EXH. RBB-4r
DOCKETS UE-240004/UG-240005
2024 PSE GENERAL RATE CASE
WITNESS: ROQUE B. BAMBA

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **PUGET SOUND ENERGY,** **Respondent.**	**Docket UE-240004** **Docket UG-240005**

THIRD EXHIBIT (NONCONFIDENTIAL) TO THE PREFILED DIRECT TESTIMONY OF

ROQUE B. BAMBA

ON BEHALF OF PUGET SOUND ENERGY

REVISED
APRIL 10, 2024

FEBRUARY 15, 2024

PUGET SOUND ENERGY

Bainbridge Island Energy Storage Battery

Corporate Spending Authorization (CSA)

Date Created:	Friday, February 10, 2023
Discretionary/ Non-Discretionary:	Discretionary
Multi Year Rate Plan:	Specific
Equity Impact:	Yes
Strategic Alignment:	Operate the Business-Reliability
Estimated In-Service Date:	Thursday, December 31, 2026
Current State (Business Need):	Substation Capacity need: A distribution substation group capacity need of 14.6 MW was identified on Bainbridge Island within the 10 year planning horizon (2018-2027) to support general load growth of 4.6 MW and planned 10 MW load addition for the new ferry electrification charging load. The anticipated capacity need is expected to grow to 16.6 MW by 2030 due to general load growth increase by 2 MW. Per the PSE Solution criteria a solution must last 10 years. The Needs Assessment shows that additional substation capacity is needed by 2020. Due to lower than anticipated load growth, the additional substation capacity will not be needed until the 2025 to 2026 timeframe. Therefore, the need of 16.6 MW is the ultimate need for a viable solution to last until 2030 and beyond.

PUGET SOUND ENERGY

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Corporate Spending Authorization (CSA)

Desired State (Proposed Solution):

The proposed solution for addressing Bainbridge Island's distribution capacity will be achieved by: o Installing an approximately 3.3 MW/6.6 MWh battery storage system (planned for Murden Cove substation). Implementing an approximately 3.3 MW DER portfolio on Bainbridge Island, with customer side resources such as energy efficiency, renewable distributed generation, and potential of demand response.

PUGET SOUND ENERGY

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Outcome/Results (What are the anticipated benefits):	The installation of a 3.3MW/6.6 MWh energy storage battery and implementation of a 3.3MW DER program will defer the need to build a new substation and new feeders for 10 years or more. The hybrid alternative, which includes an energy storage battery as one of its components, is estimated to cost less than an all wires solution. The project will improve customer satisfaction.

PUGET SOUND ENERGY

Bainbridge Island Energy Storage Battery

Corporate Spending Authorization (CSA)

Dependencies: Yes

Dependencies comment: None.

Escalation Included: No, escalation has not been included.

Total Estimated Costs: $11,720,000

Estimated Five Year Allocation:

Funds Type	ID	Line Item Description	Previous Years Actuals	Fiscal 2024 Requested	Fiscal 2025 Requested	Fiscal 2026 Requested	Fiscal 2027 Requested	Fiscal 2028 Requested
Capital	W_R.10019.01.01.04	E Bainbridge Energy Storage Battery	$ 1,679,989	$ 953,700	$ 7,008,963	$ 40,000	$ 100,000	$ -

Incremental O&M: Both

Qualitative Benefits:

The 3.3MW/6.6 MWh energy storage battery along with a 3.3MW DER program will help meet Bainbridge Island's distribution group capacity need and defer the need to build a new substation for 10 years or more. The battery will be designed for 3 use cases including: peak shaving; frequency response; and voltage regulation. Frequency response will save PSE up to $330K annually as a result of eliminating the need for purchasing equivalent frequency response from neighboring utilities in PSE's Balancing Authority.

Quantitative Benefits:

Quantitative Benefits	Benefit Type	Previous Years	Fiscal 2024	Fiscal 2025	Fiscal 2026	Fiscal 2027	Fiscal 2028	Fiscal 2029	Remaining Costs	Life Total
Annual frequency response savings	-	$ -	$ -	$ -	$ 330,000	$ 330,000	$ -	$ -	$ -	$ 660,000

Risk Summary:

Passing code amendments, obtaining permits, community resistance, negotiating battery pricing, and seasonal construction schedule pose the greatest risks to the project.

PUGET SOUND ENERGY

Bainbridge Island Energy Storage Battery

Corporate Spending Authorization (CSA)

Change Summary:

Planning Cycle	Change Summary	Last Update Date
2022 Baseline Cycle	This CSA has been migrated into the EPPM tool at go-live as part of the Phase 1 EPPM implementation effort. The projects in this CSA were previously approved for the 2023-2027 capital plan. Please refer to the original CSA document for additional information (if available.)	2/10/2023

PUGET SOUND ENERGY

Bainbridge Island Energy Storage Battery

Corporate Spending Authorization (CSA)

Approval History:

Approved By	Date Approved
Approved by Cost Center Owner: Pagano , Tony	4/3/2023
Approved by Director Sponsor: Roque Bamba	4/6/2023
Approved by Executive Sponsor: Koch , Dan	4/6/2023
CSA Status changed to Approved	4/6/2023
Approved by Cost Center Owner: Lim , Thina	12/5/2023
Approved by Director Sponsor: Lim , Thina	12/5/2023
Approved by Executive Sponsor: Lim , Thina	12/5/2023
CSA Status changed to Approved	12/5/2023
Approved by Cost Center Owner: Pagano , Tony	1/25/2024
Approved by Director Sponsor: Bamba , Roque	1/26/2024
Approved by Executive Sponsor: Vargo , Michelle	2/1/2024
CSA Status changed to Approved	2/1/2024

PUGET SOUND ENERGY

Bainbridge Tlines Trans

Corporate Spending Authorization (CSA)

Date Created:	Friday, February 10, 2023
Discretionary/ Non-Discretionary:	Discretionary
Multi Year Rate Plan:	Specific
Equity Impact:	Yes
Strategic Alignment:	Evolve the Business-Operating Model
Estimated In-Service Date:	Sunday, October 31, 2027
Current State (Business Need):	The Bainbridge Island Electric System Needs Assessment report summarized transmission system reliability and operational issues that arise from having two radial transmission lines serving the southern two thirdsof Bainbridge Island. One radial line extends from Port Madison Substation to Winslow Substation and the other extends from Port Madison Substation to Murden Cove Substation. Data from 2013 to 2017 analyzed in the needs assessment and subsequent analyses of data from 2018 to 2020 indicate that atransmission line between Winslow and Murden Cove Substations,looping the system, would have reduced customer minute interruptions (CMI) by 40% over the 8 year period from 2013 to 2020. In addition, with a looped system each substation on Bainbridge Island would be served by two transmission lines. This will improve transmission operating flexibility and allow for sections of transmission line to be taken out of service for routine maintenanceor emergency repair without interrupting service to customersor taking substations off linemaintenanceor emergency repair without interrupting service to customersor taking substations off line maintenanceor emergency repair without interrupting service to customersor taking substations off line

PUGET SOUND ENERGY

Bainbridge Tlines Trans

Corporate Spending Authorization (CSA)

Desired State (Proposed Solution):

The proposed solution is to build a new 3.4 mile transmission line between MurdenCove Substation and Winslow Substation. The route for the new line was selected after a two year public engagement process. The selected route will follow existing public roads and be co-located with existing distribution lines along its entire length. Winslow and Murden Cove Substations will need upgrades to terminate the new line including among other improvements -new control houses, new circuit breakers, new dead-end towers, new disconnect switches, new protection relays, and expanded storm water systems. To support high speed transfer tripping, Port Madison Substation will need a new control house, a new circuit breaker,and new protection relays. New fiber lines will also need to be installed along sections of the new and existing transmission lines.

PUGET SOUND ENERGY

Bainbridge Tlines Trans

Corporate Spending Authorization (CSA)

Outcome/Results (What are the anticipated benefits):	The project will reduce SAIDI and SAFI numbers on Bainbridge Island. The project will improve operational flexibility and allow for routine maintenance and emergency repair of sections of transmission line without interrupting service to customers or taking substations off line.There will be a reduction in long-term O&M costsdue to the reduced need for emergency repairs. The project will improve customer satisfaction.

PUGET SOUND ENERGY

Bainbridge Tlines Trans

Corporate Spending Authorization (CSA)

Dependencies: Yes

Dependencies comment: None.

Escalation Included: No, escalation has not been included.

Total Estimated Costs: $27,800,000

Estimated Five Year Allocation:

Funds Type	ID	Line Item Description	Previous Years Actuals	Fiscal 2024 Requested	Fiscal 2025 Requested	Fiscal 2026 Requested	Fiscal 2027 Requested	Fiscal 2028 Requested
O&M	77991	OMRC	$ -	$ -	$ -	$ -	$ -	$ -
Capital	W_R.10019.01.01.02	Bainbridge Trans WIN-MUR Loop	$ -	$ 1,038,000	$ 7,437,480	$ 8,657,000	$ 1,706,000	$ 100,000

Incremental O&M: Both

Qualitative Benefits:

Improve reliability by reducingSystem Average Interruption Duration Index (SAIDI) and System Average Interruption Frequency Index (SAIFI); increase customer satisifaction; improve operational flexibility for routine maintenance and emergency repairs; reduce costs for unplanned maintenance and emergency repairs;reduce community risks related to outages; reduce work related incidents or accidents due to emergency repairs.

Quantitative Benefits:

Quantitative Benefits	Benefit Type	Previous Years	Fiscal 2023	Fiscal 2024	Fiscal 2025	Fiscal 2026	Fiscal 2027	Fiscal 2028	Remaining Costs	Life Total

Risk Summary:

Passing code amendments, obtaining permits, community resistance, acquiring easements,andthe condemnation process pose the greatest risks to the project.

PUGET SOUND ENERGY

Bainbridge Tlines Trans

Corporate Spending Authorization (CSA)

Change Summary:

Planning Cycle	Change Summary	Last Update Date
2022 Baseline Cycle	This CSA has been migrated into the EPPM tool at go-live as part of the Phase 1 EPPM implementation effort. The projects in this CSA were previously approved for the 2023-2027 capital plan. Please refer to the original CSA document for additional information (if available.)	2/10/2023
2023 Cycle 1	The Planning to Design CSA was approved on 11/4/2022.	3/29/2023

PUGET SOUND ENERGY

Bainbridge Tlines Trans

Corporate Spending Authorization (CSA)

Approval History:

Approved By	Date Approved
Approved by Cost Center Owner: Pagano , Tony	4/4/2023
Approved by Director Sponsor: Roque Bamba	4/6/2023
Approved by Executive Sponsor: Koch , Dan	4/6/2023
CSA Status changed to Approved	4/6/2023
Approved by Cost Center Owner: Lim , Thina	12/4/2023
Approved by Director Sponsor: Lim , Thina	12/5/2023
Approved by Executive Sponsor: Lim , Thina	12/5/2023
CSA Status changed to Approved	12/5/2023
Approved by Cost Center Owner: Pagano , Tony	1/25/2024
Approved by Director Sponsor: Bamba , Roque	1/26/2024
Approved by Executive Sponsor: Vargo , Michelle	2/1/2024
CSA Status changed to Approved	2/1/2024

PUGET SOUND ENERGY

Winslow Tap 115kV Transmission Line Rebuild

Corporate Spending Authorization (CSA)

SUBMISSION INFORMATION

CSA ID:	CSA0177
Date Created:	February 10, 2023
Discretionary/ Non-Discretionary:	Discretionary
Multi Year Rate Plan:	Specific
Strategic Alignment:	Operate the Business-Reliability

ENERGY EQUITY

Is this project expected to positively impact priority populations?	Yes

KEY SCHEDULE AND FINANCIAL INFORMATION

Estimated In-Service Date:	October 15, 2025

Estimated Five Year Allocation:

CSA ID	CSA Title	Fiscal 2024 Allocated	Fiscal 2025 Allocated	Fiscal 2026 Allocated	Fiscal 2027 Allocated	Fiscal 2028 Allocated	Fiscal 2029 Allocated
CSA0177	Winslow Tap 115kV Transmission Line Rebuild	$ 2,052,237	$ 4,144,819	$ -	$ -	$ -	$ -

Is there New Ongoing O&M?	No
Are there changes to Existing Ongoing O&M?	No
Escalation Included:	No, escalation has not been included.
Escalation Description:	None

ONGOING BENEFITS

Qualitative Benefits (select all that apply):

	Future cost avoidance
	Customer
	DEI (Diversity, Equity, Inclusion)
	Regulatory
X	**Reliability Improvement**
	Risk Reduction
	Safety

Qualitative Benefits Details: Improved reliability will result from improved access, allowing for easier and safer patrol during storms, vegetation maintenance and system repairs. There will be O&M cost savings resulting from a reduction in the need for emergency repair of damage. Aligning PSE access requirements with community trails will improve PSE relations on Bainbridge.

Quantitative Benefits:

Quantitative Benefits										

RISK MANAGEMENT SUMMARY

Dependencies:	No
Dependencies Details:	None
Risk Summary:	Community Resistance, Permitting, and Condemnation pose the greatest risk to the Bainbridge Island Reliability Projects.

PUGET SOUND ENERGY

Winslow Tap 115kV Transmission Line Rebuild

Corporate Spending Authorization (CSA)

PROJECT OVERVIEW

Business Need:

Transmission Reliability Need: A reliability improvement need was identified to improve the performance of the Winslow Tap transmission line that feeds Winslow substation. Nearly 70 percent of the transmission related customer minutes of service interruption on Bainbridge Island were from outages to the Winslow Tap transmission line largely due to vegetation. The extreme duration of these outages is most often due to the poor access on the cross county section of the line. Key observations regarding Winslow Tap transmission outages over the 5 year period between 2013 and 2017: - Outages are long (ranging from 1 to 13 hours per year) - Outages are frequent (ranging from 1 to 5 outages per year) - This transmission system generally performs poorly in storms compared to other transmission systems. Reasons for poor reliability of the Winslow Tap: - Heavy vegetation along Winslow Tap - Difficult terrain and poor access along the line - Limited distribution substation capacity for backup of Winslow substation Transmission Aging Infrastructure Need: An infrastructure replacement need was identified for the Winslow Tap transmission line support structures that are nearing end of useful life and could potentially fail leading to unplanned outages and emergency repairs. Aging infrastructure risks include failure prone wishbone style cross arms and a 60 year old conductor.

PUGET SOUND ENERGY

Winslow Tap 115kV Transmission Line Rebuild

Corporate Spending Authorization (CSA)

Proposed Solution:	The project scope addresses the aging infrastructure need for the Winslow Tap transmission line by rebuilding the 4.5 mile line and improving the corridor access and vegetation management for maintainability and operability of the line. The scope includes installation of new poles and Tern conductor and the strategic acquisition of new property rights that will enable efficient access and improved footprint for system clearances. In 2020, upon inspection of the system cross arm framing, it was determined that 25 poles qualified for immediate replacement under the Pole Replacement Program. As such, 17 poles were replaced in the fall of 2020 which were all designed to meet the future rebuild specifications. The remaining 8 were replaced summer 2021. This work was funded by the pole replacement program and resulted in a $2.35M reduction in the Winslow Tap rebuild project budget.

PUGET SOUND ENERGY

Winslow Tap 115kV Transmission Line Rebuild

Corporate Spending Authorization (CSA)

Outcome/Results:	Upgrades in traditional transmission infrastructure to replace aging equipment and improve reliability. The project will reduce SAIDI and SAIFI numbers for Bainbridge Island customers. There will be an avoidance of O&M resulting from a reduction in the need for emergency repair and improved access.

PUGET SOUND ENERGY

Winslow Tap 115kV Transmission Line Rebuild

Corporate Spending Authorization (CSA)

APPROVAL AND CHANGE HISTORY

Change Summary:

Planning Cycle	Change Summary	Last Update Date
2022 Baseline Cycle	This CSA has been migrated into the EPPM tool at go-live as part of the Phase 1 EPPM implementation effort. The projects in this CSA were previously approved for the 2023-2027 capital plan. Please refer to the original CSA document for additional information (if available.)	2/10/2023

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Approved by Executive Sponsor: Vargo , Michelle	2/1/2024
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