

Appendix 9-A

Public Utility District (PUD) Utility
Priorities



Energizing Life in Our Communities

October 21, 2022

Geoffrey Thomas, Mayor
806 West Main Street
Monroe, WA 98272

Dear Mayor Thomas:

Snohomish County PUD is pleased to be given the opportunity to participate in the public process specifically related to the updating of City of Monroe Comprehensive Plan. The PUD appreciates your leadership and staff efforts to plan for necessary public services and facilities to accommodate future growth.

Environmental stewardship and prudent, wise investments for long-range growth and capacity in our service territory are critically important to the PUD. Due to this interest, the utility is keen to engage in the comprehensive planning process to provide utility-focused perspective regarding climate change, energy efficiency, electric vehicles, building electrification, and sustainable resource management to provide energy and critical power infrastructure to meet long-term population and economic growth.

A team of professionals at the PUD has spent several weeks working on a document which I have attached for the City of Monroe review. In this document is a specific range of priorities for the utility which may be of interest and benefit to the City of Monroe comprehensive plan.

PUD staff is interested in engaging and/or having further discussion with exchange of additional information which may be helpful to your efforts. Should this be of interest to your staff, please contact either Brenda White, PUD Government and External Affairs (425-783-8011) or Chuck Peterson, PUD Key Accounts (425-783-8244).

Thank you for your time and interest.

Sincerely,

John Haarlow
CEO & General Manager

CC: Deborah Knight, City Administrator, City of Monroe
Kate Tourtellot, Planning Manager, City of Monroe
Brenda White, Local Government and External Affairs, Snohomish County PUD
Chuck Peterson, Senior Executive Account Manager, Snohomish Cou

INPUTS TO THE CITY OF MONROE

COMPREHENSIVE PLAN

INTRODUCTION TO SNOHOMISH COUNTY PUD

Snohomish County Public Utility District No. 1 (the PUD) provides electrical service to the City of Monroe planning area. The PUD, which serves all of Snohomish County plus Camano Island, is the largest public utility district in the state of Washington and is the 13th largest in the nation in terms of customers served.

The PUD relies on a diversified power portfolio consisting of a long-term power supply contract with the Bonneville Power Administration (BPA), a broad range of energy-efficiency and load management programs, five PUD-owned hydroelectric projects, some customer-owned generation, and several long-term power supply contracts. The PUD purchases over 80% of its power supply from BPA, with the remainder coming from PUD-owned hydroelectric operations, PUD-contracted wind operations, and wholesale market purchases. The PUD makes short-term purchases and sales in the wholesale power market to balance daily and seasonal fluctuations in its load and resources.

The utility maintains over 6,500 miles of distribution and transmission lines to serve its more than 360,000 electric customers. The PUD also serves over 22,000 water customers in the cities of Lake Stevens and Granite Falls, and east Snohomish County areas.

The PUD's Mission Statement is to make a difference in our customers' lives by safely providing quality products and services in a cost-effective and environmentally sound manner. There are many ways in which we strive to meet this mission.

One of our primary goals is to be sensitive to the natural environment in our planning, construction, and operations. We also value and promote a safe workplace and a healthy and safe environment for our employees and customers. Valuing clean air, clean water, and responsible resource use helps ensure a healthy and safe environment for all.

The PUD:

- Introduces new energy-efficient products and services, like heat pump technology for space and water heating.
- Applies current science and technology to managing its own generation facilities in a cost effective and environmentally responsible manner.
- Has a commitment to providing clean energy by directly investing in environmentally sound energy technologies including solar, wind, small hydro, and energy storage.
- Partners with the community to optimize the grid with transportation electrification and load flexibility.

The PUD is committed to continuous improvement throughout the organization and strives to be a leader among utilities in environmental responsibility. In acting on its mission, the PUD's Board of Commissioners has committed the utility to meeting load growth to the extent possible through cost-effective energy efficiency and renewable generation sources.

PUD PLANNING AND STRATEGIES

Planning - Climate Action

The PUD recognizes that many local jurisdictions are developing plans to reduce greenhouse gases (GHG) in their operations and communities and wants to support these efforts. Given the impact that buildings and transportation have on GHG emissions in our region, clean energy resources and energy efficiency are a significant consideration in climate action plans.

The below sections describe how the PUD incorporates climate action planning into its strategies for meeting current and future resource needs. Federal/state/local policies, regulatory requirements, and funding to decarbonize communities can, in addition to meeting sustainability goals, have a significant impact upon electric power systems.

The PUD can support local government decarbonization plans by participating in advisory committees, lending expertise during plan development, and providing educational presentations on the PUD's clean fuel mix and programs to help achieve reduced GHG emissions.

Planning - Resources

The PUD's Board of Commissioners (Board) has provided clear policy direction to meet the utility's load growth first by pursuing all cost-effective energy efficiency measures. For load growth not met by conservation, the utility will pursue a diverse portfolio of clean, renewable resource technologies, and innovative rate and load management programs.

Integrated Resource Plan: The PUD's Integrated Resource Plan (IRP) provides a long-term strategy regarding future energy resources. It establishes an action plan that ensures enough resources are available, at a reasonable cost, to meet future energy loads. It is updated every two years.

The PUD's current 2021 IRP addresses a 2022-2045 study period and how the PUD will meet energy and capacity needs under the new Clean Energy Transformation Act policy in Washington state. The PUD has a carbon-free portfolio of power resources and proposes to add to its portfolio with energy efficiency programs, demand response, local solar, and energy storage to meet customer needs at the lowest cost, while maintaining reliability and a commitment to clean energy.

The 2021 IRP identifies cumulative new, cost-effective conservation and additional energy efficiency of 171 average megawatts over the planning horizon. With the PUD's owned hydro, contracts for wind, customer-owned generation, and Bonneville Power Administration supply contracts, future power supplies are not needed until 2024. Future supply-side power resources consist of a mix of small local utility-scale solar PV and utility-scale energy storage.

The IRP positions the utility to serve the electricity needs of its customers well into the future through the following actions as identified in the IRP's Action Plan:

1. Pursue all cost-effective conservation and further explore programmatic conservation portfolio optimization, to include consideration of capacity-value, distribution-system value, and BPA reimbursement.

Conservation is the single largest portfolio addition for every scenario evaluated in the 2021 IRP. It remains the PUD's resource of choice for meeting future load growth as it has in previous IRP cycles. The acquisition of conservation savings reduces the demand for electricity, delaying the need to acquire or develop and more expensive and/or less effective new resources, which can reduce the

overall cost of energy and capacity, including deferral for additional transmission and distribution capacity upgrades.

The PUD has been a regional leader in its acquisition of conservation for over 40 years. It has successfully developed and operated numerous cost-effective programs that help customers of all types to conserve or use energy more efficiently. The 2021 IRP identifies a need to acquire 171 aMW of new cumulative annual energy savings and 222 aMW of new winter on-peak energy savings over the 2022 through 2045 period. The 10-year conservation potential for the Long-Term Resource Strategy (Base Case) was identified at 77 aMW.

To attain this level of conservation achievement, the PUD must continue to develop strategies and programs that reach all sectors, with special focus on implementation strategies for conservation that brings capacity contributions.

2. Pursue acquisition of significant long-duration utility-scale energy storage.

The 2021 IRP clearly identifies long-duration storage as the supply-side resource of choice, finding it cost-effective across all eight scenarios. The Long-Term Resource strategy specifically defines the need for utility-scale 8-hour dispatch duration energy storage scaling to 70 MW nameplate capacity by 2029. This Action Item will require PUD staff to perform additional due diligence on the storage technologies available at the highest value and lowest reasonable cost to customers, with a goal of acquiring or building a significant resource around 2024.

3. Develop a roadmap to significant, lowest-cost Demand Response programs leveraging AMI, to include dispatchable demand response programs and smart rate constructs.

The PUD has been developing pilot programs that explore various deliveries and designs of demand response programs, and as would be expected, these programs are at a pilot scale. In order to meet the programmatic scale goals for demand response, the PUD needs to develop the roadmap for the organization to bring the highest-value programs to scale. This must necessarily plan for how to best leverage the roll out of AMI technology, which is expected to yield the lowest cost programs. Further, the PUD should explore programmatic demand response portfolio optimization, to include consideration of capacity-value, and distribution-system value.

4. Further develop geospatial modelling capabilities of demand-side resource potential.

The intention is to refine the PUD's ability to capture avoided transmission & distribution system costs from demand-side investments, and to better understand the geographic distribution of planned

investments. Further develop analytical methodology for applying geospatial analysis to inform future Clean Energy Implementation Plans.

5. Continue to enhance and leverage short and long-term resource portfolio modeling capabilities; expand cost and risk tradeoff analyses.

PUD staff's development of in-house modeling tools leveraging the KNIME Analytics Platform and other programming resources have played crucial roles in allowing staff to create advanced models regarding load resource balance, new resource output, energy pricing simulations throughout various defined environments, and portfolio optimization. As the electricity markets, industry, and policies continue to evolve, staff must keep pace with these changes and develop the modeling tools that provide visibility into potential risks and opportunities for the PUD.

6. Continue to participate in regional forums and assess impacts associated with climate change, reduction in greenhouse gas emissions, clean energy policy compliance, and regional power and transmission planning efforts.

Given the renewable content of the PUD's portfolio, and the close relationship of renewable resources with local and regional weather, it is important for PUD staff to continue to monitor climate science to inform future outlooks, and policies related to carbon reduction in order to identify and optimize the PUD's clean energy portfolio for the benefit of its customers.

7. Continue to participate in the development of a regional resource adequacy program to further limit reliability risks to customers.

As regional capacity resources retire, it will be important for the PUD to stay involved in regional efforts to improve resource adequacy. The PUD has been a participant in the Northwest Power Pool's Western Resource Adequacy Program (WRAP), contributing ideas to its design and governance structure. This effort holds promise for low-cost resource adequacy mitigation to augment the PUD's resource portfolio with an efficiently designed resource sharing program. PUD staff should continue to be involved in the program development, and upon its maturity towards a binding, final program design, critically evaluate the PUD's participation to assess if joining will bring net benefits for PUD customers.

8. Continue to participate in regional forums discussing the formation of organized markets in the Pacific Northwest to ensure hydropower is appropriately valued, that the economic opportunities and risks of planned dispatchable resources are accounted for, and that the forecast cost of service is appropriate.

Various regional discussions on RTO's, Day-Ahead Markets, and other market structures can present new risks and opportunities for the PUD. To adequately plan for the future, and influence market formation and design considerations, PUD staff should continue to participate in relevant discussions, evaluations, and exploratory efforts in order to develop new opportunities for the PUD on behalf of its customers and mitigate risks.

9. Continue to participate in the post-2028 contract negotiation process with the Bonneville Power Administration in pursuit of a low-cost, high environmental quality, and reliable post-2028 contract.

PUD staff should continue to play an active and collaborative role developing a sustainable, affordable, and practical BPA contract to take effect in 2029. This contract should seek to help the PUD comply with all relevant state and federal policy requirements for clean energy and carbon, appropriately position the PUD for the potential of future markets, mitigate or address capacity needs, and continue to incentivize conservation investment. As the contract negotiation process matures, PUD staff must also critically evaluate all the BPA power products available to the PUD in order to find the products that would result in the lowest reasonable cost to PUD customers. This analysis is expected to be included in the 2023 IRP update.

From a planning perspective, capacity assessments for the PUD focus on analysis of “System Peak Demand” – the largest amount of power the utility is called upon to deliver at any one time. Before any new demand or supply-side resources are acquired or wholesale market energy reliance is considered, the PUD’s Load-Resource Balance deficit forecast under adverse conditions¹ for winter peak week² is expected to grow from 25 average megawatts (aMW) in 2022 to over 300 aMW by 2045.

¹ Adverse conditions are P5, or 5th percentile.

² Peak Week is a Snohomish PUD planning metric in the 2021 IRP which are the 8 hours, 4 morning and 4 evening, that make up the demand peaks of Monday through Friday minus holidays.

To meet this growing peak, the PUD created the Long-Term Resource Strategy as part of the 2021 IRP process covering the 24-year period from 2022 through 2045, the strategy realizes the PUD Board’s two guiding principles noted earlier: to meet load growth (1) first with cost-effective energy efficiency measures and then with (2) a diverse portfolio of clean, renewable resource technologies and innovative rate and load management programs.

Consistent with the first guiding principle to first meet load growth by pursuing all cost-effective energy efficiency measures, the Resource Strategy forecasts 171 aMW of new cost-effective energy efficiency across the planning horizon. This, given the PUD’s long-term contract with the BPA, which is set to meet the majority of the PUD’s load with power produced from the Federal Columbia River Power System, leaves a small amount of new resource needed to meet the wide range of possible futures.

While energy efficiency programs help to lessen forecast average and peak loads, demand response and smart rates programs help shift load from peak hours to off-peak hours. The Long-Term Resource Strategy calls for over 31 cumulative peak week aMW by 2031. In November of 2021, the PUD launched its Flex Energy pilot programs to encourage load shifting and reduction during peak hours from the residential sector.

Even with forecast conservation and demand response, an additional need for a future capacity resource still exists as early as 2024. The Long-Term Resource Strategy identifies a need for long dispatch duration utility-scale energy storage.

As evidenced by its recent and committed resource additions, the PUD is equally committed to fulfilling the second guiding principle to pursue a diverse portfolio of clean, renewable resource technologies. In June of 2019, the Arlington Microgrid Solar Array began operation. The PUD completed construction and began operation of the Hancock and Calligan Creek run-of-the-river hydroelectric projects in February of 2018. The PUD commissioned the Youngs Creek Hydroelectric project in October of 2011; it was the first new small hydroelectric project constructed in the Northwest in over 17 years. The Long-Term Resource Strategy adds up to 5 MW of local utility-scale solar PV resource by 2029, and up to 70 MW of utility-scale long dispatch duration energy storage by 2029.

Energy Independence Act: It is worth noting that the 2021 IRP is compliant with Washington State’s Energy Independence Act (EIA), Revised Code of Washington (RCW) 19.285 (or Initiative 937), for both conservation and renewable resources. Additionally, the 2021 Long-Term Resource Strategy considers cost, reliability, risk, environmental concerns, and operational constraints.

Clean Energy Transformation Act: On May 7, 2019 Governor Jay Inslee signed into law the Clean Energy Transformation Act (CETA) (E2SSB 5116, 2019), which commits Washington to an electricity supply free of greenhouse gas emissions by 2045. Analysis from the 2021 IRP indicates that the PUD is on track to meet this goal with its existing and planned future portfolio of carbon-free resources.

Commercial Clean Buildings Standards: According to the Washington State Department of Commerce (Commerce), buildings are the most rapidly growing source of greenhouse gas emissions in Washington state. As population continues to grow, so does the number of business spaces being constructed. Each time a building is constructed or remodeled, either inefficient or efficient energy use materials and technologies are locked in for decades to come. The Commercial Clean Buildings Standards (CCBS) required Commerce to develop and implement an energy performance standard for commercial buildings greater than 50,000 square feet and provide incentives to encourage energy efficiency improvements. Industrial and agricultural buildings are exempt from the standard. The PUD is committed to working with local jurisdictions and building owners/operators to help them meet the CCBS energy efficiency standards.

Working symbiotically with Snohomish County and local governments, the PUD, through its planning process, can ensure that future load within Snohomish County is met in a sustainable manner, including the inclusion of energy efficiency in both the existing and future building and housing stock, as described in more detail below, and ensuring that additional energy and capacity needs are met through sustainable, renewable resources.

Not only does this give Snohomish County and local governments a tool to contribute to the community's goals for climate change, but it also helps maintain protection of the environment. The PUD will continue to secure access to a low-cost source of electricity for both residents and businesses which, in turn, will support economic development in Snohomish County while playing a role in keeping Snohomish County an affordable place to live.

Energy Efficiency: Energy efficiency programs help to ensure that homes and businesses use energy in ways that reduce costs for customers and support customer interests including business productivity, customer sustainability interests, and residential housing affordability, among others. The PUD develops and implements energy efficiency programs because energy efficiency is a "least cost resource" (i.e., it costs less to save energy than to produce it) that mitigates the cost of the energy system (thereby saving all customers money).

Improving the energy efficiency of homes and businesses is consistent with the goals of Vision 2050. These goals include support for economic growth, the environment, mitigation of climate change and development of healthy, sustainable, and affordable housing.

As part of its commitment the PUD offers a wide range of energy efficiency solutions for its commercial, industrial, and residential customers. Many of these solutions include technical assistance, financial incentives or rebates for existing building retrofits such as HVAC (heating/cooling) system optimization, LED lighting upgrades, commercial kitchen appliances, and weatherization (windows/insulation).

The PUD is constantly working to make energy efficiency more accessible to our customers by providing resources such as an on-line marketplace and in-store instant rebates, eliminating the need for extra paperwork. A list of all available rebates and incentives as of July 2022 is provided in Appendix 2.

Historically, the multi-use and higher-density housing sectors have been challenging for the PUD to influence energy efficiency design due to the unique challenges presented with this building type. The utility has made strides to partner with these communities early, while the buildings are still in the design process, to pursue efficiency within multi-family new construction.

Investing the PUD's energy efficiency incentive dollars before buildings are built, we hope will support our communities' economic vitality, and reduce the environmental impact. The PUD has also included an additional incentive for energy efficiency within multi-family buildings that are providing at least 51% Income Qualified housing, hoping to further reduce the economic burden of the electric bills to those most in need.

As the PUD continues to pursue approaches to address the challenges faced by multi-family new construction, we are very interested in pursuing partnerships with the City of Monroe to help ensure that, as multi-use and higher density housing is developed, it is done so in an energy-efficient manner.

Planning – Infrastructure

A PUD focus is to coordinate with customers in planning to meet future electrification demands, and to use conservation and energy efficiency programs to help serve population growth in the City of Monroe. This will be done in conjunction with improvements in system operation and infrastructure.

Capital Plans: Future service plans to meet growth throughout Snohomish County are guided by the PUD's short-term (5 years) and long-term (20 to 60 years) capital plans. Both plans are updated periodically.

The objectives of the PUD's 60-year electric system planning horizon are as follows:

- Decrease electric system capital and operating costs
- Increase system utilization
- Improve financial integrity
- Reduce undesirable service quality impacts
- Ensure environmental compatibility
- Comply with the latest applicable local, state, and federal regulations

The approach in development of the ultimate system needs for the PUD electrical system includes three major steps:

- Ultimate electric load saturation forecasting
- Transmission and distribution facility sizing optimization analysis
- Load center, facility siting, and capital addition optimization

The PUD’s capital plans rely on comprehensive land use plans as their basis, and it is expected that the land use plans will continue to change in future years. In addition, as electrification, sustainability, and energy efficiency measures are more heavily implemented, load forecasting models will likely be revised. Thus, it is expected that data models will be updated, and the PUD’s capital plans will be updated as necessary, or on a periodic basis. Related to climate change concerns, building electrification and the market rise of electric vehicles (EV) are two factors that could have significant impacts to load forecasting and power planning.

Building Electrification: The PUD recognizes the significant opportunity that transitioning from fossil-fuel based heat to electric heat presents in supporting local efforts to reduce GHG emissions. However, we want to work with communities to make this transition efficiently and strategically to mitigate impacts to the electric grid and to maintain our low-carbon resource portfolio. With the ongoing community/political movement towards building all new buildings with electric heat instead of natural gas to avoid carbon emissions there could be significant impacts to the electrical system. The average electrical demand for electric heating versus natural gas heating will have a minimum 3-to-1 or greater impact in the winter months. If 10,000 new housing units are expected that would have been natural gas in the past it would be equivalent to 30,000 new natural gas units if they are served with electricity. Many multifamily residential buildings are already being served with electricity so the changes there will be

minimal. If there are incentives to rapidly convert existing natural gas heated homes and appliances to electric heat, it is expected that the electrical demands for those existing building loads to triple or more in the winter.

Electric Vehicles (EV): Rapid conversion of fossil fuel vehicles to EV's would have a significant impact on future electric supply and capacity needs. Similar to building electrification, the PUD recognizes the significant opportunity that transitioning from fossil-fuel powered vehicles to EV's presents in supporting local efforts to reduce GHG emissions. However, as with building electrification, we want to work with communities to make this transition efficiently and strategically to mitigate impacts to the electric grid and to maintain our low-carbon resource portfolio.

The installation of EV chargers in fossil fuel heated homes, depending on home type and existing electrical usage, could potentially double or triple energy usage (kWh) and triple or quadruple electrical demand (kW). Thus, the addition of a Level 2 (L2) charger in an existing fossil fuel home could be the equivalent of adding a new home to the system.

For example, PUD has data where an existing natural gas heated home used 500 kWh during October/November 2020; with a L2 charger installed a year later in October/November 2021 the home consumed 1500 kWh or three times as much. Demand wise, if the home's average peak demand is 4kW, with an L2 charger during evening peak hours (5pm – 9pm) demand could increase from 4kW to 14-16kW for the four hours the EV is charging – a fourfold increase in electrical demand. This potentially can overload existing transformers serving neighborhood loads.

The impact of adding an L2 charger is not near as great with an all-electric house. For example, if an all-electric house is using 4,000 kWh during its billing cycle, the addition of an L2 charger adding 1,000 kWh would only be a 20% increase in energy use. Demand wise, if peak demand was 10kW – 15kW, then EV charging during the four peak hours would double demand to 20kW – 27kW.

See the *Transportation Electrification* section below for discussion on the PUD's *Electric Transportation Plan*. Also see the below *Advanced Metering Infrastructure (AMI) – The PUD's "Connect-Up" Program Enhancing Benefits for Customers* for potential mitigation measures such as Time-of-Use (TOU) rates and load management to help reduce the impacts of electrification.

Facility Siting and Electrical Service Requirements: In order to most reliably and cost-effectively serve electrical demand, load-serving facilities are sited as close as practicable to the load center. Transmission facilities are located so as to optimize electrical system reliability and performance, and these plans are developed and implemented in close collaboration with neighboring utilities.

Siting, construction, and equipment requirements for Snohomish PUD's distribution system are established to comply with PUD policies, electrical industry standards, and applicable national/state/local construction and electrical codes. The PUD's *Electrical Service Requirements Manual* (ESR) is intended to provide electrical contractors, architects, building contractors, engineers, and other customers with the information needed for determining acceptable methods of receiving electrical service from the PUD.

The ESR requirements are based on PUD policies and standards as well as national/state/local electrical codes. Their use is intended to promote a safe, efficient manner for connecting to the PUD grid and receiving electrical service. It is the responsibility of the customer to conform with the PUD's requirements, as well as pertinent national/state/local electrical codes. When new facilities are required to serve capacity-constrained areas, to improve reliability of electric service to PUD customers, or to support customer requests for dedicated electrical facilities, the PUD makes every attempt to work with the local jurisdictions to ensure that facilities blend with the character of the area as well as meeting the operational needs of the utility.

New Load Policy: A key consideration for new or expanded facilities is the PUD's New Load Policy (NLP). The NLP requires an up-front, refundable deposit for new or existing customers that grow by more than 2.5 MVA, the equivalent electrical load of 400 single-family homes. This policy protects PUD ratepayers from bearing costs spent to serve a customer who leaves before providing the amount of energy demand and revenue anticipated when infrastructure to support them is built. For additional information see the below *Appendix 3: PUD Line Extension and New Load Policy*.

Planning – Coordinating with Mass Transit Development

The PUD has extensively coordinated with regional and local jurisdictions in the development of mass transit facilities and the accompanying increased land use density associated with their development. Paramount in this effort is the planning and electrical infrastructure development associated with light rail development and rapid bus transit in the PUD service area for the Sound Transit (ST) ST2 and the ST3 Plans approved by voters in 2008 and 2016, respectively. This includes the development of light rail segments to the City of Lynnwood (ST2) and the City of Everett (ST3).

Key partners in this planning and development include Sound Transit, Snohomish County, the City of Mountlake Terrace, the City of Lynnwood, and the City of Everett. Location of transit routes, transit stations, transit electrical substations, and land use plans are key factors in developing electrical capacity to serve the light rail and accompanying high-density land use development. In addition, relocation of electrical infrastructure to accommodate development of light rail routes is a significant part of the planning and development effort.

Planning – Transportation Electrification

The PUD Board of Commissioners approved an *Electric Transportation Plan* in July 2020 following the passage of *Washington SHB 1512* which provided the authority and funding limit for utility investment in transportation electrification. This plan has three key strategies that guide the PUD’s transportation electrification efforts while focusing on our community and optimizing the grid. Since the adoption of the plan, the PUD has continued to support customer and third-party investments in transportation electrification and promoted new pilots and incentives for our customers.

The first strategy addresses the top barrier to transportation electrification by building community through outreach and education. The PUD proactively addresses limited awareness and education resources with ride and drive events for both passenger cars and commercial vehicles coupled with in-depth website content. In 2020, a pilot was launched to learn more about individual electric vehicles and customer charging behavior with additional incentives for off-peak charging starting in the Fall of 2021.

The second strategy focuses on optimizing the grid with transportation electrification resulting in benefits for all ratepayers. By partnering with customers electrifying their fleets or individual vehicles, their cost and impact on the grid are minimized through managed charging strategies. As we gain early knowledge of electrified fleets, it will be incorporated in electrical system planning models. At our Arlington microgrid, we are piloting new technologies to assess the viability of integrating vehicles as a resource for the power grid and potential customer benefits from vehicle to grid (V2G) technology.

The final strategy enables Customer adoption of electric transportation with incentives supporting our customers. The PUD has a portfolio of incentive programs supporting our customers including financial incentives for the charging costs of a new or leased electric vehicle and the purchase of connected EV chargers. In addition, the PUD has Time-of-Use rate pilot programs encouraging EV off-peak charging. The PUD has been successful in securing several grants in partnership with our public agencies for public fast charging and wireless induction charging for transit buses.

Transportation is the largest contributor to greenhouse gas emissions (GHG) and electrifying City/County fleets along with transportation electrification from businesses and individuals is one of the most effective ways to reduce GHG emissions at a local level. The PUD is committed to support our communities in the adoption of electric transportation and build out of charging infrastructure by our customers.

Distributed Energy Resources Including Customer Solar Power

The PUD is committed to providing customers with a number of options for participating in renewable energy programs, as well as initiatives that help customers and the PUD optimize existing energy resources

- Same-day reads: Reads will be obtained the same day a move-in or move-out is scheduled, providing accurate billing and expedited final bills.

New rate designs: Customers will be able to save money by using lower cost energy during non-peak periods or decreasing their demand to earn bill credits. The PUD is now piloting Time-of-Use (TOU) rates and load management programs to prepare for future opportunities and to help mitigate the impacts of electrification. This also includes EV rates where customers who own electric vehicles will be able to take advantage of cheaper rates if they charge their vehicle at night.

The Connect Up program is in the early stages. PUD will be installing 140 base stations throughout its service territory between November 2021 and September 2022. This work is in being done in preparation for the installation of advanced meters beginning in 2023. The base stations will be installed at new and existing PUD pole locations. The base stations are standard equipment used by utilities throughout the world.

on the grid to save customers money on their bills and to save on energy acquisition and grid infrastructure costs in the future. Collectively, these types of energy resources and activities are referred to as Distributed Energy Resources (DERs).

The PUD has and continues to offer a number of ways in which customers can participate in DER initiatives including rooftop solar, community solar, purchase of renewable energy credits, and financial incentives to use energy when its most abundant on the grid. Existing programs and pilots are described in the Appendix 2 tables below. A key focus for PUD staff is continuing to research and engage with customers to develop additional offerings that meet customer needs, maintain electric reliability, increase community and grid resilience, and ensure ample clean energy resources for the future.

Advanced Metering Infrastructure (AMI) – The PUD’s “Connect Up” Program Enhancing Benefits for Customers

The PUD’s Connect Up program is an infrastructure and technology project that includes deploying new metering technology that will deliver an array of added benefits for customers and help the PUD become the “Utility of the Future.” The PUD has already built much of the infrastructure in preparation for the Connect Up Program, including modernizing its substations, deploying automated devices on its distribution system, and extending communication technology to critical points across its service territory.

The Connect Up program will focus on PUD customers, giving them new options to take control of their energy usage and lower their bills. The infrastructure and technology deployed through the Connect Up program will empower customers and enable many benefits, including:

- **Outage detection:** Customers will no longer have to call in their outage. The PUD will have the capability to know right away as soon as a customer’s power goes out.
- **Detailed energy usage:** Customers will have detailed insight into how much energy they are using, allowing them to make informed decisions and save on their energy bill.
- **Flexible billing:** Customers will be able to choose their billing date range, receive accurate 30-day billing and take advantage of pre-pay.
- **No more estimates:** Customers will no longer receive an estimated monthly bill as the Connect Up program will make meter reading easier and more efficient. Today, estimated bills can occasionally occur due to weather or access issues.

APPENDICES OVERVIEW

In addition to the above provided information, additional information is provided in a set of Appendices as follows:

- Appendix 1: Capital Construction Projects in the City of Monroe Identified in the PUD's latest 5-Year Capital Plan 2022 - 2026
- Appendix 2: Energy Efficiency Rebates and Incentives as of May 2022
- Appendix 3: New Load Policy

APPENDIX 1

CAPITAL CONSTRUCTION PROJECTS IN THE CITY OF MONROE

Capital construction projects in the City of Monroe area identified in the PUD's latest 5-Year Electric System Capital Plan, 2022-2026, are shown in the below table:

Project Name	Project Description	Problem Summary
Sky Valley Substation	New construction of 115kV ring bus and substation to serve the Monroe area.	An additional substation and 115kV ring bus will improve system reliability, add capacity to the Monroe area, increase operational flexibility, and supports future expansion to the east. An additional substation will be able to support the large growth that is already present and supply many new customers.

Project Name	Project Description	Problem Summary
Woods Creek to Lake Chaplain Tie	Completed new feeder tie between a Woods Creek Feeder and a Lake Chaplain Feeder.	This new project added reliability by providing an alternate way to supply power. It also increased available capacity to the Monroe area by making a tie from a substation with much fewer customers.

APPENDIX 2

ENERGY-EFFICIENCY REBATES AND INCENTIVES AS OF MAY 2022

The following series of tables identifies all available rebates and incentives for customers of Snohomish County PUD. Note: rebates and incentive levels are subject to change at any time.

These tables are organized as follows:

- Table 1: Solar Options
- Table 2: Electric Vehicle and EVSE
- Table 3: Commercial, Industrial, Multi-Family Energy Efficiency Incentives

▪ **TABLE 1: SOLAR OPTIONS**

TABLE 1: SOLAR OPTIONS	
Net Metering (Solar systems with nameplate capacity up to 100 kW AC)	Customer credited at retail rate
Carbon Solutions (Voluntary Renewable Energy Credit program)	Schedule 80, \$4.50 per REC (1000 kWh)
Pilot Small Distributed Generation Rate Schedule (Eligible customers installing systems with nameplate capacity > 100 kW AC up to 200 kW AC)	Excess generation bought at market rate
Small Renewables Pilot (Generating systems up to 2 MW)	Excess generation bought at market rate

▪ **TABLE 2: ELECTRIC VEHICLE CHARGING AND ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE) INCENTIVES AS OF JULY 1, 2021**

TABLE 2: ELECTRIC VEHICLE CHARGING AND ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE) INCENTIVES AS OF JULY 1, 2021	
Residential	
Commercial/Industrial	
L2 Connected EV Charger (new construction)	\$500 per port up to \$5000
L2 Connected EV Charger (retrofit)	\$1000 per port up to \$10,000
Public	
L2 Connected EV Charger	\$500 per charger

▪ **TABLE 3: COMMERCIAL, INDUSTRIAL AND MULTIFAMILY EE INCENTIVES**

MEASURE	INCENTIVE RATES
Lighting Incentive Program	
Lighting Retrofits	Avg. \$0.18 / kWh
Networked Lighting Controls	Avg. \$0.30 / kWh
Rebates Program	
Heating, Ventilation and Air-Conditioning	
Heat Pump Retrofits (Replacing Electric Heat)	\$1,150 - \$1,250 / ton
Packaged Terminal Heat Pumps	\$600 ea. (\$100 for new construction)
Variable Refrigerant Flow Systems	\$1,000 / ton
Connected Thermostats	\$200 ea.
Advanced Rooftop Unit Controls	Up to \$4,500 ea.
Variable Speed Drives for Air-Handling Units	\$300 / hp
Building Envelope	
Windows	\$6 - \$9 / sqft
Insulation	\$0.50 - \$2.50 / sqft
Refrigeration	
Electronically Commutated Motors (ECMs)	\$55 & \$140 ea.
Anti-Sweat Heater Controls	\$40 / Inft
Strip Curtains for Walk-in Coolers and Freezers	\$9 / sqft
Kitchen	
Demand-Controlled Kitchen Ventilation	\$200 & \$400 / hp
Water	
Heat Pump Water Heaters	\$300 & \$600 ea.
Commercial Clothes Washers	\$25 - \$125 ea.
Pool Pumps	\$50 - \$800 ea.
Engine	
Generator Engine Block Heaters	\$200 & \$1,500 ea.
Vehicle Engine Block Heater Controls	\$200 ea.
Industrial	
Compressed Air Equipment	Avg. \$0.25 / kWh
High Frequency Battery Charger Upgrades	\$0.25 / kWh
Welding Machine Upgrades	\$0.25 / kWh
Water System Leak Abatement	\$0.25 / kWh

Building Efficiency Program

Equipment Upgrades (HVAC, Refrigeration, Pumps, Fans, etc.)	\$0.35 / kWh
Control Upgrades	\$0.20 / kWh
Building Retro-Commissioning	\$0.20 & \$0.05 / kWh
Cannabis Production Lighting	\$0.20 / kWh
Cannabis Common Areas Lighting	\$0.12 / kWh
Cannabis HVAC	\$0.35 / kWh
Building Benchmarking	\$0.05 / sqft (\$15,000 cap)

New Construction Program

Whole Building - Pay-for-Performance	\$0.20 - \$0.50 / kWh
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APPENDIX 3

PUD LINE EXTENSION AND NEW LOAD POLICY (NLP)

When customers of all sizes hook up to the PUD's grid, the utility must build infrastructure and upgrade electrical equipment to serve that customer. For residents and small businesses, that typically means running a new wire from the power lines that are already near the new building and a transformer to serve that new customer's needs.

Customers pay the cost of these new wires through an upfront payment called a Line Extension Fee. For the vast majority of customers who require a PUD-owned transformer, those are funded through a separate upfront fee determined by the amperage rating of the new customer's electrical panel, called an Amp Fee.

When customers with large power needs connect to the PUD's grid, in addition to installing the normal extensions and transformers that all customers require, the utility often must upgrade or expand the existing grid to meet that increased power demand. This can cost millions of dollars and take years to design, acquire permits, and construct.

The PUD New Load Policy (NLP) requires an up-front, refundable deposit for new or existing customers that grow by more than 2.5 MVA, the same amount of electrical load as 400 single-family homes. This policy protects PUD ratepayers from bearing costs spent to serve a customer who leaves before providing the amount of energy demand, and revenue, anticipated when infrastructure to support them is built.

New large customer loads can have significant impacts to the grid that require significant increases in electrical capacity. Therefore, the PUD needs to perform a System Impact Study (SIS) to determine system improvements necessary to serve the new load. These loads are subject to the NLP which is an extension of the PUD's Line Extension Policies and applies to common purpose load increases of over 2.5 MVA. The NLP requires that one-time connection fees be imposed to recover the costs of expanding the PUD's electric system for new or existing loads that grow by more than 2.5 MVA.

The NLP fee for a large new load Customer is calculated by the PUD based on the information in an SIS and the actual costs incurred by the PUD to serve the Customer. The fee shall be calculated by determining the applicable costs, useful shared capacity provided by any improvements or expansions, and applying a proration factor for shared facilities, as set forth in the NLP. The Customer may also then be eligible to recoup a portion of the NLP fee through a demand credit as described in the NLP.