



DELIVERY SYSTEM PLANNING

APPENDIX K



Contents

- 1. **Introduction** 1
- 2. **Electric Projects in Implementation Phase** 1
- 3. **Electric Projects in Initiation Phase** 2
 - 3.1. West Kitsap Transmission 2
 - 3.2. Redmond Area Distribution Capacity..... 3
 - 3.3. Covington Area Distribution Capacity 3
 - 3.4. Sumner Area Distribution Capacity..... 3
 - 3.5. Yelm Area Transmission 4



1. Introduction

This appendix summarizes Puget Sound Energy’s (PSE’s) update to our electric delivery system 10-year plan. For a detailed description of the planning process and the status of each project, refer to the [2021 Integrated Resource Plan \(IRP\)](#), [Appendix M](#), and the PSE plan¹. We included significant changes to project statuses from the 2021 IRP.

2. Electric Projects in Implementation Phase

Figure K.1 summarizes PSE projects in the project implementation phase, which includes design, permitting, construction, and close-out. Estimated in-service years reflect the current project status.

Figure K.1: Summary of PSE Electric Projects in Implementation

Summary of PSE Electric Projects in Implementation	Estimated In-service Year
1. Sammamish — Juanita New 115 kilovolt (kV) Line	2023
2. Eastside 230 kV Transformer Addition and Sammamish-Lakeside-Talbot 115 kV Rebuilds (Energize Eastside)	2024
3. Electron Heights — Enumclaw 55-115 kV Conversion	2025
4. Sedro Woolley — Bellingham #4 115 kV Rebuild and Reconductor	2025
5. Bainbridge Island (NWA Analysis Pilot)	2026
6. Lynden Substation Rebuild and Install Circuit Breaker (NWA Analysis Pilot)	2024

Estimated Date of Operation: 2024

Project Need: Puget Sound Energy’s 2022 needs assessment study verified a transmission capacity deficiency in the Eastside area under certain contingency conditions in the summer season. Utilizing the latest load forecast and system information, we determined this need requires Corrective Action Plans (CAPs) to manage overloads. Our 2022 needs assessment also identified a winter transmission capacity deficiency in the Eastside area for the base and sensitivity cases in the ten-year planning horizon. These deficiencies will impact reliable power delivery to PSE customers and communities in and around Redmond, Kirkland, Bellevue, Clyde Hill, Medina, Mercer Island, Newcastle, Renton, and the towns of Yarrow Point, Hunts Point, Beaux Arts, and others.

Solution Implemented: Install a 230 kV/115 kV transformer at Richards Creek substation in the center of the Eastside load area and rebuild the 115 kV Sammamish-Lakeside-Talbot #1 & #2 lines to 230 kV to provide additional transmission capacity to serve projected load growth.

Current Status: The south half of the project has been permitted and will be completed in 2023 when we energize the Richards Creek substation. The north half of the project (between the Sammamish substation and Richards Creek substation) is in the permitting phase; we expect it will be in service by the end of 2024. Supply chain issues, however, may delay the completion of the north half.

¹ http://www.oasis.oati.com/woa/docs/PSEI/PSEIdocs/PSE_Plan_2022_FINAL.pdf



3. Electric Projects in Initiation Phase

Figure K.2 summarizes PSE electric projects in the initiation phase, which includes determining need, identifying alternatives, and proposing and selecting solutions. The table also includes projects that have entered the initiation phase since we completed the 2021 IRP. For a detailed description of the initiation phase and the status of each project, refer to the [2021 Integrated Resource Plan: Appendix M](#) and the 2022 PSE Plan.¹ We included significant changes to the status of projects from the 2021 IRP and details for new projects that have entered the initiation phase in this report.

Figure K.2: Summary of 10-year PSE Electric Initiation Projects

Summary of PSE Electric Projects in Initiation	Date Needed	Need Driver
7. Seabeck (Non-wires Analysis (NWA) Pilot)	Existing	Capacity, Reliability
8. West Kitsap Transmission Project (NWA Pilot)	Existing	Capacity, Operational Flexibility, Aging Infrastructure
9. Whidbey Island Transmission Improvements	Existing	Aging Infrastructure, Reliability, Operational Concerns
10. Kent / Tukwila New Substation (NWA Candidate)	Existing	Capacity, Aging Infrastructure
11. Black Diamond Area Distribution Capacity	2030	Capacity, Reliability
12. Issaquah Area Distribution Capacity (NWA Candidate)	2022	Capacity
13. Bellevue Area Distribution Capacity	2022	Capacity, Reliability
14. Juanita-Moorlands Transmission Capacity	2027	Capacity, Reliability
15. South Thurston County Transmission Improvements	2032	Capacity, Reliability
16. Electron Heights-Yelm Transmission Project	2032	Capacity, Aging Infrastructure
17. Lacey Hawks Prairie (NWA Candidate)	2024	Capacity, Reliability
18. Redmond Area Distribution Capacity	2024	Capacity
19. Covington Area Distribution Capacity	2025	Capacity
20. Sumner Area Distribution Capacity	2024	Capacity
21. Yelm Area Transmission	2032	Capacity, Reliability

3.1. West Kitsap Transmission

Estimated Date of Operation: 2028

Current Status: We identified a need to provide additional capacity in Kitsap County to serve existing customers, projected load, and improve transmission reliability for all 134,000 customers in Kitsap County and Vashon Island. We are finalizing the solutions study, which includes an analysis of non-wire alternatives and a preferred solution. The first need we addressed includes constraints on the 115 kV system serving Kitsap County under North American Electric Reliability Corporation (NERC) credible contingencies. We identified an additional need related to bulk capacity serving Kitsap County, which could lead to voltage collapse (i.e., low or rapidly falling voltage resulting in loss of service) under certain conditions. Lastly, we identified an aging infrastructure need on the submarine cables that tie



Kitsap County to King County via Vashon Island. These cables were originally installed in the 1960s and are approaching the end of their projected useful life.

We developed a solution to address these needs, including replacing and increasing the capacity of the submarine cables and the associated overhead ends to allow us to operate this normally open tie normally closed. This action addresses the aging infrastructure and bulk capacity needs for Vashon Island and Kitsap County. We will also build a new, 18-mile-115-kV backbone transmission line from Bonneville Power Administration's (BPA) Kitsap Substation in south Kitsap County to PSE's Foss Corner Substation in northern Kitsap County. This new line will address the 115 kV system constraints within Kitsap County. Our analysis identified BPA as an affected system for this solution, and further coordination with BPA may influence the final scope of this solution. Our interim operating plan to mitigate identified needs is to shift load to the South King County transmission system via the tie across Vashon Island or to shed load in North Kitsap County or Bainbridge Island.

3.2. Redmond Area Distribution Capacity

Estimated Need Date: 2024

The downtown Redmond and Redmond Ridge areas serve roughly 14,500 customers from four substations and one 115 kV transmission line. We expect the area to experience heavy load growth in the next 20 years.

Project Need: The need drivers for this area are capacity related.

Capacity: Several large developments in downtown Redmond and Redmond Ridge will require additional distribution substations and feeder capacity. Substation Group capacity will exceed the planning trigger in 2024, with feeder group capacity exceeded in 2026.

Current Status: A review of solution alternatives is underway, and we expect to select one in 2023.

3.3. Covington Area Distribution Capacity

Estimated Need Date: 2025

Puget Sound Energy has a project in the planning phase that we will develop to address distribution capacity constraints in the Covington area due to anticipated load growth.

Project Need: The need drivers for this area are capacity related.

Capacity: Several large developments in the area will require additional distribution substations and feeder capacity in the 10-year planning horizon.

Current Status: We will start the detailed needs assessment and project initiation to review alternatives in 2023.

3.4. Sumner Area Distribution Capacity

Estimated Need Date: 2024



Puget Sound Energy has a project in the planning phase that will address distribution capacity constraints in the Sumner area due to anticipated load growth.

Project Need: The need drivers for this area are capacity related.

Capacity: Several large developments in the area will require additional distribution substation capacity by 2024 and additional distribution feeder capacity by 2026.

Current Status: A review of the wires solution alternatives is underway. The non-wires analysis will begin in early 2023, and we will select a solution in mid- to late-2023.

3.5. Yelm Area Transmission

Estimated Need Date: 2032

The existing Blumaer-Electron Heights 115 kV line serves approximately 17,450 customers, 14,450 of which are in the Yelm area. Puget Sound Energy's project is in the planning phase that will improve the reliability of the existing system and increase capacity to support anticipated load growth in Yelm in the 10-year planning horizon.

Project Need: The need drivers for this area are reliability and capacity related.

Reliability: We serve customers in this area with a single, 42-mile-long transmission line subject to outages at a rate higher than the system average.

Capacity: Anticipated load growth in the area will require additional transmission lines to avoid overloads on the system under NERC-credible contingencies.

Current Status: We expect to begin the detailed needs assessment and project initiation to review alternatives in late 2023 or early 2024.