

2021 CLEAN ENERGY IMPLEMENTATION PLAN

Public Utility District No. 1 of Cowlitz County

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Prepared by:



LIGHTHOUSE ENERGY
— CONSULTING —

with

Efficiency for Everyone

Introduction

Objectives

This report describes the development and results of a Clean Energy Implementation Plan (CEIP) prepared for and with the close collaboration of Public Utility District No. 1 of Cowlitz County (Cowlitz PUD) by Lighthouse Energy Consulting (Lighthouse) and Efficiency for Everyone. This is the first CEIP required under Washington’s new Clean Energy Transformation Act (CETA) and covers the first four-year interim compliance period beginning in 2022 and ending in 2025.

Background

CETA requires electric utilities to prepare a CEIP by January 1, 2022, and every four years thereafter. According to Washington RCW 19.405.060, the CEIP must:

- Propose interim targets for meeting CETA’s standards for greenhouse gas neutral electricity in 2030 and clean energy in 2045
- Identify specific targets for energy efficiency, demand response, and renewable energy
- Identify specific actions for meeting the interim targets and specific actions described above
- Ensure that all customers benefit from the transition to clean energy

Further requirements for the development of CEIPs are specified in Chapter 194-40 of the Washington Administrative Code. This report summarizes the CEIP prepared based on the requirements of the CETA.

Uncertainties

The recent rapid changes in economic conditions illustrate the uncertainties inherent in long-term utility planning. This CEIP uses the best available information at the time of its development. Nonetheless, it is still subject to remaining uncertainties and limitations. These uncertainties include, but are not limited to:

- Load Forecasts: This CEIP is based on a projection of future loads. These forecasts inherently include a significant level of uncertainty.
- BPA Contracts: Cowlitz PUD’s current contract with BPA expires in 2028. While this analysis assumes that Cowlitz PUD will have similar products available after 2028, this is not certain.

Due to these and other uncertainties and the continually changing planning environment, the CETA requires utilities to update their CEIP every four years to reflect the best available data.

Report Organization

The remainder of the report is organized into the following sections:

- **Utility Targets & Actions**: Describes the development of targets and actions for clean and renewable energy, energy efficiency, and demand response
- **Actions to Ensure an Equitable Transition**: Discusses the public process conducted, outcomes, and actions to ensure equity in Cowlitz PUD’s transition to clean energy

Utility Targets and Actions

While CETA has no targets for clean energy in the four-year interim compliance period covered by this CEIP, Lighthouse worked with Cowlitz PUD staff to project future loads and resources and compare them against CETA's upcoming 2030 requirements. Lighthouse and Cowlitz PUD also considered the requirements of Washington's Energy Independence Act (EIA), which Cowlitz PUD must also comply with.

2022 – 2030 Interim Loads and Resources on a Planning Basis

As shown in Figure 1 and Figure 2 below, Cowlitz PUD's long-term load forecast, based on its published 2020 Integrated Resource Plan (IRP), shows that its renewable and non-emitting generating resources, including both contracted and owned resources, are in excess of its load. Beginning in 2027, the PUD's power purchase agreement for the White Creek Wind expires and two years later, the Harvest Wind project reaches the end of its contract term. At that point, the PUD is still forecasted to be load-resource balanced under critical water conditions and expected load scenario.

Figure 1: Annual Base Case Load Scenario and Existing Resources in Critical Hydro Conditions

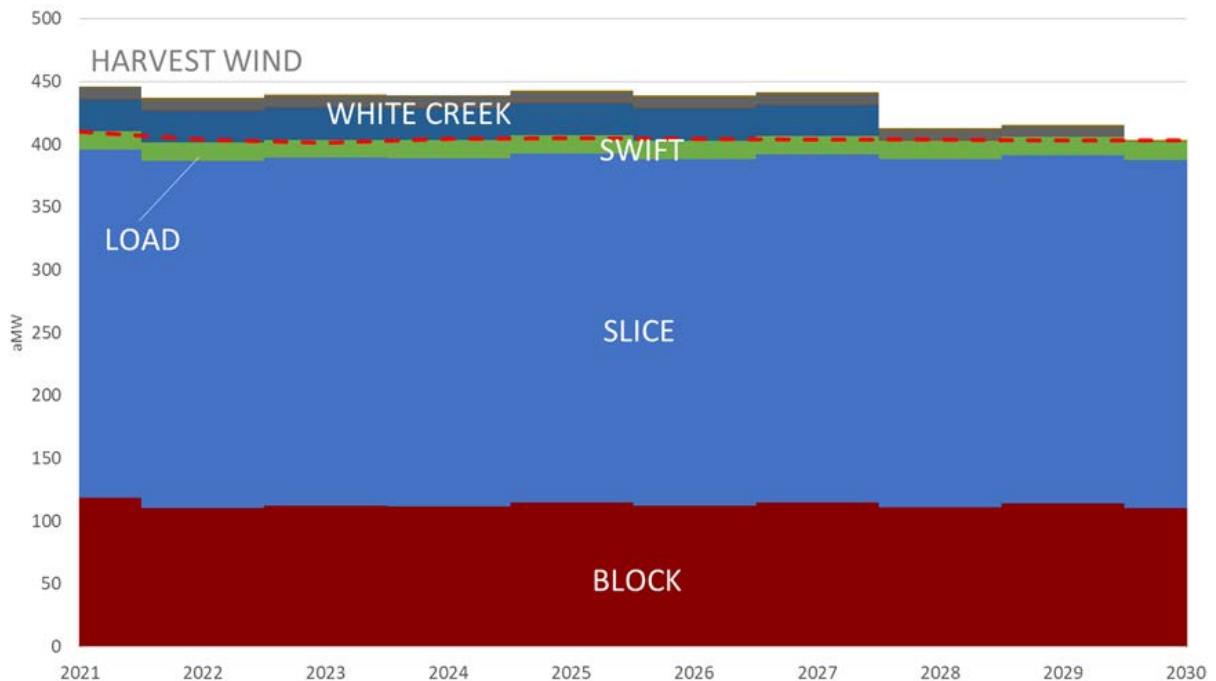
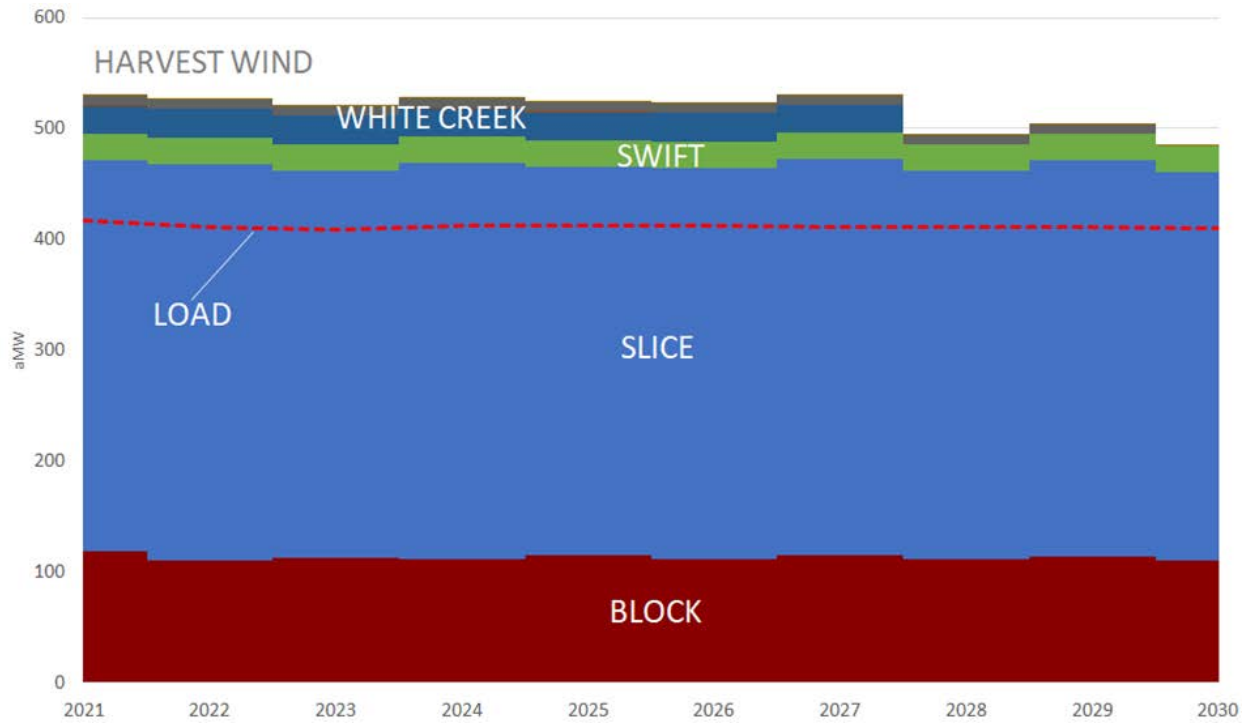


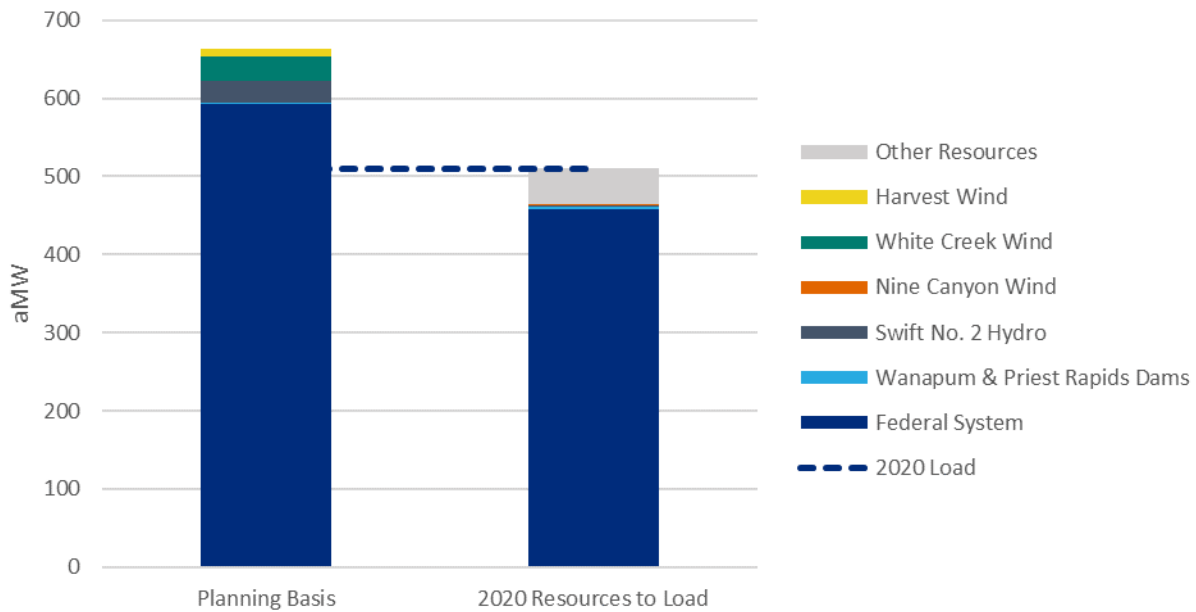
Figure 2: Annual Base Case Load Scenario and Existing Resources in Average Water Conditions



2022 – 2030 Interim Loads and Resources on a Historical Basis

Using historical data, Lighthouse conducted an analysis that looked at the generation data from the 2020 calendar year; instead of using average outputs or nameplate capacity for each facility, actual resources output was used. Lighthouse and Cowlitz chose 2020 as it was considered a typical year from a temperature and hydroelectric conditions standpoint. Lighthouse compared the generation data against forecasted loads based on Cowlitz PUD’s official 2021 load forecast, dated June 13, 2021. Based on this historical analysis, Cowlitz PUD’s load was served by 87% clean and non-emitting resources. Figure 3 compares Cowlitz PUD’s resources and loads. While, on a planning basis, Cowlitz PUD’s resources can supply more than enough energy, on an operational basis, Cowlitz PUD uses market purchases to optimize the economic performance of their resources for the benefit of Cowlitz PUD customers.

Figure 3: Cowlitz PUD Resources and Load



The sections below discuss each of Cowlitz PUD’s resources that were part of the analysis.

Federal System

Cowlitz PUD receives most of its power supply through the federal system, which includes the hydroelectric system, the Columbia Generating Station, and output from several wind power projects. Cowlitz PUD is a slice and block customer of BPA and therefore receives a fixed monthly block of guaranteed generation as well as a variable portion—or slice—of the federal system output. In 2020, the federal system provided Cowlitz PUD with nearly 459 aMW of power to deliver to customer loads. Lighthouse assumed that output from the federal system is approximately 96% clean and CETA compliant based on the average of BPA’s reported fuel mix from 2016-2019.

While Cowlitz PUD’s current contract with BPA expires in 2028, Lighthouse assumed that similar products will be available beyond 2028.

Swift No. 2 Hydroelectric Project

With a generation capacity of 73 MW, the Swift No. 2 Hydroelectric Project is located on the north fork of the Lewis River near Cougar, WA in Cowlitz County. The energy output of Swift No. 2 is 14.6 aMW in critical water conditions and 28 aMW in average hydrological conditions. During 2020 the Swift No. 2 resource provided Cowlitz PUD with nearly 3 aMW of generation to meet its retail load while 22 aMW were economically dispatched to the wholesale electricity market.

Wanapum & Priest Rapids Dams

These dams are facilities owned and operated by Grant County PUD on the Columbia River. In 2020, Cowlitz PUD received approximately 1.7 aMW from these facilities. Based on this reported production and Cowlitz PUD’s 2020 EIA Renewable Energy report, it was estimated that approximately 14% of the production from these facilities qualifies as renewable under the EIA.

Nine Canyon Wind

Cowlitz PUD purchases wind energy from the Nine Canyon Wind project, which is owned by Energy Northwest. In 2020, Cowlitz PUD received approximately 0.6 aMW of generation from this project which was used to meet loads within the District.

Other Renewable Resources

Cowlitz PUD purchases wind energy from the White Creek and Harvest Wind projects. Cowlitz PUD has contractual rights to a portion of the White Creek project's output, including all associated environmental attributes, through 2027. With a capacity factor of just over 30%, Cowlitz PUD can receive an average energy output of 31 aMW from the project. The Harvest Wind Project was developed and is owned by four Pacific Northwest utilities: Cowlitz PUD, Peninsula Light, Lakeview Light & Power, and Eugene Water and Electric Board. Cowlitz PUD has a 30% interest in the project, equating to 29.7 MW of generation capacity. Assuming a 30% capacity factor, Cowlitz PUD's average share of output is approximately 8.9 aMW of energy.

Other Resources

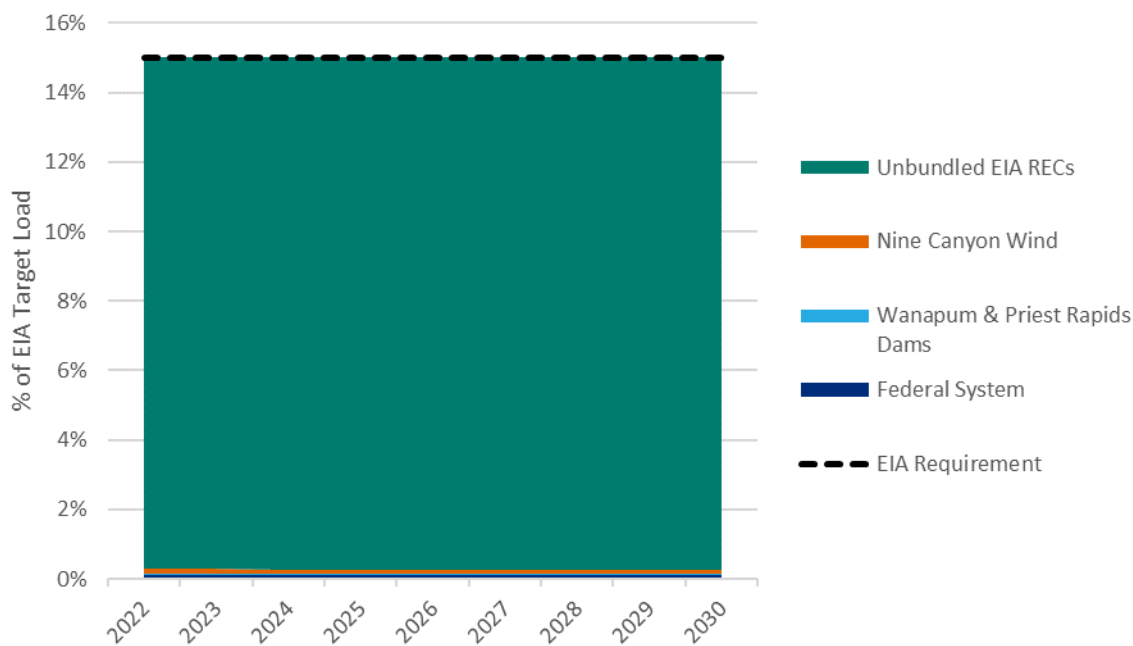
Any remaining load not served by the above resources was assumed to be served through market purchases from other resources.

EIA Compliance

The EIA currently requires Cowlitz PUD to supply 15% of its power from renewable resources. While CETA's 2030 requirement for 100% carbon neutral energy may effectively supersede this requirement, there are still some unresolved questions regarding the interaction between the EIA and CETA. To be conservative, Lighthouse has assumed that the requirements for EIA continue. Ultimately RECs or other renewable energy resources used for compliance with EIA requirements can be counted towards compliance with CETA's requirements.

Figure 4 shows the projected compliance with EIA requirements for renewable energy. While Cowlitz PUD receives small amounts of renewable energy from the federal system, the Wanapum & Priest Rapids Dams, and the Nine Canyon Wind project, the majority of Cowlitz PUD's compliance is achieved with unbundled Renewable Energy Credits (RECs). In the 2022-2025 interim compliance period covered by this CEIP, no further action is needed to comply with the requirements of the EIA.

Figure 4: Projected EIA Compliance



CETA Compliance

In 2030, CETA requires that all retail sales be greenhouse gas neutral, with at least 80% coming from clean (non-emitting or renewable) resources, while the remaining 20% can be made greenhouse gas neutral through several alternative compliance mechanisms, including the purchase of RECs.

Cowlitz PUD’s future compliance with respect to the 100% greenhouse gas neutral requirement is shown in Figure 5 below. This requirement begins in 2030 and ends after 2044. While Cowlitz PUD can purchase additional RECs beyond those purchased for EIA compliance in order to comply with the CETA requirement for 100% greenhouse gas neutral power, subject to a combined maximum of 20% of its load, based on these projections this may not be necessary. In addition, Cowlitz has renewable resources in excess of its load so, based on further CETA rulemaking outcomes, Cowlitz PUD may be able to reduce the RECs purchased for EIA compliance such that the total of its clean resources plus unbundled RECs purchased amount to 100% of its load.

Figure 5: Compliance with CETA Greenhouse Gas Neutral Requirement

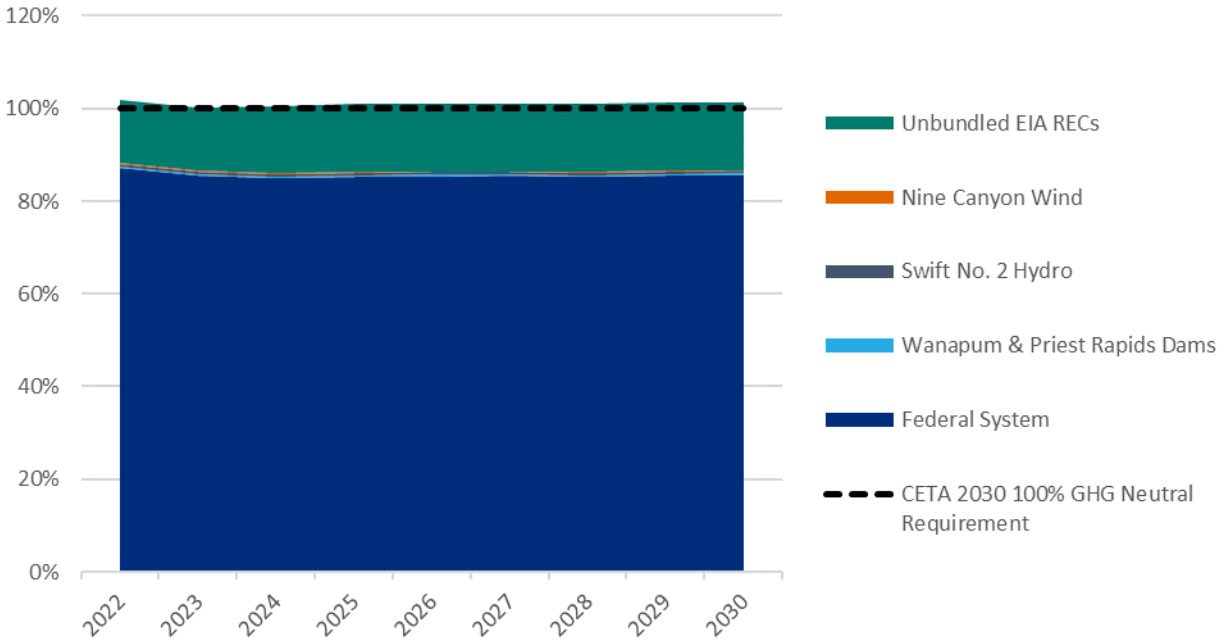
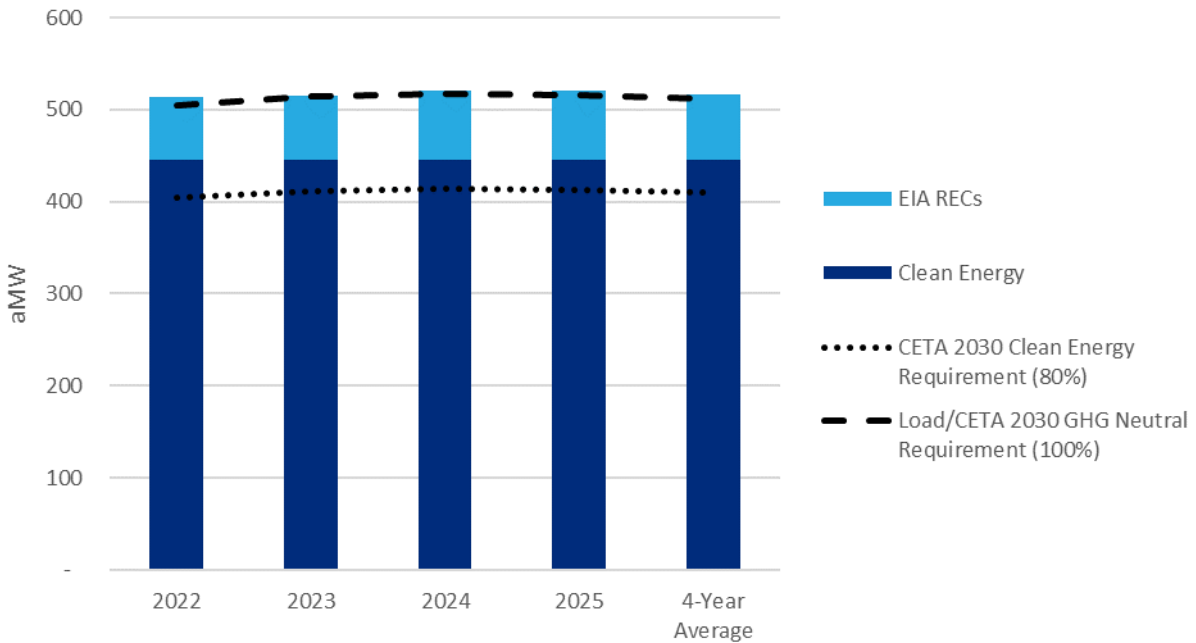


Figure 6 summarizes Cowlitz PUD’s current clean energy resources and REC purchases in comparison to CETA’s 2030 requirements for 80% clean energy and 100% carbon neutral energy. As can be seen, Cowlitz PUD is well positioned to meet these future requirements with its current resources.

Figure 6: Four-Year Compliance Summary



Based on these projections, Cowlitz PUD will serve approximately 87% of its retail load with renewable and non-emitting resources over the first four-year interim compliance period from 2022-2025.

2030 - 2045 Loads and Resources

Cowlitz's interim targets to meet the 2045 standard will be determined in a future CEIP after final rules are in place for compliance. For the 2030 to 2033 compliance period, if Cowlitz needs to utilize alternative compliance it will limit alternative compliance such as unbundled RECs to 20% or less of its four-year net retail load, in accordance with CETA. This proposal will be revisited once compliance rules are established for the 2030 to 2044 standard.

Renewable Energy

Based on the calculations above, Cowlitz PUD does not have a need to procure renewable energy for this interim compliance period. **Lighthouse estimates that Cowlitz PUD will use approximately 13,730,013 MWh of renewable energy¹ based on the expected output of Cowlitz PUD's resources and its federal system purchases during the compliance period 2022 - 2025.**

Energy Efficiency

In parallel with the development of this CEIP, Lighthouse completed a conservation potential assessment (CPA) for Cowlitz PUD. Based on this assessment, **a four-year energy efficiency target of 10.58 aMW, or 92,681 MWh was identified.** Based on discussions in the CETA rulemaking, this target can be updated when Cowlitz PUD completes its 2023 CPA.

Demand Response

Lighthouse also completed a demand response potential assessment (DRPA) for Cowlitz PUD. The assessment identified Cowlitz PUD's current industrial demand response programs as cost-effective, with residential smart thermostat demand response programs as marginally cost-effective.

For smart thermostats, Lighthouse recommends that Cowlitz PUD further investigate the costs and benefits of a smart thermostat program with its customers. Cowlitz PUD currently offers a smart thermostat incentive as part of its energy efficiency programs, so this program could be leveraged to build a flexible demand response resource. Cowlitz PUD could explore the following topics to further evaluate whether smart thermostats were a good fit for the District:

- Current customer adoption of smart thermostats
- Customer willingness to participate in summer & winter demand response programs at various incentive levels
- Costs to implement a demand response program

In the DRPA, Lighthouse used estimates of these values based on regional assumptions and projected future adoption of smart thermostats. With refined estimates, Cowlitz PUD could refine the estimate of cost effectiveness and proceed with a pilot program if warranted.

WAC 194-40-200(3)(b) requires CEIPs to include a target for DR resources *to be acquired* over the interim performance period. **Since Cowlitz PUD has already acquired the industrial demand response resources and will be further exploring whether to implement a smart thermostat DR program, a target of 0 MW is recommended for this compliance period.**

¹ This uses the CETA definition of renewable energy, which includes Cowlitz PUD's existing hydro resources as well as the hydro portion of its purchases from the federal system.

Resource Adequacy Standard

Cowlitz PUD's resource adequacy requirement is to acquire enough resources to exceed expected peak load. To ensure Cowlitz has enough resources to meet this objective, it adds a 12% planning reserve margin, as demonstrated in the 2020 IRP (pgs. 58-78). Cowlitz is confident it has sufficient resources through during this interim period to meet its load obligations.

Specific Actions

Based on the targets identified above, the following specific actions are recommended for Cowlitz PUD:

1. **Implement energy efficiency programs to meet identified target.** Cowlitz PUD should continue to implement energy efficiency programs, to meet the energy efficiency target identified for this CEIP. Pursuing cost-effective energy efficiency will help reduce the need for clean energy resources to comply with CETA's future clean energy standards.
2. **Investigate smart thermostat DR program.** Further investigating whether a smart thermostat program will help Cowlitz PUD determine if this program can be a cost-effective resource to help reduce peak demands and integrate renewable resources.

Consistency With Long-Term Plans

Cowlitz PUD completed an IRP in 2020, which included an eight-part Action Plan. The key themes of this Action Plan are summarized below, along with descriptions of how this CEIP is consistent with the Action Plan.

Market Purchases to Meet Capacity Deficits

The IRP identifies using market purchases to meet short-term capacity deficits. This CEIP assumes that strategy will continue, using RECs to comply with CETA's 2030 requirement for carbon neutral energy.

REC Purchases for EIA Compliance

The IRP identifies REC purchases as Cowlitz PUD's primary compliance option for the renewable portfolio standard in the EIA. This CEIP assumes that Cowlitz PUD will continue to purchase RECs for EIA compliance, which can be used to comply with CETA's requirement for carbon neutral energy beginning in 2030.

Cost-Effective Energy Efficiency

The IRP identifies the continued acquisition of energy efficiency as a critical component of Cowlitz PUD's resource portfolio. This CEIP includes new estimates of the cost-effective energy efficiency potential based on Cowlitz PUD's 2021 Conservation Potential Assessment and the Northwest Power and Conservation Council's (Council) draft 2021 Power Plan.

Demand Response

The 2020 IRP considered demand response based on the Council's Seventh Power Plan. This CEIP includes a demand response potential assessment based on the recently published draft 2021 Power Plan. Based on the new power plan, Lighthouse identified that Cowlitz PUD's current industrial contracts are a cost-effective demand response resource and residential smart thermostat demand response programs are also another potentially cost-effective resource worth further investigation.

Actions to Ensure an Equitable Transition

Energy equity refers to the distribution of costs and benefits of the utility system and the accessibility to affordable energy across customers in a region or utility service territory. Low-income households often pay a larger proportion of their incomes for energy than other customers and addressing their energy burden is beneficial for society as a whole.

CETA has requirements to ensure that the transition to clean energy is equitable. Specifically, CETA requires utilities to:

- Identify highly impacted communities within the utility service territory
- Identify vulnerable populations based on indicators developed through a public process
- Report on the forecasted distribution of energy and non-energy costs and benefits of the utility's specific actions (described above) using one or more indicators developed through a public process.
- Identify the expected effect of specific actions on highly impacted communities and vulnerable populations, including the location (if applicable)
- Describe how the utility intends to reduce risks to highly impacted communities and vulnerable populations

Each of these items is discussed below, including the public process Cowlitz PUD used where necessary.

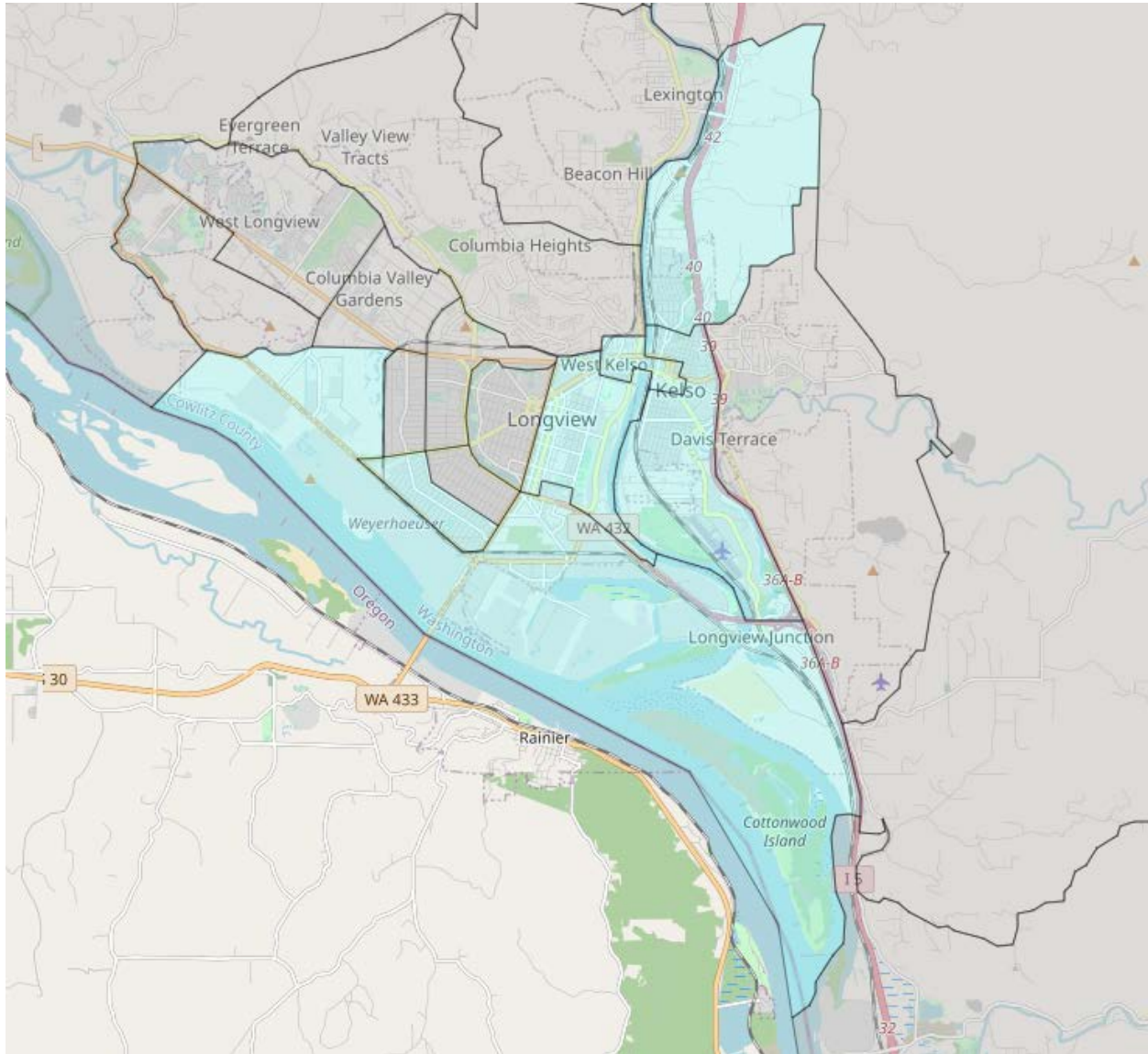
Highly Impacted Communities

CETA defines highly impacted communities as either:

- Geographic locations characterized by degraded air quality, whose residents face economic or historic barriers to participation in clean air decisions and solutions. For example, a predominantly low-income neighborhood or a neighborhood with a high population of people of color located near a major roadway would meet this definition.
- Communities located in census tracts that are at least partially on tribal lands.

There are 24 census tracts across Cowlitz PUD's service territory. Of these, six have been identified as highly impacted communities by Washington's Department of Health under the first criteria above. These census tracts are highlighted in light blue in the map below and fall primarily along major transportation corridors and industrial areas in and around Longview.

Figure 7: Cowlitz PUD Highly Impacted Communities



Public Process

In order to identify vulnerable populations, assess the risks to them during the clean energy transition, identify specific actions Cowlitz PUD could take to address those risks, and develop indicators to measure the distribution of costs and benefits of Cowlitz PUD’s planned actions for clean energy, Cowlitz PUD chose to engage directly with community organizations serving vulnerable populations in the service territory.

Cowlitz PUD chose this approach after considering other possible engagement strategies for several reasons. First, engaging with organizations rather than individual community members allowed for breadth (across different populations) and depth (detailed understanding of each population). There are several longstanding community organizations active in Cowlitz PUD’s service territory that were willing to participate in the engagement process through virtual (rather than in-person) meetings, and this approach was considered more feasible given current precautions around the COVID-19 pandemic. Finally, an emerging best practice for serving vulnerable populations involves working with trusted community

partners. Cowlitz PUD also invited public participation through its website, board meeting, and printed materials. While some people contacted Cowlitz PUD about the process and were provided information, none elected to participate.

Cowlitz PUD chose to engage with community organizations in two virtual meetings, each lasting approximately an hour and a half. The first meeting, held on July 27, 2021, was attended by four individuals from three different organizations. The second meeting, held on August 10, 2021, was attended by six individuals from four organizations. Four individuals attended both meetings.

The community organizations that Cowlitz PUD engaged with during its two input sessions were:

- Cowlitz Family Health Center
- Family Promise
- Longview Housing Authority
- Lower Columbia Community Action Program

Both meetings were structured to allow participants to share their expertise and knowledge on the topics specified in the CETA rulemaking. The first meeting included an overview of CETA's requirements as well as a focused discussion on identifying vulnerable populations in Cowlitz PUD territory and understanding their current priorities and challenges.

In the second meeting, Cowlitz PUD built on the discussion and learnings from the first engagement and presented a list of potential actions that Cowlitz PUD could take to address the priorities and risks identified in the first meeting. Participants discussed what would be required to make those actions successful and provided their sense of how to prioritize possible actions. The group also discussed potential indicators Cowlitz PUD could use to measure the distribution of costs and benefits associated with its planned specific actions (described above) in the clean energy transition.

After the meetings, Cowlitz PUD provided participants with notes from the meetings and invited participants to follow up by email with any further ideas or questions.

Identification of Vulnerable Populations

Vulnerable populations are those facing higher risks due to adverse socioeconomic factors, including unemployment, high housing and transportation costs, access to food and health care, and language barriers as well as sensitivity factors, such as low birth weight and higher rates of hospitalization.

CETA requires each utility to identify vulnerable populations based on these factors through a public process.

Through its engagement with community organizations, Cowlitz PUD identified multiple populations at risk during the clean energy transition. Community organizations used many identifiers to describe vulnerable populations including income, age, ability, language spoken, race/ethnicity, and home type (for example: those renting or living in manufactured homes). Based on this input, Cowlitz PUD has chosen to focus on the following vulnerable populations in the first CEIP interim compliance period:

- Seniors
- People with disabilities
- Renters

- Residents of manufactured homes
- Immigrants and people of color

The following table shows the factors and sources that will be used to identify the number of households in each of the above categories, whom Cowlitz PUD will target in efforts to reduce the risks that they face.

Targeted population	Factor & Source	Date last updated	Approximate number of households in service territory
Seniors Living Alone	WTN Census Data: Age 65+ and Living Alone	2021	~5,216 people
People with Disabilities	WTN Census Data: People with Disabilities	2021	~21,375 people
Renters	American Community Survey Data: Renter-occupied housing units	2021	~14,985 homes
Residents of Manufactured/ Mobile Homes	WTN Census Data: Mobile Homes	2021	~4,869 homes
Immigrants and People of Color	WTN OFM Data: People of Color	2021	~17,416 people

Identification of Indicators and Forecasting the Distribution of Costs and Benefits

CETA requires utilities to identify one or more indicators, developed through a public process, to forecast the distribution of costs and benefits of the utility specific actions—the utility’s planned actions on energy efficiency, demand response, and clean or renewable energy.

During the engagement with community organizations, Cowlitz PUD shared how its actions in this compliance period would primarily be in the areas of energy efficiency and demand response and proposed that the indicators best suited to measure the distribution of energy efficiency program costs and benefits would be **the distributions of program participation and program incentive dollars across its program participants**.

Representatives from the community organizations supported these suggested indicators.

While all Cowlitz PUD customers benefit from the acquisition of energy efficiency as a low-cost resource, benefits such as bill savings, program incentives, and home improvements often go only to those who can afford the cost of purchasing energy efficient equipment. Cowlitz PUD's planned actions to reduce risks to these populations (discussed in the next section below) will help the highly impacted community members and vulnerable populations receive more of these benefits.

If the smart thermostat DR program is validated as cost-effective and implemented, it may provide an opportunity for highly impacted communities and vulnerable populations to participate in energy programs that are traditionally unavailable to them due to the capital investments required.

Actions to Reduce Risks

In the discussion with community organizations, Cowlitz PUD noted that the risks to highly impacted communities and vulnerable populations centered on three primary categories of risks:

- Education – This includes awareness of energy and energy efficiency literacy topics, including how to best operate equipment to minimize energy usage and understanding the importance of preventative maintenance for equipment. Community organizations also discussed how language barriers may limit awareness of and participation in some programs.
- Renter/Landlord Split Incentive – This category of risks stems from the difference in motivations between landlords, who own the property and seek to minimize capital costs, and renters, who typically pay the utility bill but do not own much of the energy-consuming equipment.
- Program Requirements and Income Limits – Community organizations noted that seniors or others may need assistance but may be unaware that they qualify or may be just beyond the limits of established programs.

Based on this input, Cowlitz PUD identified the following strategies to reduce the risks to highly impacted communities and vulnerable populations in its service territory, some of which it has already begun to implement.

Expand energy education. For many years, Cowlitz PUD has participated in the Spring Home & Garden Show held at the Longview Event Center. In addition, Cowlitz PUD has offered presentations about residential energy efficiency and the various programs available to groups including senior and homeowner associations as well as mobile home communities. Cowlitz PUD plans to broaden these efforts to increase awareness of energy efficiency opportunities among a more diverse audience by expanding their outreach to family health centers, property management company staff, and local multicultural centers. Cowlitz will conduct an annual presentation to these stakeholders with specifically tailored content.

Expand energy efficiency program communications. Cowlitz PUD currently advertises its residential energy efficiency programs through several channels, including the Cowlitz PUD website, monthly newsletters, radio programs, social media, and local advertisements. Beginning in 2022, Cowlitz PUD will offer translated print and website materials with the hope of reaching a broader audience.

Low-Interest Loans. Beginning 2021, Cowlitz PUD has partnered with a local Fibre Federal Credit Union to offer a low-interest loan to make energy efficiency improvements more accessible and affordable. In the program, rebates for completed projects can be applied to reduce interest rates to zero in most cases.

Expand Senior and Disability Discount Rate (SDDR) Program. Cowlitz PUD has run the SDDR program for more than 15 years with more than 1,000 customers receiving the discount. Cowlitz PUD has recently begun accepting applications for the program year-round, instead of only four months of the year. Since this change, 34 new customers have been approved and 28 additional customers are pending approval. Cowlitz PUD plans to further increase awareness and enrollments in this program by advertising it in public events and translating program materials to additional languages. Cowlitz PUD will also re-evaluate the program requirements to identify if eligibility can be expanded.