2022

Franklin Public Utility District No. 1 Clean Energy Implementation Plan

Norm Rummel - Power Management

Franklin PUD

1/1/2022

Table of Contents

Contents

Table of Contents 1
List of Figures and Tables 1
Executive Summary 2
Energy Efficiency 3
Demand Response 6
Renewable Energy 9
Bonneville Power Administration 10
Packwood Hydroelectric Project 11
Nine Canyon Wind Project 11
White Creek Wind Project 11
Esquatzel Canal Hydroelectric Project 12
Community Solar Projects 12
Targets 13
Equitable Transition 14
Resource Adequacy 16

List of Figures and Tables

Figure 1 - Clean Energy Transformation Act Steps towards 2045 2
Figure 2 - Conservation Potential Assessment Process 4
Figure 3 - Recent Conservation History by Sector 5
Figure 4 - Cost Effective Potential 5
Figure 5 - Seventh Northwest Power Plan's Estimated Cost of Demand Response 6
Figure 6 - Annual Loads and Existing Resources in Average Water Conditions 9
Figure 7 - Annual Loads and Existing Resources in Critical Water Conditions 10
Figure 8 - REC Net Position 13
Figure 9 - Scale Designation of Impacted Communities 14
Figure 10 - Franklin PUD's Designated Highly Impacted Communities 14
Figure 11 - Threat x Vulnerability = Risk 15
Figure 12 - Generation Portfolios in 2030 17
Figure 13 - NWPP RA Timeline as of April 24, 2020 18

Executive Summary

This is Franklin County Public Utility District No. 1's (District) first Clean Energy Implementation Plan (CEIP) as required under Washington's new Clean Energy Transformation Act (CETA) and identifies specific actions planned during the next interim performance period or greenhouse gas (GHG) neutral compliance period and demonstrates intended progress towards meeting set standards as outlined in applicable Revised Codes of Washington (RCW).

Governor Jay Inslee signed CETA into law in 2019, which commits Washington State to an electricity supply free of greenhouse gas emissions by 2045.

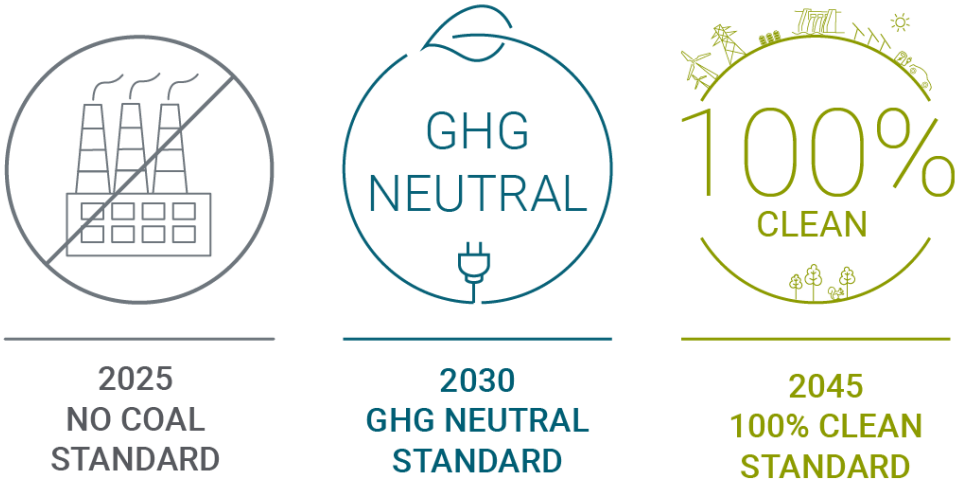

Figure 1 - Clean Energy Transformation Act Steps towards 2045

The 2025 goal of zero coal standard is low impact to the District, this plan outlines continuing efforts to seek out and add non-GHG emitting sources of renewable energy. Renewable resources under CETA and include hydro, wind, solar, geothermal, renewable natural gas or hydrogen, or biomass. Non-emitting resource are non-renewable resources that do not produce GHG emissions during generation, which includes nuclear generating resources.

This draft will also show progress towards meeting the requirements for CETA but also identify specific targets or metrics in the areas of **Energy Efficiency, Demand Response, Renewable Energy, Equitable Transition, and Resource Adequacy.**

Energy Efficiency

The characterization of efficiency measures includes measure savings, costs, and lifetime. Other features, such as measure load shape, operation and maintenance costs, and non-energy benefits are also important for measure definition. The Northwest Power and Conservation Council's (Council) Seventh Power Plan is the primary source for conservation measure data. Where appropriate, the Council's Seventh Plan supply curve workbooks have been updated to include any subsequent updates from the Regional Technical Forum (RTF). New measures reviewed by the RTF were also added to the model. Finally, the Council's draft 2021 Power Plan conservation supply curves were sourced for additional measures.

In recent years, annual retail sales have slowed but continue on an upward trajectory. Reasons for this shift in consumption patterns include implementation of energy efficiency measures by consumers such as lighting that is more efficient, heating and cooling, a shifting from an economy driven by industrial production to a service-based economy, and an increase in demand-side technologies such as rooftop solar panels that reduce metered load and increase consumers' independence from the traditional utility model. Since the 2008 recession, the District's load growth slowed to 1.1% on average per year. Further improvements in energy efficiency measures are expected to lead to further declines in per capital energy consumption, thus further slowing the District's load growth rate in the future.

The basic methodology used for this assessment is illustrated in Figure 2. A key factor is the kilowatt hours saved annually from the installation of an individual energy efficiency measure. The savings from each measure is multiplied by the total number of measures that could be installed over the life of the program. Savings from each individual measure are then aggregated to produce the total potential.

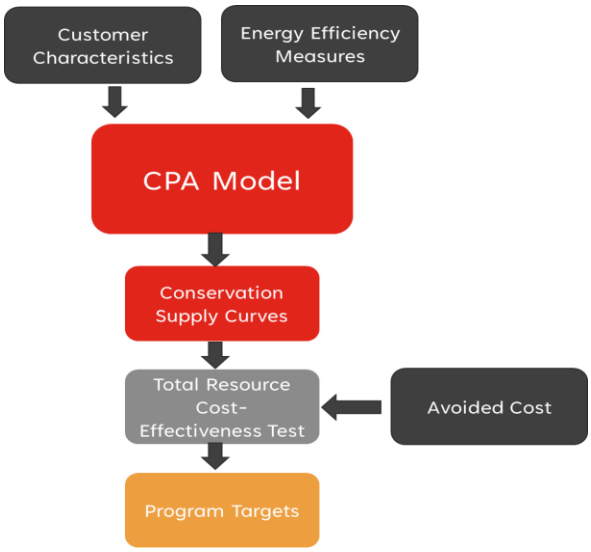

Figure 2 - Conservation Potential Assessment Process

The District has pursued conservation and energy efficiency resources for many years. Currently, the utility offers a variety of programs for residential, commercial, industrial and agricultural customers. These include residential weatherization, Energy Star® appliance rebates, new construction programs for commercial customers, and energy-efficiency audits. In addition to utility programs, The District receives credit for market-transformation activities that are accomplished by the Northwest Energy Efficiency Alliance (NEEA) in its service territory.

Figure 3 shows the distribution of conservation among the District's customer sectors and through Northwest Energy Efficiency Alliance (NEEA) efforts over the past five years. NEEA's work helps bring energy efficient emerging technologies, like ductless heat pumps and heat pump water heaters to the Northwest markets. Note that savings achievement for 2020 were lower than historic achievements primarily due to the COVID-19 pandemic. Economic factors and risk for COVID-19 transmission both likely contributed to fewer measures being implemented in the District's service area. More detail for these savings is provided below for each sector.

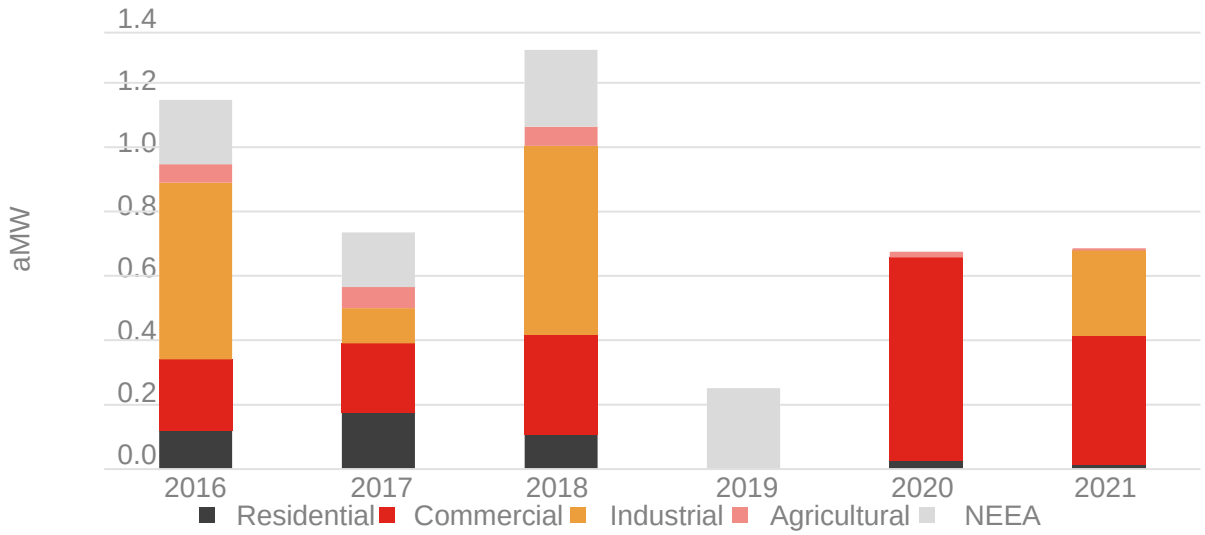

Figure 3 - Recent Conservation History by Sector

The District plans to continue to invest in energy efficiency by offering incentives to all sectors. The results of this Conservation Potential Assessment (CPA) will help the District program managers to structure energy efficiency program offerings, establish appropriate incentive levels, comply with the EIA and CETA requirements, and maintain customer service.

Cost Effective Potential (aMW)				
	2-Year*	**6-Year**	**10-Year**	**20-Year**
Residential	0.38	1.30	2.31	4.01
Commercial	0.58	2.22	4.24	6.99
Industrial	0.60	2.33	4.39	5.81
Agricultural	0.08	0.22	0.28	0.28
Distribution Efficiency	0.02	0.12	0.28	0.78
Total	**1.67**	**6.19**	**11.49**	**17.88**

**2020 and 2021*

Note: Numbers in this table and others throughout the report may not add to total due to rounding.

Figure 4 - Cost Effective Potential

As seen in Figure 4 above, the economically achievable potential by sector in 2, 6, 10, and 20-year increments is included. The total 20-year energy efficiency potential is

17.88 aMW. The most important numbers per the EIA are the 10-year potential of 11.49 aMW, and the two-year potential of 1.67 aMW.

These estimates include energy efficiency that can be achieved through the District's utility programs and through the District's share of the Northwest Energy Efficiency Alliance (NEEA) accomplishments. Some code and standard changes may also account for part of the potential, especially in the later years. In some cases, the savings from those changes will be quantified by NEEA or through BPA's Momentum Savings work.

Demand Response

Demand Response (DR) is best suited for meeting the hourly peak load deficit. In the Northwest Power and Conservation Council's 7th Power Plan, DR was thoroughly reviewed and determined to be a cost- effective resource to meet peak load. The Power Council's 7th Plan determined the results for various DR programs as outlined in Figure 5. Since actual program implementation costs are unknown, it is assumed that DR could be implemented at the District for costs as displayed in Figure 5.

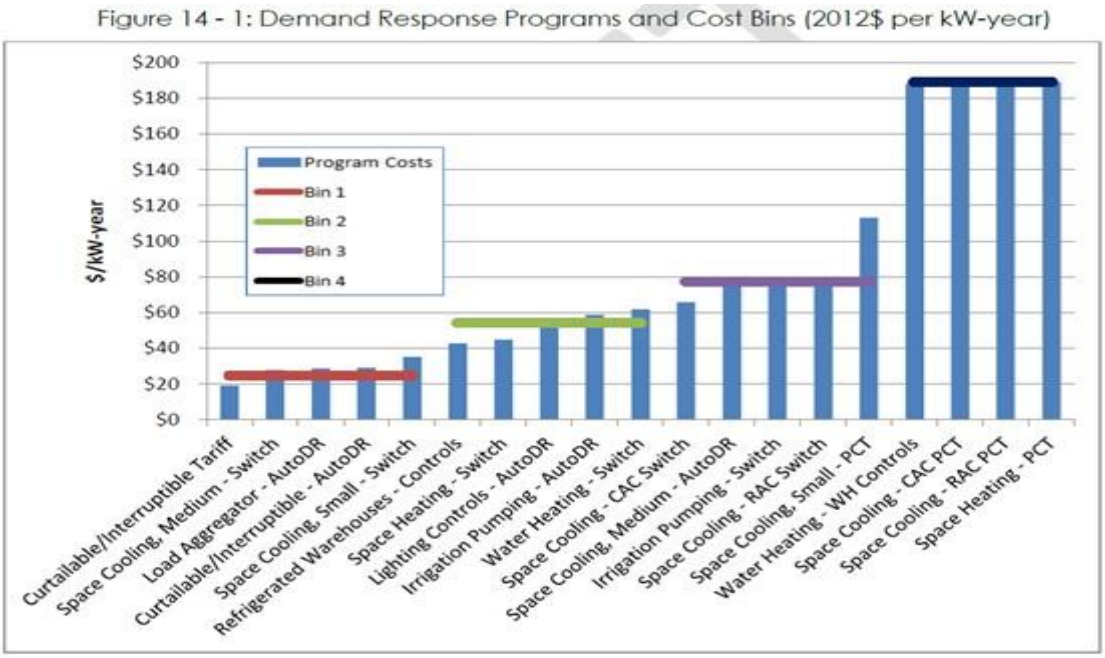

Figure 5 - Seventh Northwest Power Plan's Estimated Cost of Demand Response

The District's IRP defines the District's need for new resources and investigates different generic resource types with an objective of presenting both quantitative and qualitative analysis of the benefits of pursuing different resource technologies to fulfill the District's load and RPS requirements. The District's action plan addresses both resource acquisitions and power supply related issues that will require additional investigation outside of the IRP process.

1. The preferred portfolio to meet energy and Renewable Energy Credit (REC) requirements is to continue to make purchases from the market in the short-to-intermediate term. The District will continue to monitor market conditions to track any significant changes in regional resource sufficiency.
    a. Energy requirements should continue to be met using the 3-year purchase/sale window used by the RMC.
    b. RPS requirements will be met by executing new REC purchase contracts once deficits begin to appear. The District can bank RECs for future use, however, this study does not forecast when the REC bank will be exhausted.
    c. The District will investigate alternative approaches for risk simulation analysis to account for peak loads and capacity needs consistent with the requirements of the NWPP regional RA initiative.
    d. The District will analyze the impacts of the California Independent System Operator's (CAISO) proposed Enhanced Day Ahead Market (EDAM) on the recommendation to use the market as the preferred portfolio to meet energy needs.
    e. If significant new industrial load (greater than 10 MW) commits to the District's service territory, prepare a report that analyzes the impacts on energy purchases and transmission infrastructure.
2. Assuming more will be known about the post 2028 BPA product offering, budget for and prepare a study in 2021 that examines:
    a. Scenarios of BPA supply of energy, capacity, and non-emitting attributes.
    b. Include various changes in the BPA resource, BPA augmentation, and regional loads placing Net Requirements on BPA.

3. The District will continue to monitor the regulatory environment and modify its resource strategy as necessary.
    a. The District will closely monitor CETA rulemaking for impacts to this action plan.
4. The IRP continues to identify the District's summer/winter capacity deficits as an item to closely monitor as the region's coal plants are retired.
    a. Actively monitor the NWPP RA program development.
    b. Develop a white paper that describes a process for determining a Levelized Cost of Capacity for use in the 2022 IRP process.
    c. Monitor the Council's Loss of Load Probabilities (LOLP) studies and consider longer term resource acquisition for future periods:
        i. Monitor the cost and availability of regional developments of pumped hydro storage, solar plus storage, and standalone battery storage.
        ii. Explore how to and consider developing a demand response potential assessment and supply curves that could be implemented in synergy with the District's smart meters as a potential resource for meeting hourly peak loads.
5. Implement all cost-effective conservation consistent with the requirements and any future amendments of the EIA. This number was 11.49 aMW over 10 years in the November 2019 Conservation Potential Assessment but will continue to evolve as better information becomes available.
6. The District will continue to monitor energy economic fundamentals to ensure that its resource strategy provides ratepayers with low cost energy with a low level of risk. Major changes to price and volatility of wholesale electricity, natural gas, and RECs may require changes to the District's plan.
7. The District will continue to take steps to ensure compliance in the 2030-2044 period as well as the 2045 period consistent with prudent utility planning practices. This will include procuring reliable and environmentally compliant assets as the future need arises evaluated in light of the District's relationship with BPA.

Renewable Energy

Figure 6 shows the District's long-term load forecast under the expected load scenario to the District's projected BPA High Water Mark (HWM) plus already contracted for resources.

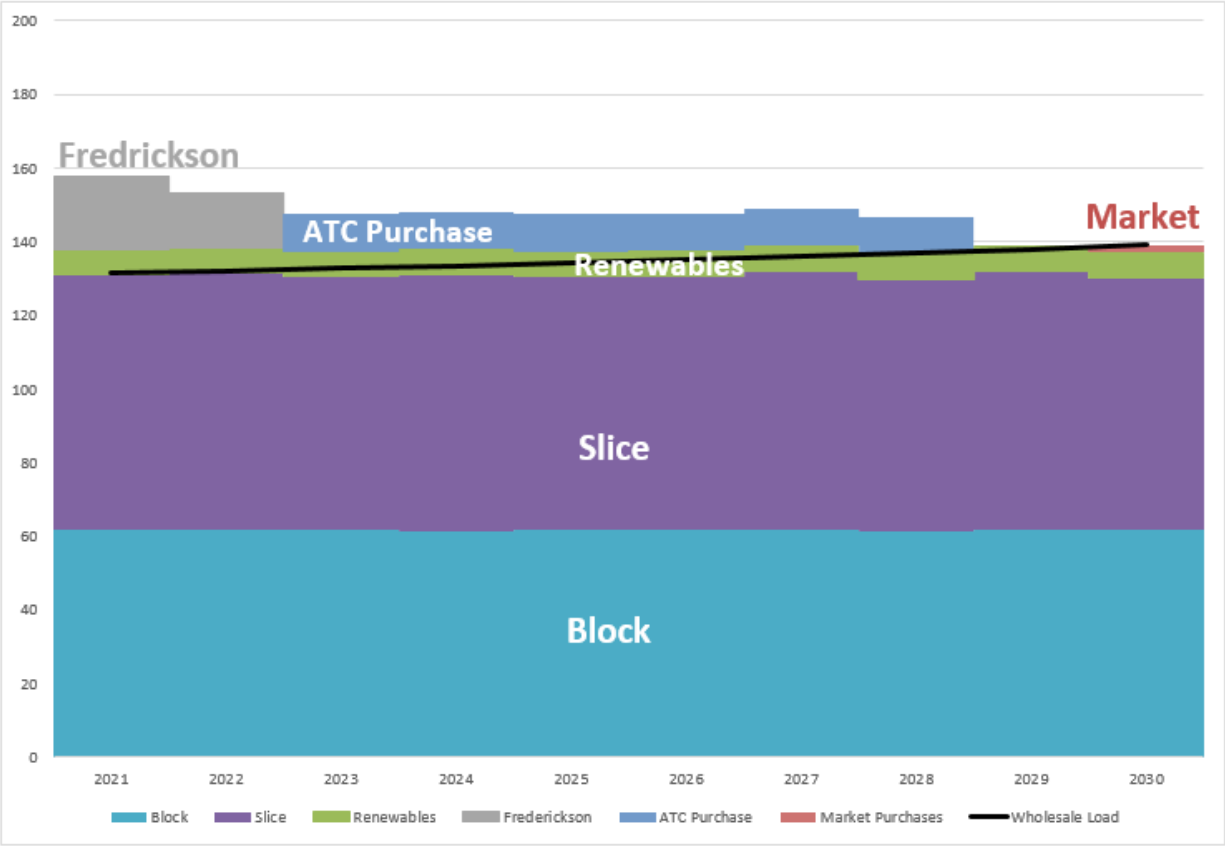

Figure 6 - Annual Loads and Existing Resources in Average Water Conditions

Under critical water conditions, the District is short starting in 2024. This deficit will be managed through market purchases and potential additional resources. Critical water years are a black swan event and the district is in energy surplus through 2029 during an average water year show in Figure 7.

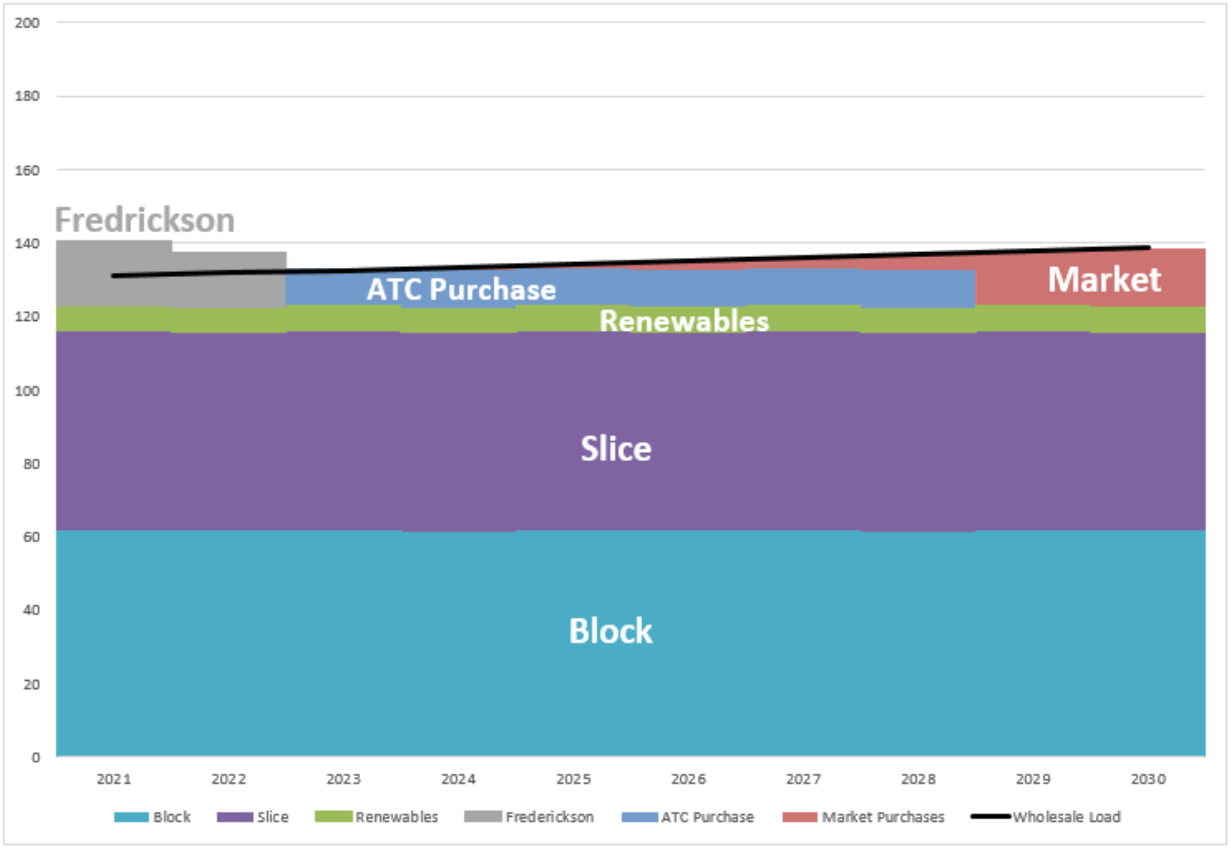

Figure 7 - Annual Loads and Existing Resources in Critical Water Conditions

Bonneville Power Administration

A majority of the District's power is supplied from the Federal Columbia River Power System (FCRPS) within the Northwest Power Pool, the Columbia Generating Station, and output from wind farms. the District is a slice and block customer of BPA ad therefore receives a fixed monthly block of guaranteed generation in addition to a variable allotment (Slice) of the federal output system. The Slice portion is an allocated amount of power the District based on available generation with water conditions, fish migration and spawning, migratory bird considerations, and flood control the District's share of output is about 132 aMW in an average water year, but can vary substantially depending on hydrological conditions. This source of power is assumed to be 96% clean and CETA compliant based on BPA's fuel mix report from 2016-2019.

the District's current contract with BPA end in 2028 with the expectation that similar products will be offered in the new contracts beyond 2028.

Packwood Hydroelectric Project

The Packwood Lake Hydroelectric Project has a generation capacity of 27.5 MW, a firm output of 7 aMW, and an average output of approximately 10 aMW. It is owned and operated by Energy Northwest, but 12 Washington PUDs are participants in the project with "ownership-like" rights. It is located 5 miles east of Packwood, Washington in Gifford Pinchot National Forest. the District receives a 10.5% share of the output from the project, .7 aMW under critical water conditions, and approximately 1.3 aMW under average water. The project does not qualify as a renewable resource and will not help the District meet its obligations under the EIA.

Nine Canyon Wind Project

The Nine Canyon Wind Project is an Energy Northwest-owned wind generation resource situated on dryland wheat farms approximately eight miles southeast of Kennewick in the Horse Heaven Hills. Phase I of the project consists of 37 wind turbines, with a total capacity of 48 MW. Phase II consists of an additional 12 wind turbines, totaling 15.6 MW of capacity. Phase III consists of 14 wind turbines with a total capacity of 32 MW. The aggregate capacity of the Project is 95.6 MW.

The District entered into a power purchase agreement with Energy Northwest for 10.5 percent of the generation capacity of the project, including the environmental attributes it produces, that extends through June 2030, and the IRP assumes this contract will extend through the study period. These attributes will help the District fulfill its EIA renewable requirements. Nine Canyon has an expected capacity factor of 30 percent, also equating to an average energy output of 3 aMW.

White Creek Wind Project

Located just northwest of Roosevelt, WA in Klickitat County, the White Creek Wind Project consists of 89 turbines, each with 2.3 MW of capacity, with a combined capacity

of 205 MW. It came online and began generating electricity in November 2007. White Creek provides renewable energy and environmental attributes that will help the District meet its Energy independence Act (EIA) renewable requirements. The District has contractual rights to a portion of the project's output, including all associated environmental attributes, through 2027. With a capacity factor of around 30 percent, the District receives an average energy output of 3 aMW from the project.

Esquatzel Canal Hydroelectric Project

The Esquatzel Canal, which discharges into the Columbia River, is located about 5 miles north of Pasco, in Franklin County. In 2011, Green Energy Today, LLC installed a hydroelectric generation turbine at the confluence of the canal and the Columbia River to capture the kinetic energy of the flowing water and convert it into electricity. the District purchased all of the rights to the power and environmental attributes generated by the 0.9 MW Esquatzel Canal Hydroelectric Project through 2031, and has an option to extend the contract. The IRP therefore assumes that Esquatzel will remain as a resource through the study period. The project generates power year-round – producing roughly 6,000 MWh of power annually. Esquatzel Canal Hydroelectic Project qualifies as a small integrated resource and is eligible for double REC's under Washington State's I-937 legislation.

Community Solar Projects

Community solar gives customers the opportunity to come together and share in the cost of building a solar electric project that has an approximate capacity of 69kW. Customers who voluntarily purchase "blocks" of the system fund the cost of the project. With community solar, you do not have to worry about the site, materials, or maintenance of the system. The District's project is a solar carport located in the parking lot of the District's administration building. The structure will hold 252 solar panels consisting of 1,725 block. Customers were able to purchase between one (1) and seventy-five (75) of the project's 1,725 blocks. A block is equal to approximately 40 watts of generating capacity or 14% of a panel. This helps provide an alternative for

customers who cannot install individually owned (rooftop) systems at their residence or business.

Targets

The EIA requires the District to supply the following amounts of its load requirements with renewable resources: 3 percent by 2021, 9 percent by 2025, and 15 percent by 2029. The EIA also requires the IRP process to develop a plan for acquiring renewable resources and all cost-effective conservation. The District's RPS requirements and resources to meet those requirements are depicted in Figure 8 below. Risk Analysis and Portfolio Selection, the District will continue to rely on purchases from the market when REC deficits begin, which will occur sometime after 2025 after banked RECs are exhausted.

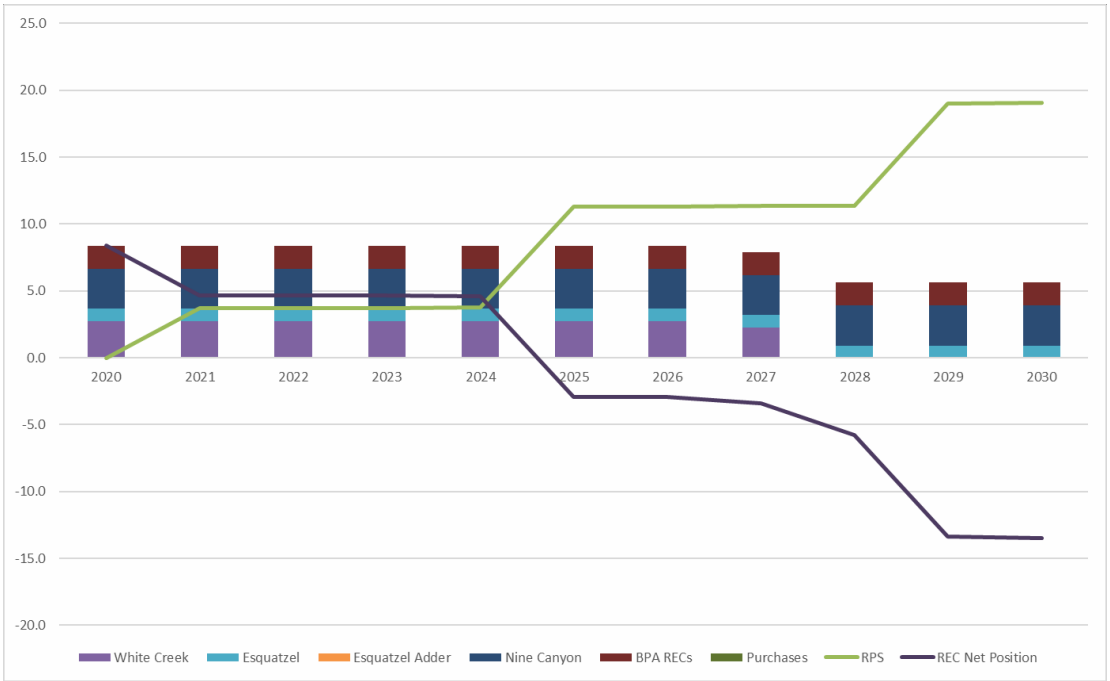

Figure 8 - REC Net Position

Equitable Transition

The Department of Health designates as a highly impacted community any census tract with a 9 or 10 overall rank on the Environmental Health Disparities (EHD) map, or any census tract with tribal lands.

Figure 9 - Scale Designation of Impacted Communities

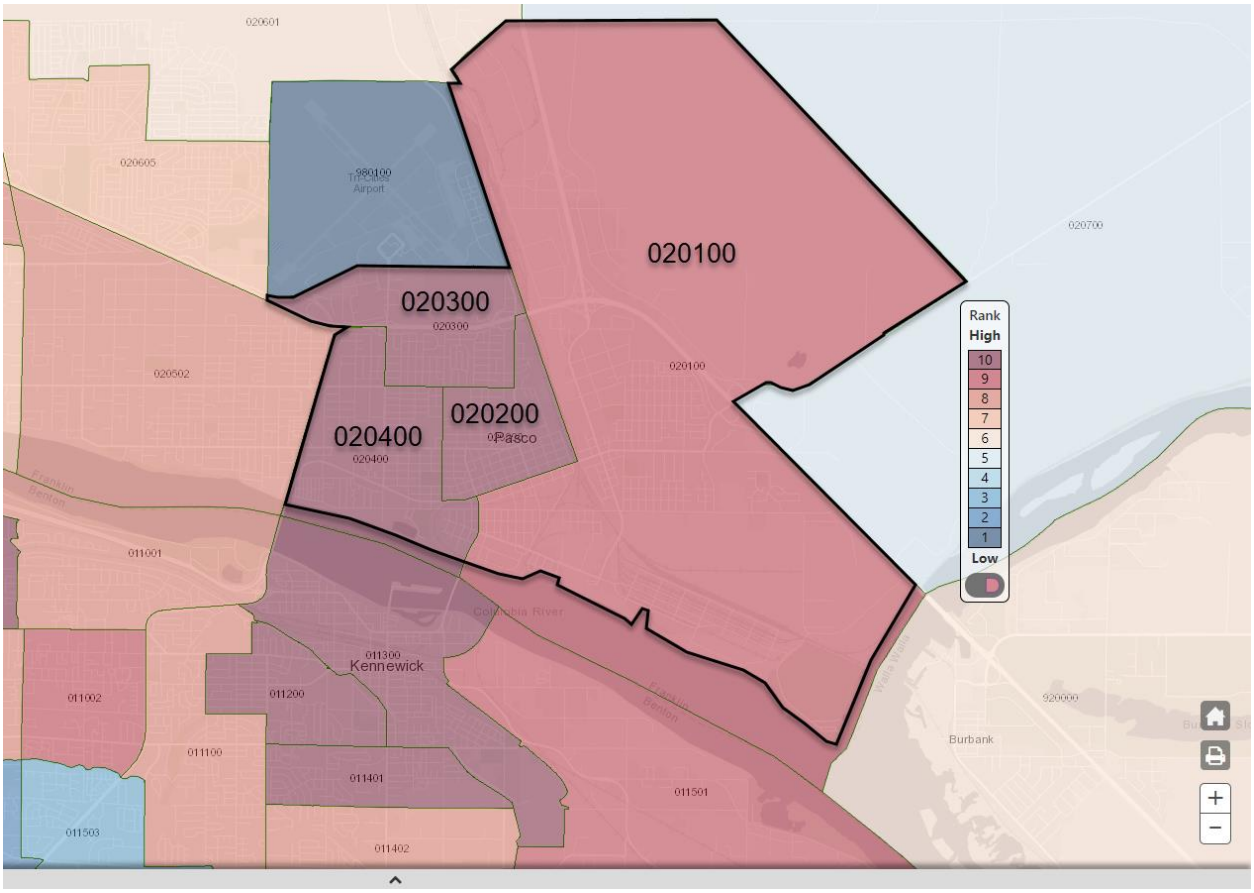

Figure 10 - Franklin PUD's Designated Highly Impacted Communities

The EHD map, as seen in Figures 9 and 10, ranks the risks communities face from environmental burdens including fossil fuel pollution and vulnerability to climate change impacts that contribute to health inequities. It is a well-known vulnerability index for environmental health disparities, and is being used by other state processes to guide funding to reduce environmental health disparities.

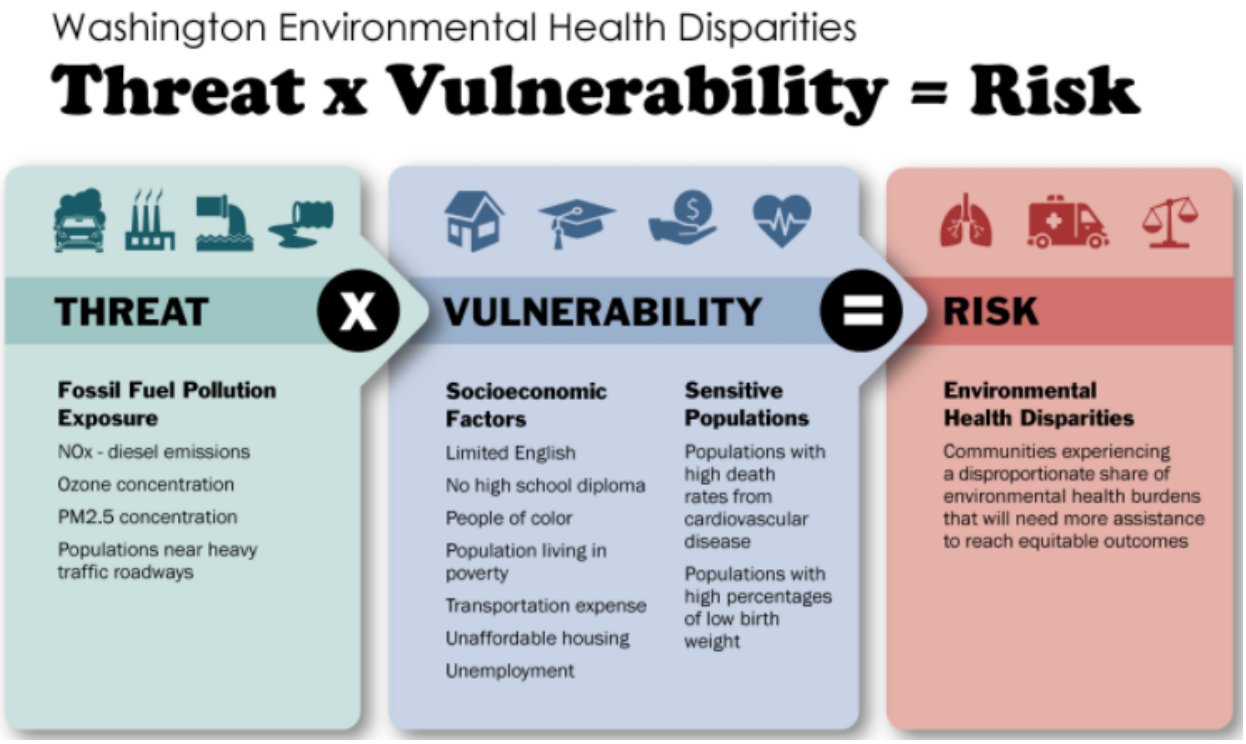

Figure 11 - Threat x Vulnerability = Risk

Source: Clean Energy Transformation Act - Cumulative Impact Analysis :: Washington State Department of Health

The EHD map is based on a conceptual formula of Risk = Threat x Vulnerability as seen in Figure 11. Threat is comprised of both environmental effects and exposures, and vulnerability is comprised of socioeconomic factors and sensitive populations.

Fossil fuel pollution in Washington is primarily from several air pollutants, particularly particulates, ozone, and nitrogen oxides. Current exposures for these pollutants and populations living near roadways (a major location of exposure) are captured in the EHD map.

Not every measure included in the EHD map is directly related to fossil fuel pollution or climate change effects. The EHD map was developed with considerable input from community organizations and validated through a literature review and statistical analysis by the University of Washington. Changing the composition of the measures would compromise the validity of the statistical analysis, and literature review and the expertise added by the lived experience contributions provided through community engagement. Climate change measures are not currently included in the overall rankings in the EHD map. However, the map still represents communities that are highly vulnerable to future climate change impacts, because current population vulnerability correlates with the health impacts for most climate hazards.

The equity attribute refers to measures that require additional incentive to achieve equitable distribution of benefits. The District defines these measures as the following:

1. Historic and long-term cost-effectiveness
2. Significant regional penetration from past program activity
3. Data demonstrating that untouched pockets are not reflective of the population (i.e. different socioeconomic status)

Equity measures are likely to be envelope measures in residential buildings. These can be high-cost to homeowners or there may be a renter/landlord issue. By definition, the equity component identifies measures that are cost-effective, and have been cost-effective for a period of time.

Resource Adequacy

The Public Generating Pool (“PGP”) commissioned E3 Consulting (“E3”), a well-respected firm with experience performing regional resource adequacy3, to analyze different scenarios of resource adequacy into the future. As part of the analysis, the additional generation for growth and replacement for the retiring coal units came primarily from natural gas resources. With the Clean Energy Transformation act significantly truncating the useful lives of new natural gas resources, reliability will

continue to be an issue of concern as dispatchable capacity from thermal plants is retired.

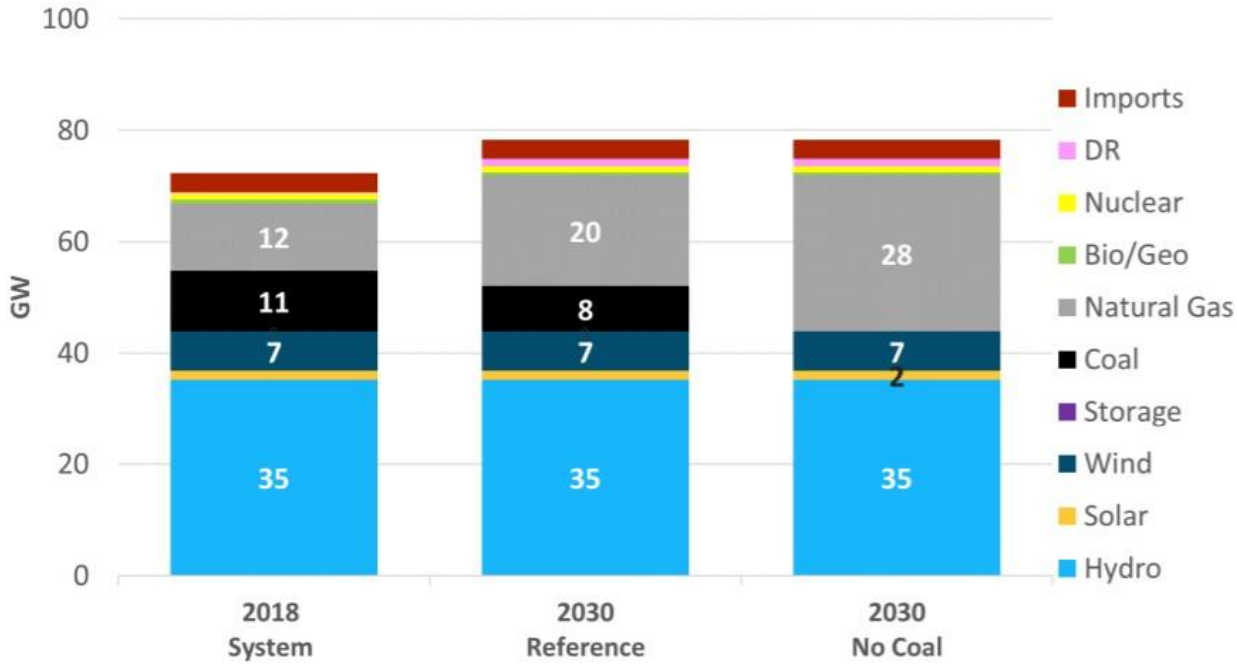

Figure 12 - Generation Portfolios in 2030

In response, the Northwest Power Pool has formed a collective of utilities working toward a voluntary Resource Adequacy program intended to ensure reliability can be maintained into the future. While much of the plan is in the early phases and design will continue beyond the submission of this IRP, a framework is being constructed in the first half of 2020. The group has sought out a program developer “with proven expertise in design and implementation of multi-state RA programs to assist with areas of technical and operational complexity and commissioned E3 to perform the supporting analysis surrounding the initiative. Figure 13 below outlines the expected program design timeline.

Figure 13 - NWPP RA Timeline as of April 24, 2020

The program is expected to be organized into two time horizons. The first will be a forward showing program designed to ensure entities meet regional metrics months in advance. The second will be a shorter-term operational horizon intended to share access to pooled resources to better right-size regional metrics for better long-term investment savings.

While the grid will continue to evolve as technologies become more or less viable over time, a regional Resource Adequacy metric like the one being developed by NWPP will be essential to maintaining reliability into the future.