



2021 Clean Energy Implementation Plan

2022-2025

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The Clean Energy Implementation Plan development process brought together staff from across the District to determine how to engage our customers amidst the global pandemic, and how to set a foundation for the PUD’s first CEIP.

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Michael Coe, Energy Services	Taylor Ostrander, Business Readiness
Brenda White, Government Relations	Kris Scudder, Power Supply
John Hieb, System Planning	Zack Scott, System Planning
Peter Dauenhauer, Rates	Ian Hunter, Power Supply
Garrison Marr, Power Supply	Jason Zyskowski, Assistant General Manager
Anne Spangler, General Counsel	Pam Baley, Assistant General Manager
Julee Cunningham, Corporate Communications	Aaron Swaney, Corporate Communications
Landon Snyder, Power Supply	Jeff Kallstrom, Legal Counsel
Shelley Pattison, Energy Services	Laura Reinitz, System Planning

Section 1 - Executive Summary

Utility planning is a process that considers how a given utility will provide reliable electric service to its customers at the lowest reasonable cost while adhering to the policy requirements of electric utilities. While the Public Utility District #1 of Snohomish County (PUD) engages in a comprehensive Integrated Resource Planning process to evaluate future needs and select appropriate resources to meet those needs, this Clean Energy Implementation Plan (CEIP) specifically examines how the PUD plans to meet the policy and regulatory objectives of the Clean Energy Transformation Act (CETA).

While the PUD's 2021 IRP establishes its Long-Term Resource Strategy (LTRS), the CEIP is intended to provide a shorter-term look at targets and goals that will demonstrate the PUD's continued commitment to clean energy and satisfy the statutory requirements of CETA. The CEIP will achieve this by establishing realistic targets for clean energy use, examine specific actions recommended by the IRP, and engage the PUD's customers for their thoughts and feedback.

Key Features of the CEIP

1. Establish interim targets for clean energy usage
2. Utilize all existing and validated analysis from the PUD's 2021 IRP in establishing specific targets for energy efficiency, demand response, and renewable energy
3. Identify and investigate actions specified in the 2021 IRP's Long Term Resource Plan for their applicability to CETA compliance
4. Consider highly impacted communities and vulnerable populations, and the impact the PUD's actions may have upon those customer groups
5. Meaningfully engage with the PUD's customers to gather feedback and perspectives on the PUD's clean energy future

6. Describe how the PUD expects to continue planning for CETA compliance in the future, and what to expect from future engagements

Establishing Targets

The PUD's 2021 IRP examines the needs and resources that the PUD should consider as it moves through the planning horizon. Because the PUD's current portfolio does not contain any carbon-emitting resources, and when considering the quantity of non-emitting resource forecasted in the PUD's Long-Term Resource Strategy, **the CEIP establishes an interim target of 100% clean energy for the 2022-2025 period.** At the time of this writing, the rulemaking that will establish how utilities measure compliance is ongoing; however, based on the most recently available draft rules, the PUD believes that it is capable of reaching 100% carbon-free energy with its current and forecasted portfolio over the four-year period.

When considering specific targets for energy efficiency and demand response, the PUD conducted a Conservation Potential Assessment. From this assessment, the PUD established energy efficiency targets for the Energy Independence Act. The PUD also conducted a Demand Response Potential Assessment, which informed the 2021 IRP on the availability and viability of utility scale demand response. The CEIP draws from each of these assessments not only to establish the specific targets required by statute, but to maintain consistency across PUD planning efforts and regulatory filings. **The 2022-2025 CEIP establishes an energy efficiency target of 19.35 annual average megawatts (aMW) at busbar, and a peak week demand response target of 3.6 aMW.**

Specific Actions to be Taken by the PUD

Once again leveraging the analysis performed as part of the PUD's 2021 IRP, the CEIP identifies three specific actions to be considered in the 2022-2025 timeframe for the purposes of the IRP: **acquiring conservation, demand response, and energy storage.** These three actions have been selected as the lowest reasonable cost methods of meeting the PUD's forecasted needs, while maintaining reliability, safety, and environmental standards. The CEIP must consider the potential impacts of these specific actions in the CEIP.

Public Process

In order to identify vulnerable populations and potential impacts of planned specific actions, the PUD engaged the public for its feedback. The scope of this public process was impacted by the timing of the rulemaking process for CETA and the impacts of the pandemic on in-person gatherings, and ultimately limited the volume and type of engagement the PUD otherwise would have pursued. In an effort to collect meaningful input, **the PUD’s 2021 CEIP public process component included a residential customer survey, two focus groups with targeted demographics and a virtual open house event.** This engagement was in addition to the public process held for the IRP, which included a **four-month intensive engagement with local businesses and community groups.** In the future, the PUD plans a more robust public engagement with a diversity of in-person and virtual meetings to cover a broad cross-section of customer types.

Evaluating the Impact of the PUD’s Specific Actions

Evaluating the impacts of specific actions (acquiring conservation, demand response, and energy storage) requires the **identification of impacted communities** and the **development of metrics used to evaluate the impact of actions.**

CETA statute identifies two classifications of impacted communities: “highly impacted communities” and “vulnerable populations” that may be impacted. The CEIP utilized the Washington Department of Health’s Cumulative Impact map to identify highly impacted communities as required by statute¹, which can be found in Appendix B. The PUD also developed two categories of vulnerable populations to monitor over the course of the 2022-2025 CEIP study period, reflective of feedback from the public engagement process.

These vulnerable populations are listed below and described in more detail in Section 5:

1. Customers that have a high energy burden of at least 7% and,
2. Customers living in distribution system constrained area

¹ As defined in RCW 19.405.020(23)

The metrics identified as appropriate to measure the impacts of actions in these communities are listed below and described in more detail in Section 6:

1. Conservation program participation of high energy cost burden customers in and,
2. Forecasted distribution constraint relief from resource acquisition in distribution constrained areas

Resource Adequacy

As a utility that operates within the Bonneville Power Administration's Balancing Authority (BPA BA), the PUD has a different set of considerations for resource adequacy than other utilities that manage their own BA.

When considering what it means to be adequate, the PUD looks to its resource portfolio and its ability to meet the unique needs and position of its customers. When developing the 2021 IRP, the PUD established a rigorous set of planning standards that are consistent with the standards used by BPA in their own resource program. **This CEIP will identify the resource adequacy standard and measurement metrics as established by the PUDs 2021 IRP and further described in Section 7 of this document.**

Continuing Commitment to Clean Energy

The PUD's Board of Commissioners has a long-standing policy to meet all future load growth through a combination of cost-effective conservation and non-emitting resources. The 2021 IRP establishes a Long-Term Resource Strategy that is consistent with this vision, and the CEIP team will continue to examine the PUD's expected actions and resource developments to ensure that the PUD is progressing toward the 2030 and 2045 clean energy standards while equitably distributing the energy and non-energy benefits of its actions.

Because the PUD views the commitment to the transition to clean energy as an ongoing commitment, the CEIP, reiterates the findings in the IRP, and helps lay the foundation for how **the PUD seeks to continue its commitment to non-emitting resources in its power supply portfolio and meet customer needs with clean, affordable, and reliable electricity.**

Section 2 - Identifying Targets

The process of identifying targets in the interim compliance period (2022-2025) accomplishes two tasks set forth in statute: 1) identifying specific targets for new resource additions consistent with the IRP and Clean Energy Action Plan, and 2) identifying those resources which will serve retail load consistent with the existing portfolio, resource additions called for in the IRP and Clean Energy Action Plan, and categorized as renewable resources or non-emitting resources in the Clean Energy Transformation Act statute.

Specific Targets by Resource Type

The CEIP must establish specific targets for (a) Energy Efficiency (as expressed in MWh of first-year savings), (b) demand response (in peak hour MW), and (c) Renewable energy (in MWh)². The 2021 IRP identifies two such planned investments in its long-term resource plan relevant to the four-year interim compliance period of 2022-25. These targets are expressed in Figure 2-A as they appear in the 2021 IRP. These resources are cumulative in nature, such that that the 2025 figure expressed is the result of all such cumulative achievements by December 31, 2025 of the compliance period.

Figure 2-A: Specific Targets by Resource Type (Cumulative)

	2025 (4-year)
Conservation (Cumulative annual aMW)	19.35
Demand Response (Cumulative Peak Week aMW)	3.6

Figure 2-B is reproduced in the units called for in the units specified under the applicable administrative code in figure 2-B below.

² WAC 194-40-200 (3)

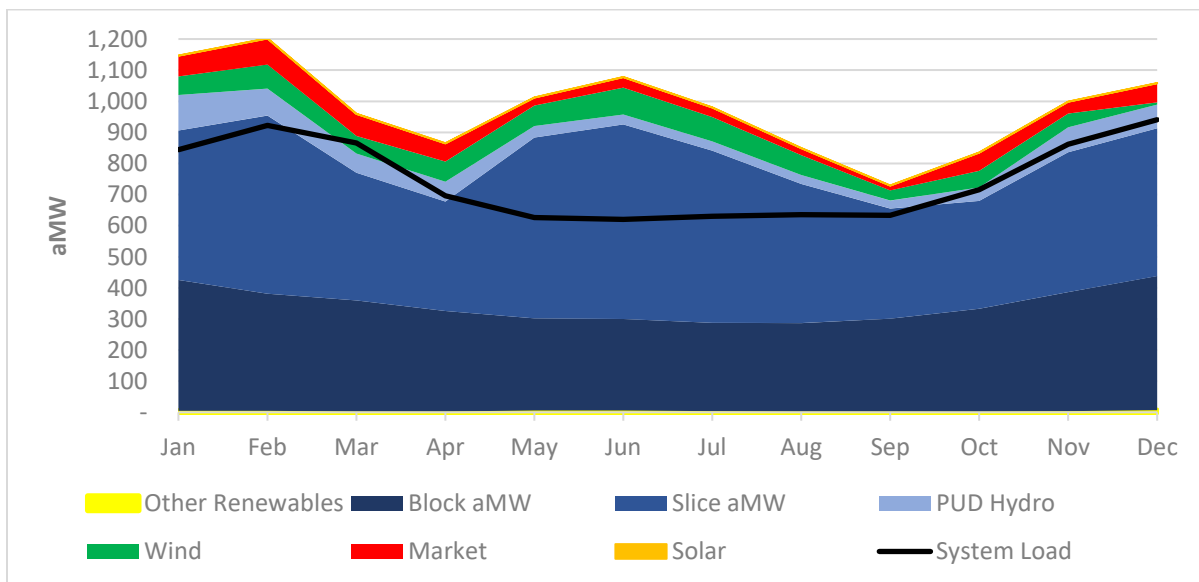
Figure 2-B: Specific Targets by Resource Type (Cumulative)

	2025 (4-year)
Conservation (Cumulative annual MWh)	169,506
Demand Response (Cumulative Peak Hour MW)	5.6

Interim Targets for the Compliance Period

The PUD relies on a diversified power portfolio consisting of a long-term power supply contract with the Bonneville Power Administration (BPA), PUD-owned hydroelectric projects, and several long-term renewable power supply contracts and is a net-seller of carbon-free resources. Figure 2-C illustrates the shape of the PUD's 2020 actual load and existing resources:³ The solid line in Figure 2-C shows the PUD's average load by month during calendar year 2020. The PUD's annual load shape is driven largely by electric heating loads during the winter months. Though the resource supply may be sufficient on an average monthly basis, the PUD's hourly needs can vary.

Figure 2-C
2020 Actual System Load with PUD's Existing Resources (in aMW)

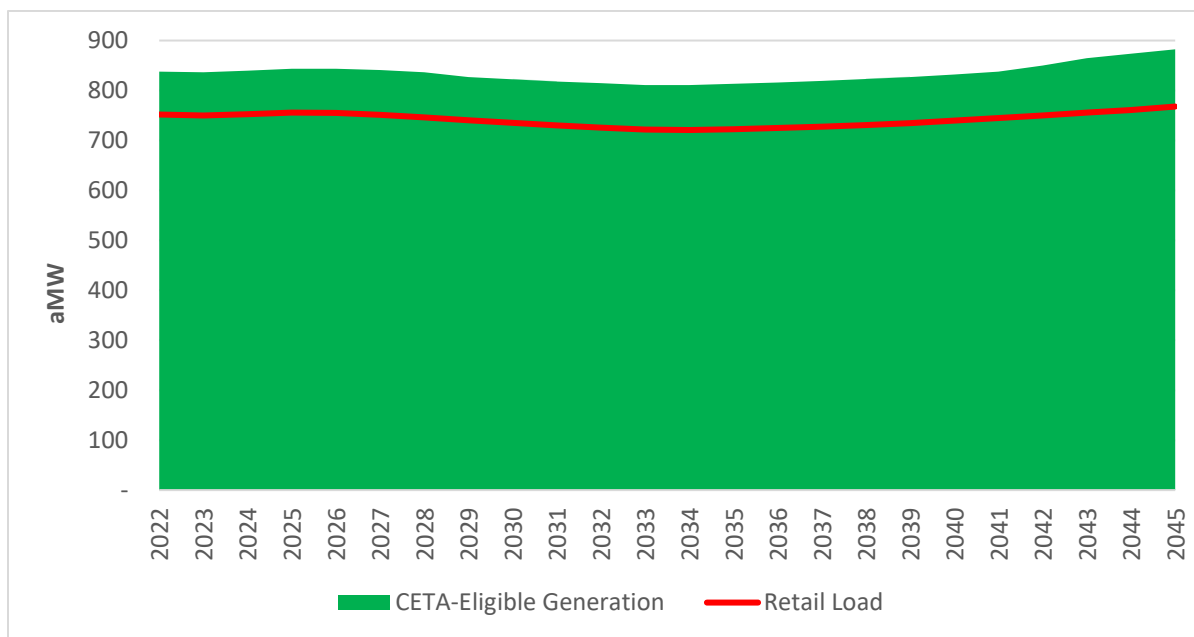


³ Water Year 2020 as measured at The Dalles was 81% of average for the Jan-July period, based on the 1981-2010 period. https://www.nwrfc.noaa.gov/water_supply/ws_normals.cgi?id=TDAO3

The Clean Energy Transformation Act (CETA) applies a definition of eligible resources, including existing renewable resource such as hydropower, wind and solar, as well as non-emitting resources such as the PUD’s share of Columbia Generating Station through BPA.

Figure 2-D displays the CETA qualified resource generation forecast from the IRP, set against the forecast retail load. As shown in the chart, the PUD expects to have surplus qualifying resources on an annual average basis, and therefore, expects to meet the 100% clean standard well before 2030 on an expected basis. Consequently, this also means the PUD expects to exceed the carbon neutral standard (which would require 80% clean energy with 20% alternative compliance) by 2030⁴.

Figure 2-D
IRP Forecast of Annual CETA-Eligible Resource Generation (in aMW)



CETA statute requires that interim targets demonstrate progress towards meeting clean energy goals set forth in CETA statute, which include that utilities be carbon neutral by 2030, and carbon-free by 2045. Snohomish PUD’s portfolio is net-surplus carbon-free energy as demonstrated in Figure 2-C and Figure 2-D. Further, Snohomish PUD currently expects to have a significantly similar portfolio composition into the future as expressed by Figure 2-D. **The combination of**

⁴ Further defined in [RCW 19.405.040](#)

these charts provides the basis for the PUD's assertion that the PUD both exceeds the threshold for being 100% clean on an expected basis throughout the compliance period and is expected to exceed the same threshold into the future. The PUD views this forecast outcome as progress towards clean energy goals for the purpose of meeting this portion of the statute.

This portfolio outcome may be considered an early CETA success story, in that the PUD is able to demonstrate its ability to serve customers with 100% clean energy while maintaining affordable rates and reliable service. Further, this orientation towards CETA compliance compels the PUD to drive towards an early goal of 100% clean energy by 2030, exceeding the CETA statute's goal of being carbon neutral by 2030, and demonstrating to regional and national utilities that clean energy goals can be practical, achievable, and result in low energy costs. While this is the PUD's position, it should be noted that the rulemaking process is not yet complete, and if a material change should be made in the determination of portfolio resources that can be used to demonstrate CETA compliance that the PUD's goals may be subject to change and this goal may require revision.

Figures 2-E and 2-F present this data in the format specified in statute. Here renewable energy includes all renewable energy (including the PUD's share of BPA Power using the methodology outlined in Section 5 of the 2021 IRP) and non-emitting resources (using the same methodology specified in Section 5 of the 2021 IRP). These targets are provided on a forecast basis, using an assumption of normal (or P50) weather as it effects load and hydropower generation. Because total renewable and non-emitting energy exceeds retail load, renewable energy is artificially capped in Figure 2-E at a level that would yield 100% of retail load, though additional renewable energy is expected.

Figure 2-E: Interim Targets for the Compliance Period, MWh

	2022	2023	2024	2025
Renewable Energy	7,087,964	7,083,941	7,018,008	7,035,734
Non-Emitting Energy	825,114	823,778	827,001	830,506
Total Renewable and Non-Emitting Resources	7,913,078	7,907,719	7,845,010	7,866,240
Retail Load Forecast	6,588,519	6,572,245	6,613,118	6,620,276
Surplus Renewable and Non-Emitting Energy over Retail Load	1,324,559	1,335,475	1,231,892	1,245,964

Figure 2-F: Interim Targets for the Compliance Period, Percentage

	2022	2023	2024	2025
Renewable Energy	87%	87%	87%	87%
Non-Emitting Energy	13%	13%	13%	13%
Percentage of Retail Load Served by Renewable or Non-Emitting Resources	100%	100%	100%	100%

Section 3 - Specifying Actions

A Clean Energy Implementation Plan must demonstrate the specific actions a utility plans to take to comply with CETA requirements and describe how specific actions are consistent with IRP and the Clean Energy Action Plan. The specific actions planned are derived directly from the 2021 IRP and its sub-component Clean Energy Action Plan and are the planned resource additions to meet the PUD's defined resource adequacy goals. The CEIP identifies three specific actions to be considered in the 2022-2025 timeframe for the purposes of the CEIP: acquiring conservation, demand response, and energy storage.

The first identified action is **continuing the PUD's investment in and commitment to energy efficiency and conservation**. Conservation represents the foundation for the PUD's resource plan by providing multiple value streams for meeting the PUD's future needs; by reducing future needs, conservation presents itself as a viable and cost-effective alternative to expensive resource acquisitions. Further, the capacity benefit provided by its reduction during peak hours eases the upward capacity pressure seen in the PUD's forecasts. While the PUD has a robust conservation portfolio already established, the CEIP hopes to explore its accessibility to all customers, and how the PUD can improve and increase conservation portfolio availability to vulnerable populations throughout Snohomish County.

The second identified action is continuing development of local demand response and smart rate programs with our customers. Demand response represents a cost-effective capacity addition to help the PUD meet capacity needs and reduce supply-side capacity resource acquisitions. While the PUD has pilot demand response programs established, the CEIP hopes to explore its accessibility to all customers, and how the PUD can improve and increase demand response program availability to Snohomish County. Development of demand response programs will be interdependent on the development and rollout of the PUD's Advanced Meter Infrastructure (AMI) project.

The third identified action is to acquire or construct energy storage. In the short term, the PUD's needs are primarily seasonal capacity-related; as such, energy storage provides significant benefit to the PUD by helping to integrate our carbon-free portfolio and better match generation

to load during peak periods. Energy storage can also provide transmission and distribution level benefits if sited within Snohomish County.

Figure 3-A provides the scale and type of planned actions, expected by 2025.

Figure 3-A: Specific Resource Additions over Compliance Period by Resource Type (Cumulative)

	2025 (4-year)
Conservation (Cumulative annual aMW)	19.35
Demand Response (Cumulative Peak Week aMW)	3.6
Long-Duration Energy Storage (Nameplate MW)	25

Section 4 - Engaging the Public

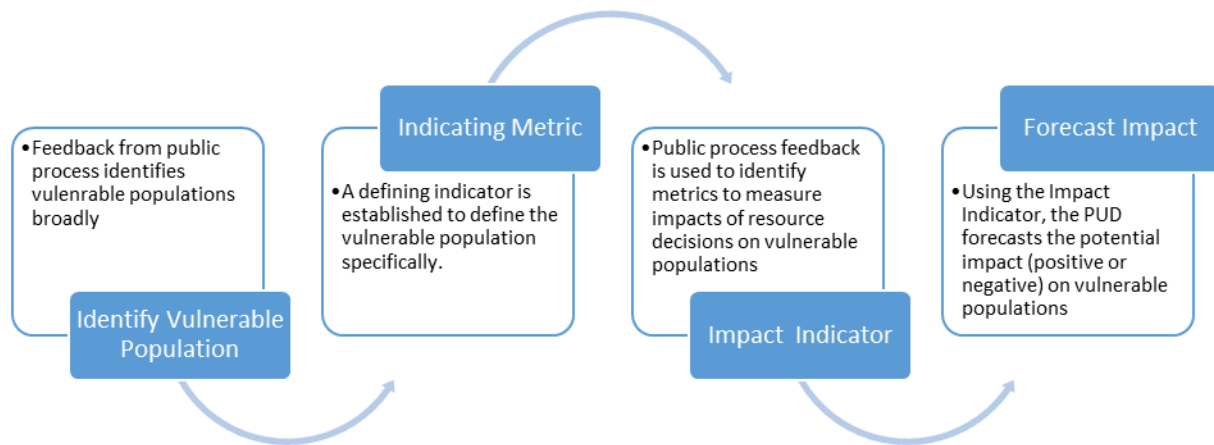
As a publicly owned utility, the PUD believes that its customers voices are critical to our mission of serving Snohomish County with safe, reliable, and environmentally responsible power at the lowest reasonable cost. Under PUD organizing statutes, our regulatory body is made up of three elected PUD Commissioners who serve as the decision-making foundation upon which the PUD operates. While this CEIP will be discussed and considered in open public Commission meetings, it was the goal of the CEIP team to perform additional outreach to our customers.

The PUD had hoped and planned for an expansive community-based public engagement process, including multiple engagements within the community through presentations and listening sessions to local government and local community organizations. Unfortunately, at the time this outreach was being contemplated, the county experienced a resurgence of Covid-19 which undercut our ability to execute a more ambitious outreach plan. Future CEIPs will include a more expansive, community-based public process, and the PUD looks forward to setting a high standard for utility customer engagement.

The primary purpose of the public processes was to receive feedback and input to inform an identification of vulnerable populations as defined under the statute, and to explore meaningful metrics that may measure how planned actions may impact community groups. The PUD also engaged the public in their perception of planned actions listening for public feedback on how actions could best meet community needs. The PUD's Board of Commissioners is also a critical component of the public process by virtue of their policy leadership on the 2021 IRP for which the CEIP relies, the feedback they provide during CEIP briefing sessions, and through the public comment processes that Commission briefings provide.

The interrelationship of vulnerable population identification, measurement, and forecast impacts is described in Figure 4-A below:

Figure 4-A: Public Process and Development of Vulnerable Population, Indicator and Forecast Impact Relationships



For the 2022-2025 CEIP, the public engagement strategy consisted of four parts:

- An online Clean Energy survey,
- Two focus groups convened and facilitated by a consultant, and;
- A virtual Clean Energy Open House
- Commission Meeting Briefings and Public Comment periods on planned CEIP efforts

A summary of the high-level themes across public processes is as follows:

- The overall effect on rates is important to PUD customers, and the PUD should consider the impact our actions may have on lower income or fixed income customers, including seniors and those with disabilities
- PUD customers understand the importance of reliability as it relates to their ability to maintain a high quality-of-life at home, in their workplace, the reliability of the businesses they frequent, and increasingly, as they work from home. In this context, customers want PUD resource plans that consider reliability for the community as a whole and in the neighborhoods where they live, work and play. This includes adequately planning for the potential of future innovation, such as electric vehicles and rooftop solar growth.

- The PUD should ensure any project built in Snohomish County is safe, and through outreach, ensure that the community is confident that the project is safe.
- Future PUD public processes should include an emphasis on connecting with community groups, finding ways to connect with community groups that may not speak English as a first language, and providing venues for discussion to community as a first language, and providing venues for discussion to community members without regular access to computers or the internet.

The feedback received thus far has been valuable and has been taken into account when considering the specific actions identified in this CEIP.

Online Survey – Methodology and Results

In August of 2021, the PUD created and distributed an online survey to its customers and received over 1,100 unique responses. The survey asked respondents to rate and/or provide feedback on equity, costs, importance, and/or personal use of various PUD related programs and/or topics such as resource choices, energy efficiency and conservation, and transportation.

Regarding resource choices, respondents overwhelmingly care about the impacts the PUD's resource choices have on the local economy and environment, and state that the PUD should prioritize investing locally while still considering the potential impacts on vulnerable groups of people.

Respondents also overwhelmingly state that energy efficiency and conservation incentives and programs are very important to them, with over half of respondents having taken personal advantage of an incentive in the past.

On transportation and electricity programs and costs, just over half of the respondents state that transportation and electricity costs are a significant portion of their budget.

Focus Groups – Methodology and Results

In September of 2021, the PUD contracted with a consultant to conduct two focus groups. Each group's participants were split 50/50 by gender, 50/50 over and under the age of 40, 50/50 in using a mix of electric and non-electric services/appliances, and between 50 and 60 percent on the PUD's income-qualified discount program. The summary and key insights relative to the CEIP are below.

- Participants appreciated the thought that went into the focus group process to consider Long-Term Resource Plan implications and encouraged the PUD to stay connected with the customers and communities it serves via public processes for big decisions.
- Participants wanted to make sure that the PUD was staying ahead of the growth that Snohomish County is and will be experiencing.
- Nearly all participants responded favorably to the types of specific actions the PUD was considering in its long-term resource plan (including demand-side programs and supply-side resource developments such as local solar and energy storage). Participants viewed these planned actions as being positive, valuable, and meaningful ways for the PUD to serve its customers and support the environment. Where discussion did veer into specifics, it was more related to “how” and “when” resources would be developed, but not “why”.
- Both focus group participants saw the impact of planned actions being investigated by the PUD as ways it increases dependability of power and possibly contain the cost of power, which were expressed priorities of both groups.
- A significant portion of the discussion focused on where potential future local resources such as community solar and/or storage facilities might be located. This was a very challenging discussion because focus group respondents had a hard time picturing them. Customers valued thorough attention to safety in consideration of resource siting, and there were mixed opinions on other dimensions of siting choices; some customers were

curious of the reliability implications of siting proximity to load centers, and others were curious about the aesthetic impacts of a resource in a residential area.

Clean Energy Open House

The Clean Energy Open House was held virtually on October 21, 2021 and was heavily promoted through PUD communication channels. The online event drew a total of 25 participants, though the majority of the participants were PUD employees (most of whom are also PUD customers). The discussion was wide-ranging, and participants were asked for their feedback on their perceptions of vulnerable populations, potential impacts of planned actions, and their perceptions of planned actions in general. Much of the discussion centered on customer interest in solar and energy efficiency, and actions participating customers were taking in their homes. As it relates to the CEIP, key feedback heard was that reliability benefits, especially (from the participants' perspective) as it relates to storage could be an important consideration, and that the impacts of planned actions on businesses should be considered.

Section 5 - Identifying Highly Impacted and Vulnerable Communities

CETA statute asks utilities to identify both Highly Impacted communities, using a set methodology, and Vulnerable Populations using a public process.

Identifying Highly Impacted Communities

The PUD follows the Washington State Department of Commerce guidance on identifying Highly Impacted Communities provided in their CEIP reporting template. In general, that guidance identifies census tracts with “cumulative environmental health disparities” index values of 9 or above (as determined by the Washington state Department of Health), or census tracts containing Tribal Lands as highly impacted communities for consideration in CEIP documents. These identified Census tracts are provided in Appendix B and contain a total of 25 Census Tracts. Eight (8) of these Census tracts were identified because their disparity index value was greater than 9, and eighteen (18) were identified because they contained Tribal Lands.

Identifying Vulnerable Communities

Through the public engagement process, the PUD distilled feedback to identify vulnerable populations related to the provision of electricity service that the PUD could meaningfully impact through resource acquisition actions.

Energy-Cost-Burdened Customers

The PUD is sensitive to the needs of its community and the economic pressures they face. While the PUD offers assistance programs for those customers who are income-qualified, there may be other customers who face a high energy burden but whose income is above the threshold required to qualify for the current assistance program. Particularly in Focus Groups, public feedback directly referenced a public interest in an expansive consideration of customers who may have a harder time paying their bills. **To define this vulnerable population, the PUD proposes to use an indicator on high energy cost burden, which defines a customer as having a high energy burden if their energy costs are 7% or more of their income.**

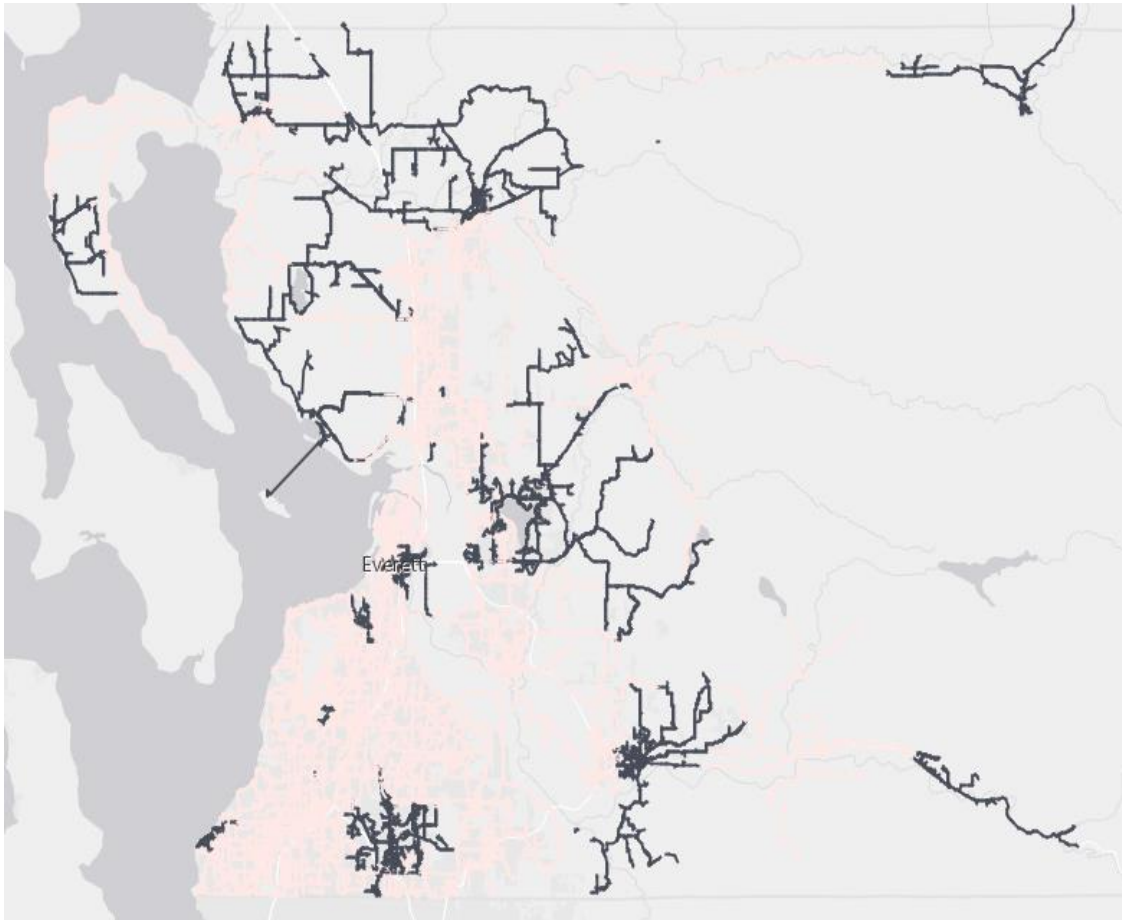
Customers Living in Distribution System Constrained Areas

As the PUD reviews its distribution system, there are areas in Snohomish County that are quickly growing. This growth is just one factor that could contribute to the distribution system in a particular geographic region becoming constrained. While existing customers may not see a reduction to reliability, increased usage of the existing system could produce future constraint. In addition, distribution constrained systems are at increased risk of reliability interruptions due to extreme weather events, as was seen in Eastern Washington during the 2021 Heat Dome event.

During the public feedback process, service reliability and proactively planning for the future, especially for those in parts of the service territory that may be more vulnerable to service interruptions was considered. The public feedback sessions also indicated an interest in a vulnerable population that could include local businesses. The PUD proposes a second vulnerable population of “customers living in a distribution system constrained area” to proactively assess the potential benefits of resource additions in these areas. Consideration of this vulnerable population model could help inform future decisions about where resources might be sited in Snohomish County to maximize the benefit not only for the PUD’s portfolio, but also for those customers whose local distribution system may need reinforcement.

To define this population, the PUD proposes as an indicator those customers who are on **Distribution System Circuits that have limited capacity on the primary line serving the circuit.** Figure 5-A depicts Distribution Constrained Circuits as black lines on the map of the service territory.

Figure 5-A: Distribution Constrained Circuits within Snohomish PUD service territory



Section 6 - Assessing Impacts of Specific Actions on Identified Communities

Assessing the impacts of specific actions requires a layered look in the context of CEIP regulatory obligations. Utilities must provide an expectation of the energy or nonenergy benefits and costs, provide an expectation of expected effects of specific actions, and a description of how the utility intends to reduce risk to vulnerable populations in the Clean Energy transition. Initial guidance from the Department of Commerce, expressed in the CEIP reporting template, is that the 2021 CEIPs may have as few as one expected energy or nonenergy benefits identified, and as few as one expected effect of specific action expressed. There is a shared understanding that future CEIPS, with the benefit of a completed rulemaking process, a more robust public process not impacted by a pandemic, and further internal development will likely result in more numerous measures in future CEIPS. The PUD's 2021 CEIP offers both an initial indicator for reporting, and areas staff will explore throughout the 2022-2025 compliance period to better develop data frameworks and reporting processes relevant to identified populations.

In many respects, the PUD's Clean Energy Implementation Plan is expected to be characterized as a conveyance of benefits to identified communities, rather than a distribution of costs or harms. This is because the largest investments in the CEIP are conservation and demand response measures that seek to lower energy consumption, bills, and distribution system strain for customers across the service territory. In addition, because this is the lowest cost way for the PUD to meet its portfolio needs, it is expected that this course of action will result in the lowest costs to customers in identified communities.

Expected Energy and Nonenergy Benefits and Costs

The PUD is at the beginning of developing nonenergy benefit and cost methodologies and expects to have a more robust framework developed for the next CEIP cycle. The PUD prioritized conservation as a starting point for these measures as it represents the largest investment by scale. Additional analysis is planned throughout the interim compliance period, with an expectation that this additional analysis will be provided in the next CEIP cycle. In addition, it is worth noting that because the planned actions are the result of a lowest reasonable

cost plan analysis, the actions anticipated are expected to result in the lowest cost to all customers, including those in Highly Impacted Communities and among Vulnerable Populations.

Expected Energy Benefits

Expected energy benefits of conservation were developed using a new geospatial analysis tool the PUD developed as part of the Conservation Potential Assessment process. This tool allowed the PUD to model the cost-effective conservation geospatially to see what cost-effective conservation potential there may be in Highly Impacted Communities and Vulnerable Populations that are mappable.

It is expected that 20.2% of the cumulative cost-effective conservation and 18.36% of the cumulative demand response planned by 2025 will be located in Highly Impacted Communities. Additional information is provided in Appendix C.

It is unknown today, what percentage of conservation may be achieved by customers in the **Energy Cost Burdened vulnerable population**. In order to monitor performance of service provision and positively impact this vulnerable population, staff proposes **to track, where possible and appropriate, conservation measures that serve energy-cost-burdened customers**. Initial thinking is that tracking would start with provision of weatherization services to income-qualified customers.

It is estimated that 16.6% of the cumulative conservation and 22.05% of the cumulative demand response planned by 2025 will be located in areas with Distribution System constraints. Additional information on this breakdown is provided in Appendix D.

Expected Non-Energy Benefits

Non-energy benefits are an included component of the Conservation Potential Assessment are included as a financial consideration in the CPA methodology. To estimate the non-energy benefits of conservation in Highly Impacted Communities and Vulnerable Populations, the total non-energy benefit total for cost-effective conservation measures was calculated and applied to the proportion of cost-effective energy found for the applicable identified communities in terms

of expected energy benefits. The total non-energy benefits for cost-effective conservation to be achieved by 2025 is estimated at \$4.3 million, with \$2.08 million of this in the residential sector. The estimated nonenergy benefits within Highly Impacted Communities is estimated at \$868k, with \$420k in the residential sector. The estimated nonenergy benefits within the Vulnerable Population of Distribution Constrained Areas is estimated at \$718k, with \$347k in the residential sector

Other Energy and Nonenergy Benefit Considerations

The PUD also plans to develop demand response and energy storage within the interim compliance period. However, at this time in the development process, less is known about the specific location and impacts of the proposed actions. As development activities take further shape, PUD will be proactive in considering the impact of these activities on highly Impacted Communities and Vulnerable Populations and will seek to minimize harm and maximize benefits of actions, as appropriate, and on balance with other utility obligations. In addition, as the PUD considers potential siting of energy storage resources, consideration will be given to communities that may be more prone to seasonal power outages, and whether a storage resource could improve outcomes in those communities.

Expected Effect of Specific Actions

The overall anticipated effect of the specific activities identified in the 2021 CEIP is that they will result in the lowest reasonable costs to PUD customers, while keeping clean energy supply at no less than 100% of retail load and meet the PUD's resource adequacy criteria. However, it is also anticipated that the planned actions will produce additional benefits for Highly Impacted Communities and Vulnerable Populations.

Energy Bill Savings

It is expected that conservation and demand response will reduce the energy bills of customers that participate. As stated in the section above, it is anticipated that 20.2% of the energy bill savings from planned conservation actions will occur within Highly Impact Communities and 16.7% of the energy bill savings from planned conservation actions will occur within the Vulnerable Population of Customers in Distribution System Constrained Area.

Distribution System Relief

The PUD further expects that conservation savings will provide additional distribution system capacity in areas where there is little existing capacity on the circuit. Figure 5-A above provides a chart of the circuits with limited capacity. It is anticipated that planned conservation activities will add 3.15 aMW of additional capacity to these areas by 2025.

How the PUD Intends to Reduce Risks to Clean Energy Transition to Vulnerable Communities

The District in some respects, may be considered largely done with its own transition to clean energy by virtue of being 100% clean today⁵, and as a result, most of the risk left to customers is the rest of the State of Washington's transition to clean energy and its impact on ratepayers. Market forecasts show declining wholesale energy prices which create rate pressure for the PUD as it is a net-seller of electricity. The PUD plans to mitigate this risk by pursuing the identified actions of developing demand response and utility scale storage. These actions are expected to allow the PUD to help meet its capacity needs by adding CETA-compatible resources, which may also help the PUD better balance its load and renewable generation profile in light of these market challenges.

⁵ Subject to the completion of rulemaking, as described in Section 2.

Section 7 - Ensuring Resource Adequacy

The Planning Standards used by the PUD in the 2021 IRP and Clean Energy Implementation Plan were developed by staff to reflect the unique needs and position of the PUD and constitute the resource adequacy standards for the PUD for the 2021 IRP. The PUD is not a Balancing Authority itself but rather operates within the BPA Balancing Authority Area. As a result, the planning standards used by the PUD are consistent with the standards used by BPA in their own resource program, are reflective of a hydro dominant portfolio, and do not reflect the Loss-of-Load planning metrics sometimes employed by utilities that operate their own balancing authority areas.

The Clean Energy Transformation Act requires utilities to make “a determination of resource adequacy metrics for the resource plan...” The planning standards established in the 2021 IRP are a balanced collection of metrics that appropriately measure adequacy risk.⁶

The PUD is a participant of the regional resource adequacy program under development by the Northwest Power Pool. While that program will ultimately yield regional resource adequacy metrics and provide an additional overlay into the PUD’s long-term planning efforts, the program was still under development at the time of 2021 IRP analysis, and a binding program with a finalized design is not expected until 2023.

Planning Standards

The probabilistic approach to the PUD’s load resource balance provides the analytical platform upon which the planning standards are derived. Planning standards use standardized risk thresholds combining the likelihood of portfolio insufficiency in a given time period and a standard determining at what threshold potential deficits exceed risk tolerance. This threshold informs the PUD’s ability to meet some potential portfolio deficits on a short-term basis through the wholesale electricity market. As such, the deficit thresholds are consistent with current operating practices and significantly less than anticipated market depth and liquidity determined by prior analysis. The four planning standards established in the 2021 IRP and Clean Energy

⁶ RCW Chapter 19.285.030 (1)(g). <https://app.leg.wa.gov/RCW/default.aspx?cite=19.280.030>

Implementation Plan analysis provide an objective comparison of the impacts of various scenario assumptions on future resource needs, and are listed below:

1. The **Annual Energy Planning Standard** measures the ability of the PUD to meet average annual energy demand across the entire year. The PUD is deemed to have an energy need if the P50 load resource balance is below zero on an annual average basis.
2. The **Monthly On-Peak (HLH) Planning Standard** measures the ability of the PUD to meet monthly on-peak demand, 19 out of 20 times, with its existing resources. Given that the PUD's existing portfolio is predominantly hydro based, the Monthly On-Peak standard is reflective of exposure to the combination of high load and poor or adverse water hydro conditions. This planning standard also limits the quantity of on-peak energy/capacity purchased from the short-term wholesale energy market to no more than 100 aMW in a given month to satisfy portfolio deficits. Combined, this standard requires a Monthly HLH Load Resource Balance of no less than negative 100 aMW under P5 conditions.
3. The **Peak Week (PW) Planning Standard** measures the ability of the PUD to reliably meet its highest on-peak⁷ demand during the most deficit week of the month, 19 out of 20 times, with its existing resources. Peak Week aMW metrics measure the average surplus or deficit of all hours on average in a given risk condition (such as P5). The highest on-peak demand has historically occurred during December.

The PUD's existing portfolio is predominantly hydro based and as such the Monthly Peak Week standard for on peak hours is reflective of exposure to the combination of high load and poor or adverse water hydro conditions. This planning standard limits the quantity of on-peak energy/capacity purchased from the short-term wholesale energy market to no more than 150 aMW in a given month to satisfy portfolio deficits. Combined, this standard requires a Monthly Peak Week Load Resource Balance of no less than negative 150 aMW under P5 conditions.

⁷. Peak Week hours are defined as hours-ending 7-10 and 17-20 on days Monday through Friday, for a total of 8 hours per day and 40 hours per week.

4. The **Regulatory Compliance Standard** generally assures that no portfolio will be considered meeting the PUD's portfolio needs unless the portfolio would comply with all regulatory compliance standards to which the PUD must comply. These standards include conservation requirements, the EIA RPS, and CETA clean energy standards. Other regulatory requirements including consideration of over-generation and renewable and nonrenewable resources are also addressed through this planning standard.⁸

⁸ RCW Chapter 19.285 details conservation and renewables' compliance requirements and RCW Section 19.280.030 addresses developing a resource plan and considering overgeneration events.

Section 8 - Looking to the Future

The PUD is committed to a clean energy future and is well-positioned to meet compliance standards under the new CETA provisions. While this first CEIP provides a foundation to build from, the PUD has recognized areas to focus on for further development in the next CEIP and throughout the interim compliance period of 2022-2025.

Continuing to Develop Robust Public Processes

The PUD has embraced the public process components of the CEIP, plans to make public processes more robust, and looks forward to additional community engagement as it develops and executes clean energy planning activities. Future public processes will meet our internal expectation of exceeding customer's expectations and taking a customer-centric approach to service provision. It is expected that future processes will include more in-person convenings, and a larger volume of community engagements more distributed throughout the service territory. The COVID-19 pandemic, limited staff's ability to execute on this vision in the 2021 CEIP.

Indicator Development

The PUD intends to further develop indicators that capture how planned actions impact identified communities throughout the interim compliance period of 2022-2025. While some data was not yet available to include, it is the PUD's intention to develop indicators, avoid negative impacts, and drive towards positive benefits throughout the interim compliance period.

Appendix A. Clean Energy Implementation Plan Compliance Crosswalk

WAC 194-40-200

Citation	Short Description	Compliance
194-40-200 (1)	Identify specific actions the utility will take during the next interim performance period to demonstrate progress towards clean energy goals	Section 3 details how the PUD identified specific actions
194-40-200 (2)	Establish an interim target for percentage of retail load to be served using renewable and non-emitting resources during period covered by CEIP. This target must demonstrate progress towards clean energy goals.	Section 2 details and specifies interim targets
194-40-200 (3)	The CEIP must establish specific targets for (a) Energy Efficiency [in MWh of first-year savings], (b) demand response [in MW], (c) Renewable energy [in MWh]	Section 2 details and specifies interim targets
194-40-200 (4) (a)	Identify each highly impacted community as a community designated by Department of Health, or community located in census tracts at least partially on Indian country	Section 5 describes how the PUD accessed Department of Health Data, and Appendix B lists them in the format of the DOH database output
194-40-200 (4) (b)	Identify vulnerable populations developed through a public process established by the utility	Section 5 describes how the PUD identified vulnerable populations through a public process
194-40-200 (4) (c)	Report the forecasted distribution of energy and nonenergy costs and benefits for utility's specific actions	Section 6 reports expected distribution of energy and nonenergy benefits and costs
194-40-200 (4) (c) (i)	Include one or more indicator developed through a public process	Section 6 provides indicators developed through a public process

194-40-200 (4) (c) (ii)	Identify the expected effect of specific actions on highly impacted communities and vulnerable populations; included whether resources will be located, serve, or otherwise benefit these communities	Section 6 provides the expected effect of specific actions
194-40-200 (4) (c) (iii)	Describe how specific actions are consistent with IRP and Clean Energy Action Plan	Section 3 provides a description of how specific actions are consistent with the IRP
194-40-200 (4) (d)	Describe how utility intends to reduce risks to highly impacted communities associated with the transition to clean energy	Section 6 provides a description of how the PUD intends to reduce risks to highly impacted communities associated with the transition to clean energy

Appendix B. List of Identified Highly Impacted Communities in Snohomish County

The PUD follows the Washington State Department of Commerce guidance on identifying Highly Impacted Communities provided in their CEIP reporting template. This guidance instructs utilities to reference Department of Health data on census tracts with an Environmental Health Disparities index score of 9 or 10 (out of a range of 1 to 10) and census tracts that contain tribal lands.

This dataset can be found online at the Department of Health's website⁹:

Census Tract	County Name	Highly Impacted Community (Yes/No)	Tribal Lands (Yes/No)	Environmental Health Disparities Topic Rank
53061040100	Snohomish	Yes	Yes	5
53061040200	Snohomish	Yes	No	9
53061040500	Snohomish	Yes	No	9
53061040700	Snohomish	Yes	No	9
53061041202	Snohomish	Yes	No	9
53061041805	Snohomish	Yes	No	9
53061041904	Snohomish	Yes	No	9
53061051000	Snohomish	Yes	No	9
53061051803	Snohomish	Yes	No	9
53061052104	Snohomish	Yes	Yes	5
53061052803	Snohomish	Yes	Yes	5
53061052805	Snohomish	Yes	Yes	6
53061052903	Snohomish	Yes	Yes	8
53061052904	Snohomish	Yes	Yes	5
53061052905	Snohomish	Yes	Yes	9
53061053102	Snohomish	Yes	Yes	2
53061053202	Snohomish	Yes	Yes	1
53061053301	Snohomish	Yes	Yes	3
53061053302	Snohomish	Yes	Yes	1

⁹<https://www.doh.wa.gov/DataandStatisticalReports/WashingtonTrackingNetworkWTN/ClimateProjections/CleanEnergyTransformationAct/CETAUtilityInstructions>

53061053400	Snohomish	Yes	Yes	2
53061053508	Snohomish	Yes	Yes	4
53061053700	Snohomish	Yes	Yes	2
53061940001	Snohomish	Yes	Yes	7
53061940002	Snohomish	Yes	Yes	4
53029971700	Island	Yes	Yes	1

Appendix C. Expected Energy Benefits in Highly Impacted Communities

Census Tract	County Name	Cumulative 2025 EE (aMW)	Cumulative 2025 DR (PH aMW)
53061040100	Snohomish	0.14	0.03
53061040200	Snohomish	0.30	0.03
53061040500	Snohomish	0.05	0.02
53061040700	Snohomish	0.32	0.05
53061041202	Snohomish	0.12	0.03
53061041805	Snohomish	0.25	0.05
53061041904	Snohomish	0.14	0.03
53061051000	Snohomish	0.15	0.03
53061051803	Snohomish	0.09	0.03
53061052104	Snohomish	0.08	0.03
53061052803	Snohomish	0.29	0.05
53061052805	Snohomish	0.12	0.03
53061052903	Snohomish	0.16	0.04
53061052904	Snohomish	0.05	0.03
53061052905	Snohomish	0.10	0.03
53061053102	Snohomish	0.12	0.04
53061053202	Snohomish	0.09	0.04
53061053301	Snohomish	0.19	0.05
53061053302	Snohomish	0.11	0.06
53061053400	Snohomish	0.13	0.05
53061053508	Snohomish	0.10	0.02
53061053700	Snohomish	0.25	0.03
53061940001	Snohomish	0.39	0.07
53061940002	Snohomish	0.05	0.03
53029971700	Island	0.06	0.05
	System Total Cumulative 2025 Potential¹⁰	19.01 Annual aMW	5.12 PH¹¹ aMW
	Highly Impacted Community 2025 Potential	3.84 Annual aMW	0.94 PH aMW
	% in Highly Impacted Communities	20.19%	18.36%

¹⁰ Due to data techniques used to downscale system-level data to more granular geospatial levels, 4-year EE potential in the geospatial dataset is ~1.8% lower than the system level estimate used in other portions of the CEIP (19.35 aMW). 4-year DR potential is ~8.6% lower. This does not change the proportional estimate of potential.

¹¹ Peak Hour

Appendix D. Expected Energy Benefits in Distribution Constrained Areas

Station	Circuit	Cumulative 2025 EE (aMW)	2025 Cumulative DR (PH aMW)
Maplewood	343	0.09	0.03
Canyon Park	1095	0.02	0.02
Canyon Park	3488	0.11	0.01
Thrashers Corner	3471	0.12	0.00
Thrashers Corner	278	0.03	0.02
Thrashers Corner	3304	-	-
Thrashers Corner	3471	0.12	0.00
Thrashers Corner	277	0.06	0.02
Thrashers Corner	275	0.09	0.00
Thrashers Corner	276	0.03	0.02
Thrashers Corner	3473	0.06	0.00
Thrashers Corner	3474	0.10	0.00
Thrashers Corner	3472	0.06	0.02
Floral Hills	2063	0.05	0.04
North Creek	1413	0.08	0.02
York	5395	0.02	0.01
York	5394	0.03	0.02
Fitzgerald	5509	0.05	0.00
Fitzgerald	5511	0.04	0.00
Woods Creek	1809	0.05	0.02
Woods Creek	1810	0.09	0.02
Woods Creek	1808	0.05	0.03
Gold Bar	554	0.08	0.04
Gold Bar	555	0.03	0.01
West Monroe	632	0.09	0.02
West Monroe	3363	0.05	0.01
Gibson	2897	0.07	0.03
Glenwood	594	0.04	0.03
Everett	118	0.08	0.02
Everett	100	0.03	0.01
Everett	112	0.07	0.02
Lake Stevens	274	0.05	0.04
Lake Stevens	124	0.04	0.03
Frontier	535	0.07	0.03
Frontier	533	0.05	0.02

Hartford	3117	0.02	0.02
Hartford	3118	0.05	0.01
Hartford	3120	0.02	0.02
Hartford	3327	0.01	0.01
Hartford	3119	0.03	0.02
East Marysville	38	0.03	0.03
Three Lakes	1820	0.04	0.03
Tulalip	507	0.03	0.02
Quilceda	3178	0.05	0.03
Lake Goodwin	379	0.06	0.02
Lake Goodwin	382	0.02	0.01
Lake Goodwin	383	0.03	0.02
Stimson	3091	0.03	0.02
Sunset	5208	0.02	0.02
Sunset	5209	0.02	0.01
Sunset	5210	0.01	0.01
South Camano	1530	0.01	0.01
North Stanwood	999	0.07	0.03
North Stanwood	3204	0.07	0.03
Portage	3504	0.07	0.02
Eagle Creek	2618	0.02	0.02
Eagle Creek	2617	0.03	0.03
Eagle Creek	988	0.07	0.03
Eagle Creek	989	0.06	0.01
Eagle Creek	986	0.04	0.01
North Mountain	2514	0.04	0.03
North Mountain	2516	0.10	-
	System Total Cumulative 2025 Potential¹²	19.01 Annual aMW	5.12 PH¹³ aMW
	DCA 2025 Potential	3.15 Annual aMW	1.13 PH aMW
	% in Distribution Constrained Areas	16.56%	22.05%

¹² Due to data techniques used to downscale system-level data to more granular geospatial levels, 4-year EE potential in the geospatial dataset is ~1.8% lower than the system level estimate used in other portions of the CEIP (19.35 aMW). 4-year DR potential is ~8.6% lower. This does not change the proportional estimate of potential.

¹³ Peak Hour