement](#)

¹³ [Washington Utilities and Transportation Commission | Social Cost of Carbon](#)



CETA Category	Indicator	Metric	Data Source	Expected Burdens Reduced
			emissions are available on the PSE website. ¹⁴	
Public Health	Improved outdoor air quality	Reduce regulated pollutant emissions (SO ₂ , NO _x , PM _{2.5})	Internal PSE data on emissions.	Adverse health impacts from air pollution
Public Health	Improved community health	Reduce the occurrence of health factors like hospital admittance, and work loss days	Washington Department of Health hospital discharge rates. ¹⁵	Adverse health impacts from air pollution
Resilience	Decrease frequency and duration of outages	Decrease the number of outages, total hours of outages, and total backup load served during outages using System Average Interruption Duration Index (SAIDI) and System Average Interruption Frequency Index (SAIFI) Reduction in peak demand through demand response programs	Internal PSE data on named communities and publicly available data regarding PSE's current SAIDI and SAIFI metrics are available on the UTC website. ¹⁶ Internal PSE data provided the analysis of named communities.	Dependability of variable clean electricity sources like wind and solar
Risk Reduction Energy Security	Improved access to reliable, clean energy	Increase the number of customers who have access to emergency power	Internal PSE data in which PSE measures the number of customers with storage related to all customers and PSE customers within named communities.	Lack of awareness and education Cost of participation and economic barriers Dependability of variable clean electricity sources like wind and solar

Note: Additional information on metrics used for disparity data is available in Appendix H: Customer Benefit Indicator Metrics¹⁷ of the 2021 CEIP.

We showed data for many of these metrics in Chapter Three of the 2021 CEIP¹⁸ and established a baseline measurement for 2020. We are working to collect and process data to extend this baseline data through recent years to track and measure CBIs across time. We plan to present updated data as part of the upcoming Clean Energy Implementation Plan Biennial Update scheduled for release in the fourth quarter of 2023.

¹⁴ [PSE Greenhouse Gas Policy Statement](#)

¹⁵ [Hospital Discharge Data \(CHARS\): Washington State Department of Health](#)

¹⁶ [Washington Utilities and Transportation Commission | Annual Reliability Reports of Electric Companies](#)

¹⁷ [2021 CEIP Appendix H: Customer Benefit Indicator Metrics](#)

¹⁸ [2021 CEIP Chapter Three: Highly Impacted Communities and Vulnerable Populations, and Customer Benefit Indicators](#)