

FINAL

# **Green Water BESS Project: 200 MW Large Generator Interconnection Facilities Study**

Pierce County, Washington

Queue Position No.98

December 15, 2023



TRANSMISSION POLICY & CONTRACTS DEPARTMENT

SYSTEM PLANNING DEPARTMENT

MAJOR PROJECTS DEPARTMENT

REVIEW #1  
SEPA-2024-0001

<b>I. Introduction.....</b>	<b>3</b>
<b>II. Definitions.....</b>	<b>4</b>
<b>III. Existing System .....</b>	<b>6</b>
<b>IV. Proposed System .....</b>	<b>6</b>
<b>V. Network Upgrades .....</b>	<b>7</b>
Substation Civil and Electrical .....	7
Protection and Controls.....	8
Information Technology/Telecommunications (“IT”).....	8
Network Transmission Lines .....	9
<b>VI. Transmission Provider’s Interconnection Facilities .....</b>	<b>9</b>
Substation Electrical .....	9
Substation Civil.....	9
Protection and Controls.....	9
Metering .....	10
<b>VII. Interconnection Customer’s Interconnection Facilities .....</b>	<b>12</b>
<b>VIII. Contingent Facilities and PSE Plan Facilities.....</b>	<b>12</b>
<b>IX. Affected Systems .....</b>	<b>13</b>
<b>X. Real Estate &amp; Right of Way.....</b>	<b>14</b>
<b>XI. Permitting .....</b>	<b>14</b>
Permitting Risks.....	15
<b>XII. Long-Lead Materials .....</b>	<b>15</b>
<b>XIII. Schedule.....</b>	<b>16</b>
<b>XIV. Budget Estimate Summary.....</b>	<b>16</b>
The cost estimate includes:.....	17
The cost does not include: .....	17
<b>XV. Additional Risks and Assumptions .....</b>	<b>17</b>
<b>XVIMiscellaneous Requirements .....</b>	<b>19</b>
<b>XVII. Attachments .....</b>	<b>19</b>

## I. Introduction

This Interconnection Facilities Study ("IFS") provides results for a Large Generator Interconnection Request submitted by GREE bn, LLC ("Interconnection Customer") for its proposed Green Water Battery Energy Storage System (BESS) project (the "Project" or "Generating Facility"). Puget Sound Energy, Inc. ("PSE" or "Transmission Provider") originally received the interconnection request for the Project on March 19<sup>th</sup> 2021.

PSE performed this IFS according to its Federal Energy Regulatory Commission ("FERC") approved Large Generator Interconnection Procedures ("LGIP"). Under the LGIP, the Project is required to meet all requirements identified in the LGIP, PSE's Technical Specifications and Operating Protocols and Procedures for Large Generation Interconnections PSE-TC-160.50 ("Technical Specifications"), and PSE's Energy Imbalance Business Practice.<sup>1</sup> LGIP Studies, including this IFS, evaluate the project as a Generating Facility and do not contemplate load service (*e.g.*, charging from PSE's electrical system) beyond station service.<sup>2</sup>

More particularly, the contents herein summarize the results of PSE's analyses to interconnect the Project into PSE's Transmission System. For the Project, Interconnection Customer elected Network Resource Interconnection Service ("NRIS") and a Commercial Operation Date ("COD") of December 15<sup>th</sup> 2023. Interconnection Customer has proposed a Point of Interconnection ("POI") at PSE's 230-kV White River Substation and chosen in the Facilities Study Agreement that this study be conducted within 90 days and provide a +/- 20 % cost estimate.

Interconnection Customer's request is for the interconnection of a BESS with a maximum nameplate generation capacity of 200 MW for both summer and winter and located in Pierce County, WA. The Project consists of 74 bi-directional inverters coupled to battery energy storage. The inverters proposed are SMA SCS 3950-UP-US inverters, which produce 3220 kW/unit. A central plant controller will limit the Project to 200 MW at the POI. The Project will interconnect to PSE's White River Substation at 230-kV at the POCO via a new 230 kV transmission line built and owned by Interconnection Customer. It is solely Interconnection Customer's responsibility to construct the ICIF and acquire the necessary rights-of-way.

---

<sup>1</sup> These materials may be found on PSE's Open Access Same-Time Information System ("OASIS"), located at <https://www.oasis.oati.com/psei/index.html>.

<sup>2</sup> The ability to charge from the grid is not a product offered under PSE's LGIP but may be applied for and studied either through a FERC-jurisdictional Line and Load Request or a Transmission Service Request, or the state-jurisdictional tariff processes. A Project will not be permitted to charge off of PSE's system until a load study has been completed and the customer has been granted load service.

## II. Definitions

For ease of reference, the following selected terms and definitions are referenced from PSE's FERC LGIP. All terms for this IFS, stated or unstated, are defined therein unless otherwise stated herein.

**Energy Resource Interconnection Service** shall mean an Interconnection Service that allows the Interconnection Customer to connect its Generating Facility to the Transmission Provider's Transmission System to be eligible to deliver the Generating Facility's electric output using the existing firm or non-firm capacity of the Transmission Provider's Transmission System on an as available basis. Energy Resource Interconnection Service in and of itself does not convey transmission service.

**Interconnection Customer's Interconnection Facilities** shall mean all facilities and equipment that are located between the Generating Facility and the Point of Change of Ownership, including any modification, addition, or upgrades to such facilities and equipment necessary to physically and electrically interconnect the Generating Facility to the Transmission Provider's Transmission System. Interconnection Customer's Interconnection Facilities are sole use facilities.

**Interconnection Request** shall mean an Interconnection Customer's request, in the form of Appendix 1 to the Standard Large Generator Interconnection Procedures, in accordance with the Tariff, to interconnect a new Generating Facility, or to increase the capacity of, or make a Material Modification to the operating characteristics of, an existing Generating Facility that is interconnected with the Transmission Provider's Transmission System.

**Interconnection Facility Study** shall mean a study conducted by the Transmission Provider or a third party consultant for the Interconnection Customer to determine a list of facilities (including Transmission Provider's Interconnection Facilities and Network Upgrades as identified in the Interconnection System Impact Study), the cost of those facilities, and the time required to interconnect the Generating Facility with the Transmission Provider's Transmission System. The scope of the study is defined in Section 8 of the Standard Large Generator Interconnection Procedures.

**Network Resource** shall mean any designated generating resource owned, purchased, or leased by a Network Customer under the Network Integration Transmission Service Tariff. Network Resources do not include any resource, or any portion thereof, that is committed for sale to third parties or otherwise cannot be called upon to meet the Network Customer's Network Load on a non-interruptible basis.

**Network Resource Interconnection Service** shall mean an Interconnection Service that allows the Interconnection Customer to integrate its Large Generating Facility with the Transmission Provider's Transmission System (1) in a manner comparable to that in which the Transmission Provider integrates its generating facilities to serve native load customers; or (2) in an RTO or ISO with market based congestion management, in the same manner as Network Resources. Network Resource Interconnection Service in and of itself does not convey transmission service.

**Network Upgrades** shall mean the additions, modifications, and upgrades to the Transmission Provider's Transmission System required at or beyond the point at which the Interconnection Facilities connect to the Transmission Provider's Transmission System to accommodate the interconnection of the Large Generating Facility to the Transmission Provider's Transmission System.

**Point of Change of Ownership** shall mean the point, as set forth in Appendix A to the Standard Large Generator Interconnection Agreement, where the Interconnection Customer's Interconnection Facilities connect to the Transmission Provider's Interconnection Facilities.

**Point of Interconnection** shall mean the point, as set forth in Appendix A to the Standard Large Generator Interconnection Agreement, where the Interconnection Facilities connect to the Transmission Provider's Transmission System.

**Transmission Provider** shall mean the public utility (or its designated agent) that owns, controls, or operates transmission or distribution facilities used for the transmission of electricity in interstate commerce and provides transmission service under its Tariff. The term Transmission Provider should be read to include the Transmission Owner when the Transmission Owner is separate from the Transmission Provider.

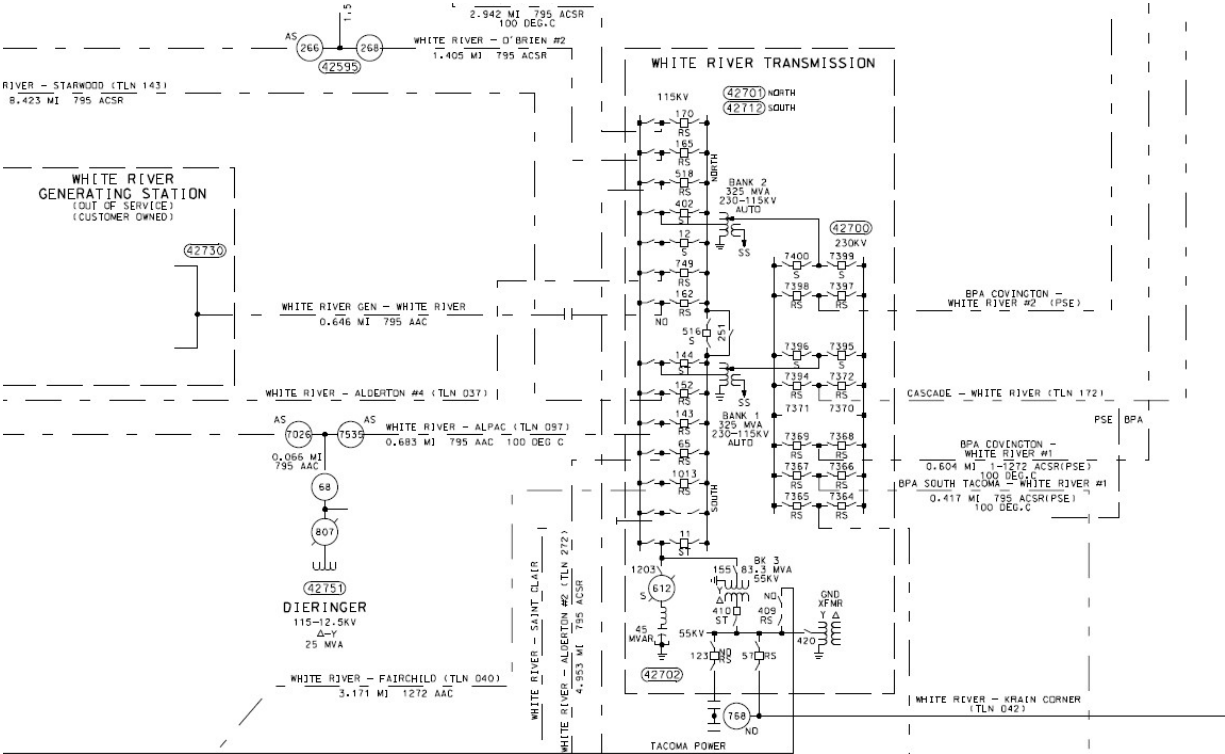
**Transmission Provider's Interconnection Facilities** shall mean all facilities and equipment owned, controlled, or operated by the Transmission Provider from the Point of Change of Ownership to the Point of Interconnection as identified in Appendix A to the Standard Large Generator Interconnection Agreement, including any modifications, additions or upgrades to such facilities and equipment. Transmission Provider's Interconnection Facilities are sole use facilities and shall not include Distribution Upgrades, Stand Alone Network Upgrades or Network Upgrades.

**Transmission System** shall mean the facilities owned, controlled or operated by the Transmission Provider or Transmission Owner that are used to provide transmission service under the Tariff.

### III. Existing System

PSE’s existing White River 230-kV Substation configuration is shown below.

#### Existing White River 230-kV Configuration

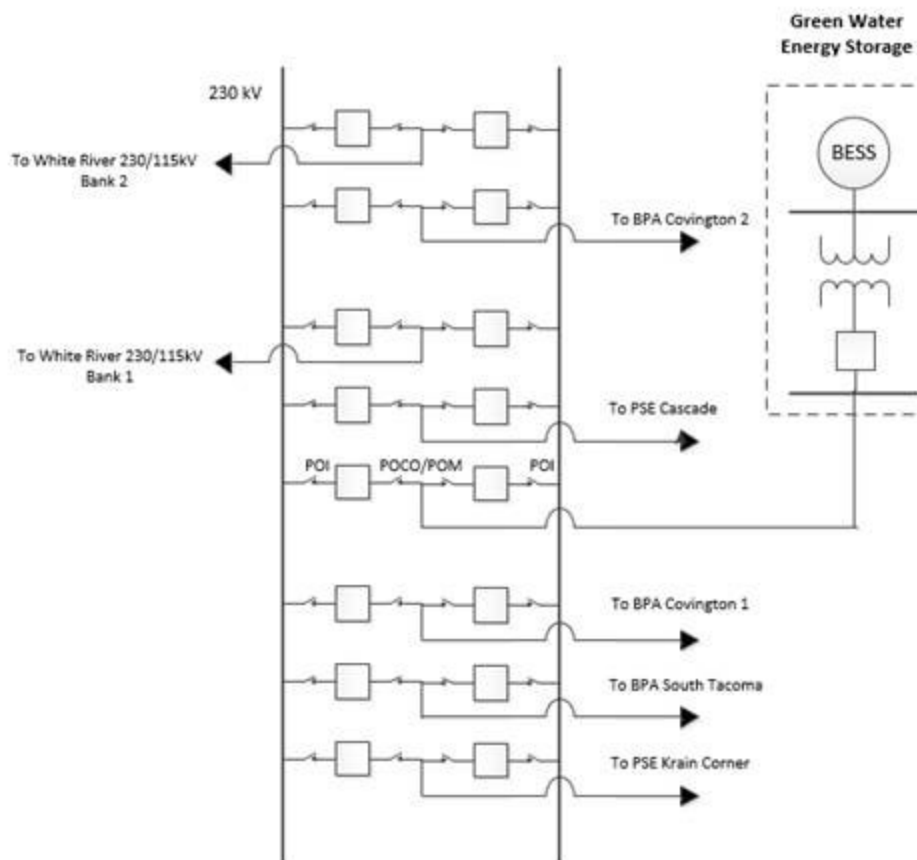


### IV. Proposed System

Interconnection Customer requested a POI at White River 230-kV Substation for the Project. As a result, the Project POI is an open bay at PSE’s White River 230-kV Substation that is available for the Project’s interconnection for NRIS.

It is Interconnection Customer’s responsibility to make all necessary arrangements for construction power, station service, and back feed power as applicable.

**Figure 2 – Proposed POI at PSE’s White River 230-kV Substation Configuration  
NRIS**



## V. Network Upgrades

Interconnection Customer has selected NRIS. For this service, Network Upgrades includes all new facilities beyond the POI on PSE's Transmission System.

### *Substation Civil and Electrical*

#### *Substation Requirements*

- The Transmission Provider's Interconnection Facilities will connect to PSE's existing west and east 230-kV bus. There are no Network Upgrades to account for associated with substation civil and electric assembly scope.

## ***Protection and Controls***

### *Protection Requirements*

- There are no Network Upgrades associated with protection and controls.

## ***Information Technology/Telecommunications (“IT”)***

The Project will require coordination with the existing PSE’s White River 230-kV Substation for metering, station service, system protection, and SCADA equipment upgrades. This assumes that sufficient unutilized capacity exists on the fiber system, and an agreement can be reached for minimum usage as defined below.

### *Telecommunications*

- Fiber between PSE White River 230-kV Substation and the Project
- Transition point between Customer’s OPGW fiber and PSE’s fiber

### *Supervisory Control and Data Acquisition (“SCADA”)*

- PSE assumes the existing SCADA equipment at PSE White River 230-kV Substation can be utilized for information points as needed.
- SCADA and Telemetry for this Project will be per PSE-TC-160.50 Table 6.6.1 RTU and Telemetry Points on Generating Units equal to or greater than 2 MW. This assumes that the generator is not under PSE control.
  - The White River RTU will poll both the main and station service meters using the DNP 3 protocol as applicable.
  - This link will retrieve instantaneous MWatts, MVA, and Bus Voltage.
  - This link will also retrieve MWatt Hour data for both delivered and received.
  - The status of the generator breaker will be retrieved via a dry contact to the RTU digital input module or other means as determined.
  - An IED will be installed to send MWatts (this is to provide both a primary and backup MW for PSE Automated Generation Control (“AGC”) back to both main East Side Operations (“ESO”) and back up (BUCC) control centers.
- After construction is complete, PSE will need 24/7 ongoing access to the telecom and SCADA equipment located at the Project site.



***Network Transmission Lines***

Per the facilities study no network transmission line upgrades are needed for this POI.

**VI. Transmission Provider's Interconnection Facilities**

Transmission Provider's Interconnection Facilities ("TPIF") include all facilities between the Point of Change of Ownership ("POCO") and POI.

***Substation Electrical***

The current substation configuration at the White River 230-kV side is double bus double breaker. To accommodate the new 230-kV line bay for the Project, existing Bay GG and Bay HH will be built out and connected to the east and west buses.

The design includes two 230-kV 3000A 63kA circuit breakers, a thirty five-foot dead-end tower, four 230kv 3000A disconnect switches, three metering CT/PT combination units, and all associated structures and foundations. Conduit and grounding for the new equipment is also included.

For these requirements, PSE assumes that Interconnection Customer's intertie transmission line will be coming into White River 230-kV Substation from the east side.

Attachment 5 – Substation Proposed Layout

***Substation Civil***

Civil work at White River 230-kV Substation consists of required electrical equipment foundations and steel structures, including a new dead-end tower, breaker foundations, switch structures and foundations, and a CT/PT combo structure and foundation. There is space within the existing substation footprint to accommodate all of this equipment and it is assumed that the existing soil conditions are such that no deep foundations will be required for this work.

***Protection and Controls***

See Section 5 of PSE's Technical Specifications for minimum interconnect protection requirements.

***Protection Requirements***

- The interconnection breakers must be integrated into the new bus. This will require integration of bus differential and breaker fail schemes.

- PSE's standard line differential protection package will be used on the line to Green Water Battery Energy Project. This will consist of dual SEL-411L relays.
- Line protection elements will consist of line current differential with backup phase distance and directional ground overcurrent elements.
- The protection scheme will require high-speed communications with the interconnect breaker(s) at the Generating Facility. The communications between the Generating Facility and PSE's White River 230-kV Substation will be the responsibility of Interconnection Customer.
- A direct transfer trip signal will be sent to the interconnection breaker(s) at the Generating Facility on breaker failure.
- Closing of the interconnect breakers will be blocked when the line is hot.

### *Metering*

#### Metering Abbreviations

- AGC – Automated Generation Control
- ANSI – American National Standards Institute
- CMU – combination metering unit – potential transformer and current transformer
- CAISO – California Independent System Operator
- EIM – Energy Imbalance Market, Operated by CAISO
- GPS - Global Positioning System
- IRIG - Inter-Range instrumentation Group
- MV-90 - Itron Multi-Vendor 1990 meter data systems
- POM - Point of Metering
- NRI# - New Resource Implementation Number, for the EIM
- SQMD – (5) minute interval settlement quality meter data, for the EIM
- SS – Station Service, auxiliary power, backfeed for when the generation plant is idled

Consistent with PSE's OATT, unless otherwise stated herein, Interconnection Customer will provide for all revenue metering installation costs as described in the latest revision of PSE's Technical Specifications. Further, Interconnection Customer will provide for all revenue metering installation costs by PSE labor forces in PSE's White River 230-kV Substation.

#### *Metering Requirements*

- PSE will require 230-kV combined metering instruments (CMUs) at the Point of Metering (POM). Per Technical Specifications Section 12.7, high accuracy, extended range, current transformers will be required. They shall have  $\pm 0.15\%$  accuracy class, from 1% or less, through their rating factor limits, through a burden rating of 0.1 to 1.8  $\Omega$ . Per CAISO, potential transformers with an accuracy class of at least  $\pm 0.3\%$  will be required.
- Proposed CMUs will likely exceed 3,745 lbs. each and will likely require their own substation steel support structure ahead of the 230KV dead-end tower, similar to MID 9998614, Dwg D-17615. See Arteche Dwg No. 418907036.
- PSE will require, at POM, one switchboard meter, full four quadrant, to be served from the same high accuracy, extended range metering instruments.
- PSE will require, at POM, one switchboard meter, which shall have its own dedicated test switch and 125VDC meter auxiliary power supply.
- PSE will require, at POM, one switchboard meter, which shall receive time clock source from IRIG direct connection from a substation Global Positioning System clock.
- PSE will require, at POM, Meter to be programmed for all four quadrants, and 5 minute interval SQMD for the EIM. PSE will require PSE Corporate Network available at POM for PSE MV-90 billing server access to this Meter. Interconnection Customer may receive kWh energy & SQMD from this meter, provided they furnish their own corporate IP network fiber up to the meter. Interconnection Customer may receive Distributed Network Protocol 3 ("DNP3.0") or Modbus serial data from this meter, provided they furnish their own Control IP network fiber up to the meter.

#### *Accuracy Testing*

PSE will require, at POM, one switchboard meter to be accuracy tested by PSE Meter Operations biennially.

#### *AC Disconnect Requirement*

To satisfy the requirements of the Technical Specifications Section 4.1, and WAC 296-45-335, "De-energizing Lines and Equipment for Employee Protection," PSE requires Interconnection Customer to provide for switch installation for PSE crews 24/7 access to a visibly opening and

lockable gang operated three-phase disconnect switch, which is to be installed on the Interconnection Customer's side of the interconnection meter. PSE will place a placard with a reference number on this disconnect, identifying it as "Customer-Owned Generation." PSE will lock and tag out the switch to disconnect the solar generation from PSE's system for the operation and maintenance work when needed.

#### *Metering Assumptions*

POI, POCO, and POM shall be at PSE's White River 230-kV Substation, which will include new 230-kV bus bay, for this Project. No line loss or transformer loss compensation is required for the meter.

#### *Other*

Interconnection Customer will ask for station service and auxiliary power for when the plant is idled. That station service load must be in excess of 398 KW monthly demand in order to build metering described herein per Option A on the latest revision of PSE'S OATT and Technical Specifications. In this case, the station service back feed loads are expected to be approximately 5-6 MVA but this must be verified.

If station service load is less than 398 KW monthly demand, station service metering must be built per Option B on the latest revision of PSE'S OATT and Technical Specifications.

Thermal rating factor for the metering current transformers at the POM will allow for at least 223 MVA bi-directionally at 230-kV.

## **VII. Interconnection Customer's Interconnection Facilities**

Interconnection Customer's Interconnection Facilities ("ICIF") include the Project's generating station and collector substation, through the generator lead line, and up to the POCO. Interconnection Customer is responsible for all ICIF construction, costs, permitting, etc., which must comply with PSE's Technical Specifications. See PSE's Technical for details of interconnect requirements. Section 5 of that document describes specific protection requirements. Interconnection Customer's compliance with the technical standards is subject to Transmission Provider's inspection and approval before the Project may be deemed commercially operable.

- All protective relay design and settings at the Generating Facility will be the responsibility of the Interconnection Customer and be reviewed by PSE.
- The Generating Facility's interconnect relaying must be compatible with PSE relaying. This must include dual SEL-411L relays. PSE will review relay selection, design, and relay settings for these relays.

- Breaker failure protection for the Generating Facility's interconnect breaker(s) is required. The design must include sending a direct transfer trip signal to PSE on breaker failure.
- Redundant relaying is required throughout the Project in accordance with Good Utility Practice.
- The proposed interconnection transformer winding configuration of wye grounded – delta – wye grounded is acceptable. PSE will require a copy of the transformer test report before commissioning of the Project.
- A dedicated transmitter will be installed to send MW. This is to provide both a primary and backup MW for PSE's Automated Generation Control ("AGC") back to both main and back up control centers.
- PSE Telecom or the customer to add fiber between the BESS breaker and WRT-230 breaker along the new Transmission line for line-diff.

## VIII. Contingent Facilities and PSE Plan Facilities

No contingent Facilities were identified by the study. Interconnection Queue<sup>3</sup> Project 54 and PSE Plan<sup>4</sup> projects were included in power flow analysis. A restudy may be performed to determine the potential for additional mitigation requirements if Project Queue Position No. 54 is removed from the Queue, select Energy Resource Interconnection Service ("ERIS") or the completion date for a PSE Plan project is delayed.

## IX. Affected Systems

Consistent with PSE's OATT, PSE is required to coordinate with Affected Systems with Affected System Operators to determine the impact of the proposed Project.

BPA is a potentially affected system and would be included in the interconnection discussion. Additional coordinating agreements between PSE and BPA may therefore be necessary for interconnection.

This IFS does not include any potential costs associated with requirements from potentially affected systems and costs associated with negotiating any necessary agreements; further, the IFS does not consider any delays resulting from such negotiation or any other delay as a result of PSE's efforts to effectuate Interconnection Customer's desired interconnection configuration.

<sup>3</sup> [https://www.oasis.oati.com/woa/docs/PSEI/PSEIdocs/9-26-2023\\_Interconnection\\_Queue.pdf](https://www.oasis.oati.com/woa/docs/PSEI/PSEIdocs/9-26-2023_Interconnection_Queue.pdf)

<sup>4</sup> [https://www.oasis.oati.com/woa/docs/PSEI/PSEIdocs/PSE\\_Plan\\_2022\\_Final\\_-\\_Updated.pdf](https://www.oasis.oati.com/woa/docs/PSEI/PSEIdocs/PSE_Plan_2022_Final_-_Updated.pdf)

The LGIA will contain a condition precedent to the Project's Commercial Operation Date that Interconnection Customer and any Affected Systems have made any arrangements or agreements necessary for the protection of the Affected Systems.

## **X. Real Estate & Right of Way**

Interconnection Customer shall acquire all real property and other rights necessary for construction, installation, operation and maintenance of, and permanent access by both Interconnection Customer and Transmission Provider (during and after construction) to, Interconnection Customer's Interconnection Facilities and communication equipment and facilities. Interconnection.

## **XI. Permitting**

The necessary upgrades to the electrical system associated with the Project may require the acquisition of land use, building, and environmental permits. Interconnection Customer either has or will in a timely manner obtain and pay for all permits required to execute the work and operate the Transmission Provider's Interconnection Facilities and Network Upgrades.

Interconnection Customer will include Transmission Provider's system requirements in all applicable Project's description for purposes of local, state and federal permitting—particularly the Project's State Environmental Policy Act ("SEPA") environmental checklist.

### ***Likely Required Permits***

While the Project's impacts that include the route and details associated with connecting to the PSE substation are presently unknown at this time, PSE, in consultation with Pierce County Community Development readily available information, has made an initial estimation that the following permits may be required for the proposed Project:

- Grading Permit – Pierce County
- Building Permit – Pierce County
- Site Development Storm water Permit – Pierce County; requires –
  - Engineer stamped plans
  - Drainage report
- Construction Storm water Permit – Washing State Department of Ecology

- Storm water Pollution Prevention Plan
- SEPA Determination of Non-Significance or Mitigated Determination of Non-Significance – Pierce County

This initial permit requirements estimation is subject to change, and all permitting requirements shall be subject to Pierce County and/or other relevant permitting authority determinations and requirements.

### ***Permitting Risks***

Permitting requirements could affect the cost or schedule for completing the interconnection project. Work triggering long-lead permitting would include the following:

- Work in close proximity to water bodies
- Work that has the potential to impact endangered and/or protected species
- Construction activities that disturb critical areas (includes wetlands, streams, steep slopes)
- Any installation that exceeds height or other zoning limitations
- Potential project characteristics such as substations may not be a permitted facility at the location selected and would need to receive a conditional use permit
- Access improvements may be required to reach proposed or existing structures in need of upgrades, which can trigger additional permit review and/or mitigation requirements

## **XII. Long-Lead Materials**

Long-Lead Materials are items that require extended time to obtain once Engineering is complete. Delay in initiating the acquisition process may result in a delay Commercial Operation. Section 9 of Transmission Provider’s LGIP provides details for an Engineering & Procurement Agreement.

PSE has identified the following items as Long-Lead Materials:

- Steel Transmission and Substation Dead-end Structures: 18Months.
- 230-kV Breakers: 24 Months.

- 230-kV Switches: 8 Months.
- 230-kV CT/PT Combo (& substation steel support structures): 18 Months

### **XIII. Schedule**

Interconnection Customer has requested a COD of December 15<sup>th</sup>, 2023. Transmission Provider estimates that time needed to design, permit, and construct the TPIF and Network Upgrades is approximately *24-30 months*.

Transmission Provider as determined that Interconnection Customer's requested COD is infeasible.

The schedule is subject to the following assumptions and risks:

- PSE estimates 12 months are required for permitting, but it may take longer for Interconnection Customer to complete the SEPA checklist, obtain the necessary permits, site control, and rights of way.
- Interconnection Customer obtaining the necessary site control and rights of way
- Coordination with affected systems<sup>5</sup>
- Civil work will be completed during the dry season
- Timely acquisition of Long-Lead materials
- Property will be adjacent to PSE transmission line right-of-way

### **XIV. Budget Estimate Summary**

Consistent with the LGIP and the Project's Facilities Study Agreement, this section specifies and estimates the cost of the equipment, engineering, procurement and construction work needed to implement the system-requirement conclusions of the Interconnection System Impact Study in accordance with Good Utility Practice to physically and electrically connect the Interconnection Facilities to the Transmission System. This study's cost estimate refines and supersedes the cost estimate provided by the System Impact Study.

---

Coordination with affected systems may include negotiation time that may delay implementation; such delays are not included in this study's non-binding good faith estimate.



Should Interconnection Customer enter into a Large Generator Interconnection Agreement with Transmission Provider, Interconnection Customer will be required to provide security in the amount of the High Range cost estimate provided below.

Interconnection Customer elected to receive a +/- 20% cost estimate. This estimate percentage is reflected in the Pre-Contingency Total.

***The cost estimate includes:***

- The estimate's basis for PSE labor includes the assumption of a fifty-hour workweek.
- Any costs of the Transmission Provider Interconnection Facilities and Network Upgrades.

***The cost does not include:***

- Interconnection Customer's Interconnection Facilities
- The effect of any delay due to negotiation of any required agreement with any third party.
- Any costs associated with BPA requirements.
- Costs for diverse breaker and relay protection paths.
- Existing PSE communications tower/house move and/or replacement

A 25% base contingency is used to account for the incomplete design at the delivery and project high/low are estimated at requested +/- 20% However, all costs are estimates. Final costs may vary significantly from these estimates. The Interconnection Customer will be responsible for all actual costs, regardless of the estimated costs communicated to or approved by the Interconnection Customer.

Attachment 7 – Budget Estimate.

## **XV. Additional Risks and Assumptions**

The following list provides additional major assumptions and risks associated with the Project's timing and budget. Additional risks may be discovered as the Project progresses or remain unknown.

- Property is not located on rocky or poor soil location. Grading and foundation costs would increase with rocky or poor soil.

- Time and costs associated attributed to work with Affected Systems as non-FERC jurisdictional entities.
- Unknown permitting requirements that could jeopardize project schedule and ability to build substation.
- 203 days are required in order for PSE to apply to the CAISO for New Resource Implementation Number and five minute interval SQMD approval prior to energization.
- Interconnection Customer will complete activities within a timeframe to allow adequate time for PSE to complete the necessary network upgrades and interconnection facilities.
- In this case, PSE will require SCADA situational awareness MW signal for AGC be sourced from SEL-421 relays, and neither from the proposed revenue metering CMUs, nor SEL-735 revenue meter.
- The surrounding area near the White River Transmission substation is highly congested, as shown on the transmission system map and one line, with multiple transmission lines going in and out of the substation. These transmission lines and associated structures vary in height, voltage, and configuration. Some of the transmission facilities are owned and maintained by BPA. Interconnection Customer will be responsible for coordinating with the appropriate parties to ensure their final route and design will be compliant with applicable codes, clearances, and standards when in proximity to any existing transmission facilities. Any unforeseen changes to PSE's or BPA's infrastructure to accommodate the Interconnection Customer's facilities will add more time and cost to the project.
- It is Interconnection Customer's responsibility to obtain all necessary easements for access to substation parcel with enough room for turn-around area.
- The existing communications tower/house is assumed to stay in its existing location. A further study by the communications team would be required to determine if the tower has to move. The relocation of those facilities would fall under network upgrades and may increase costs.

Moreover, Interconnection Customer must complete activities within a timeframe to allow adequate time for PSE to complete the necessary network upgrades and interconnection facilities.

## **XVI. Miscellaneous Requirements**

- Interconnection Customer will be responsible for ensuring that PSE's Technical Specifications requirements are met. This document is located on PSE's OASIS.
- Interconnection Customer shall, at its sole expense, provide any additional Generating Facility data, forecasts, or other information reasonably required and necessary for any Transmission Provider to operate its Transmission System in accordance with Good Utility Practice and any other applicable operating requirements.

## **XVII. Attachments**

Attachment 1 – Project Location Map

Attachment 2 – Transmission System Map

Attachment 3 – One Line of Existing Transmission System

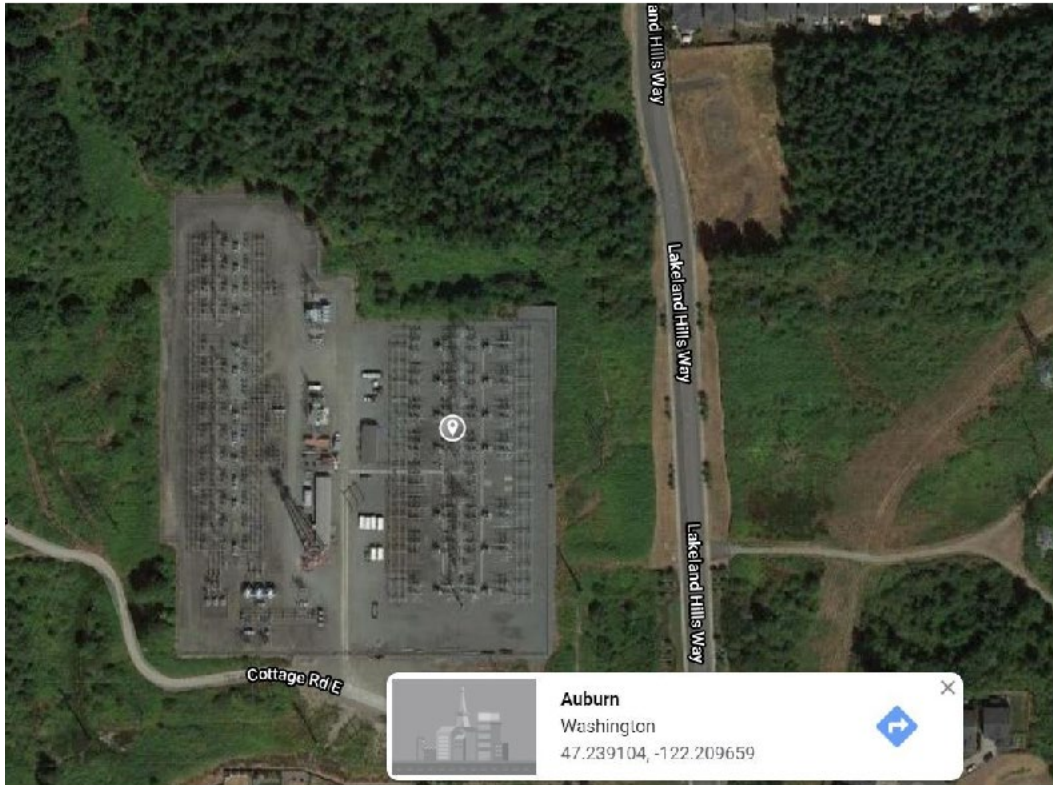
Attachment 4 – Proposed One Line

Attachment 5 – Substation Proposed Layout

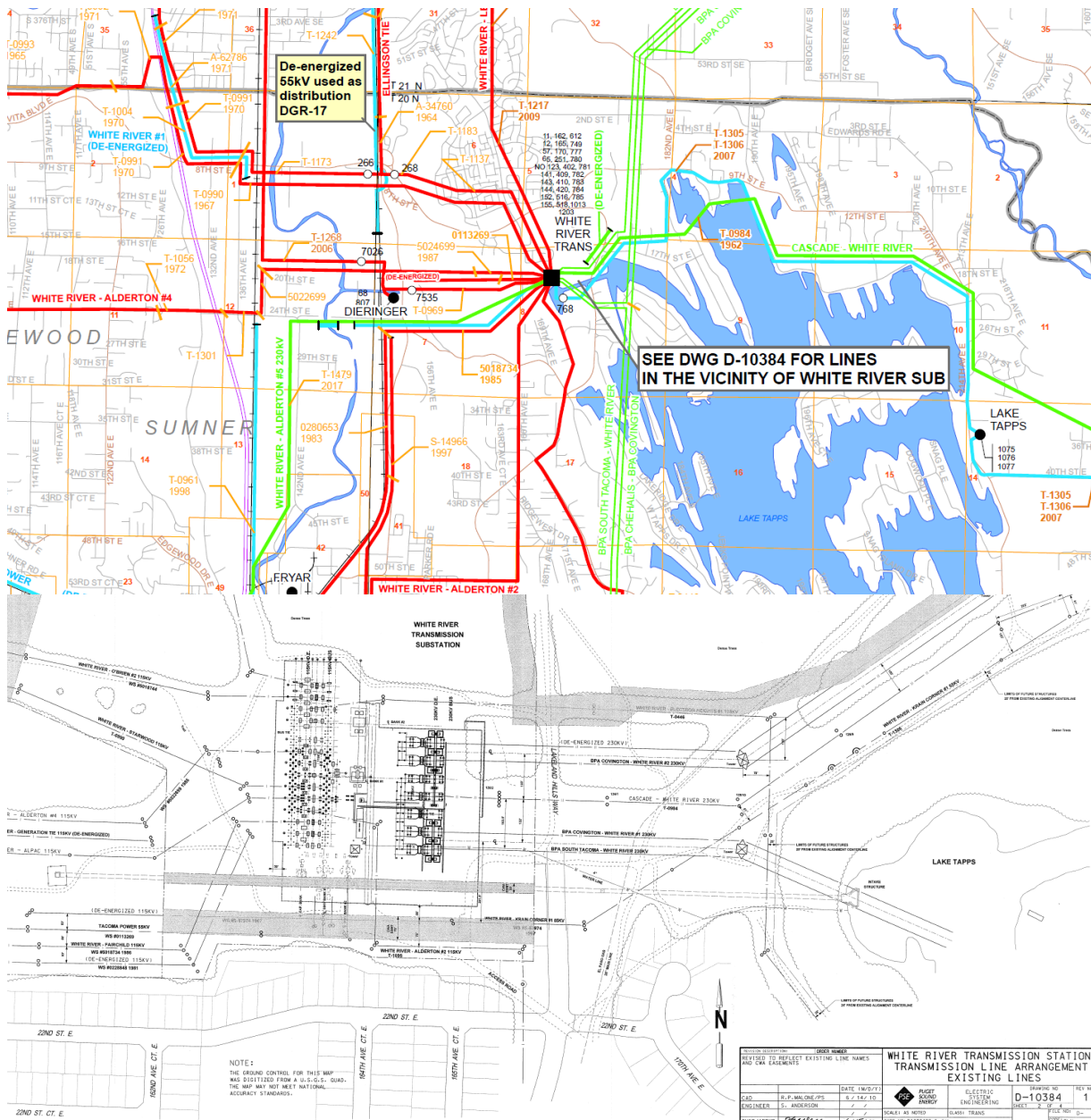
Attachment 6 – Schedule

Attachment 7 – Cost Estimate

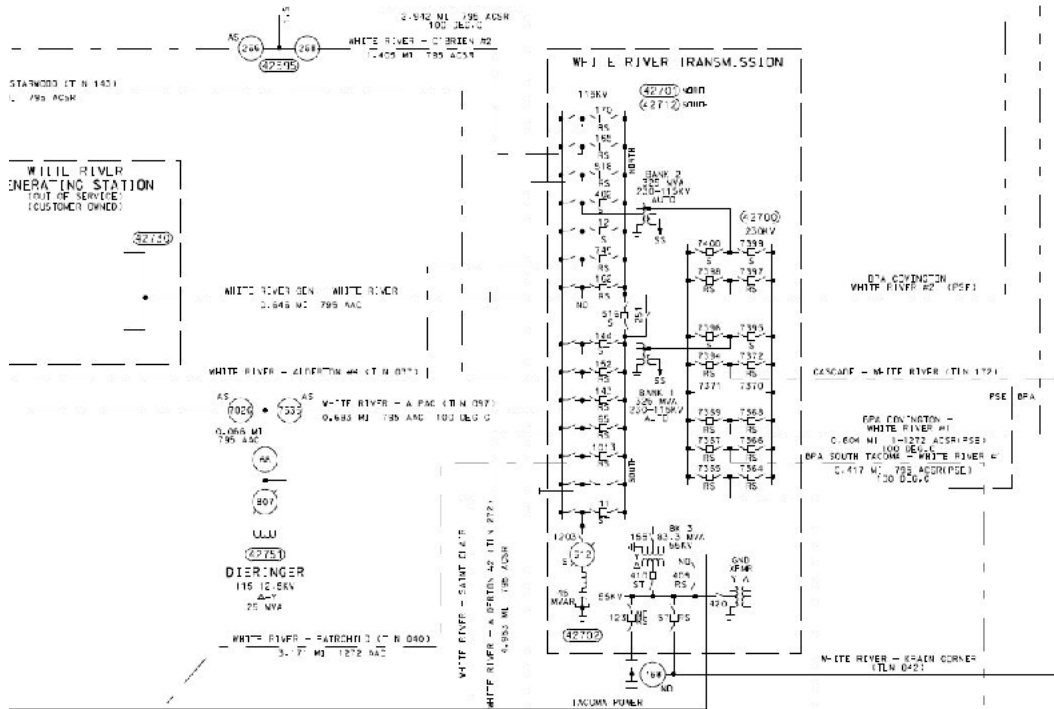
### Attachment 1: Project Location Map



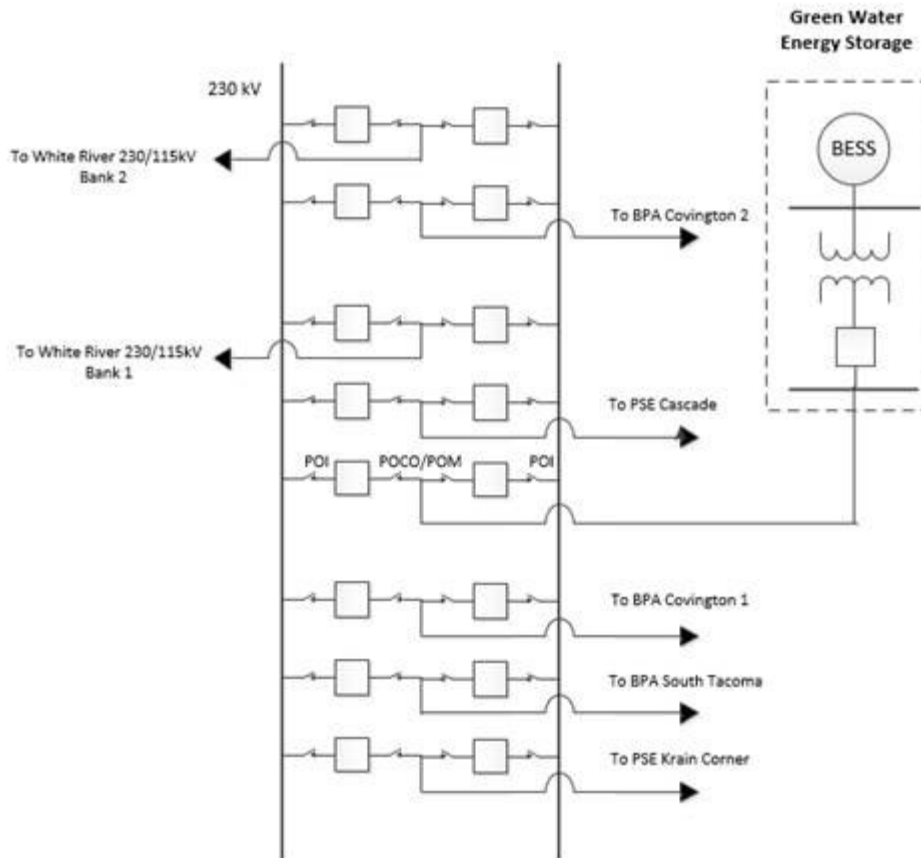
### Attachment 2: Transmission System Map and Detail



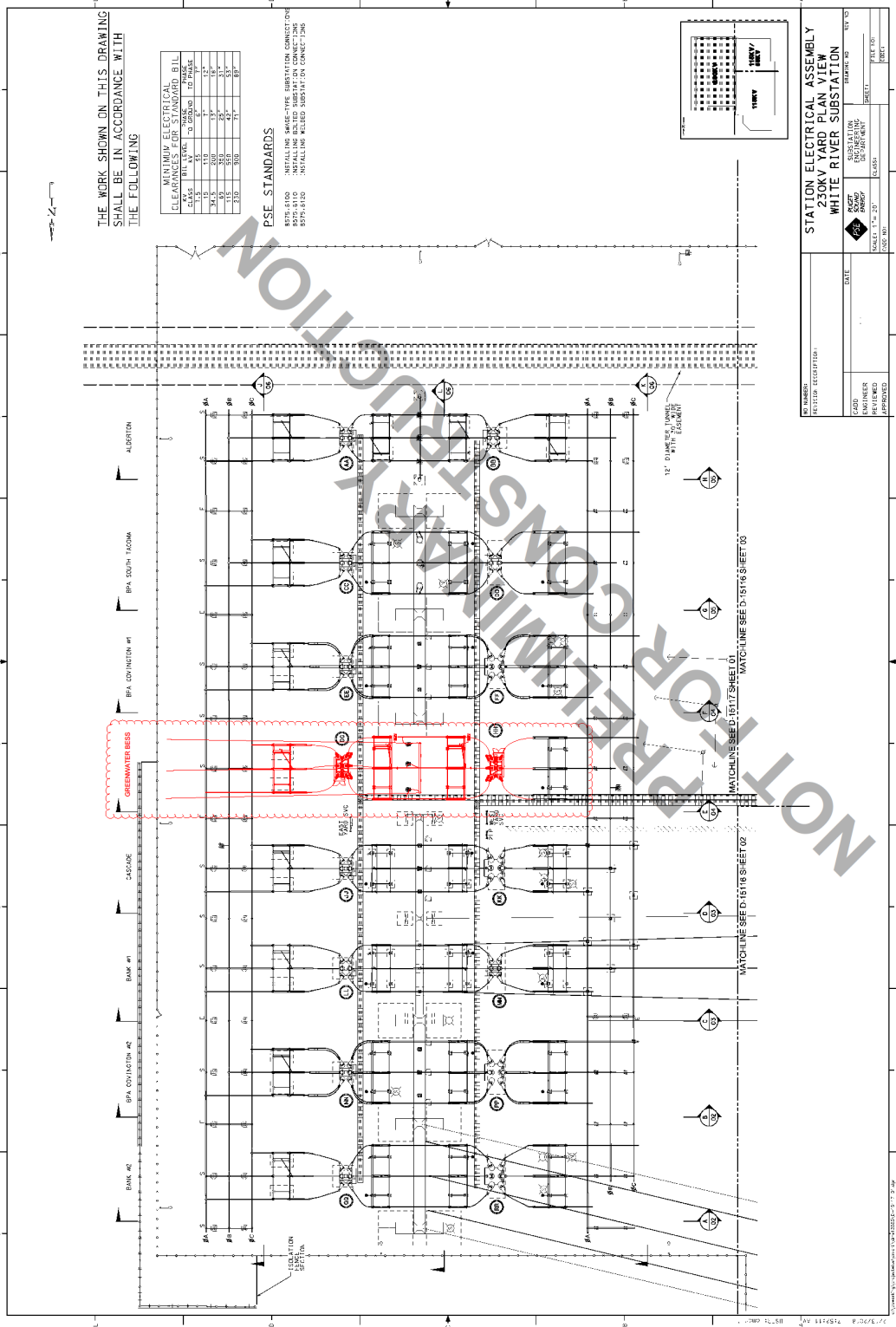
Attachment 3: Existing One-line White River Transmission Station



### Attachment 4: Proposed One-Line for White River Transmission Station

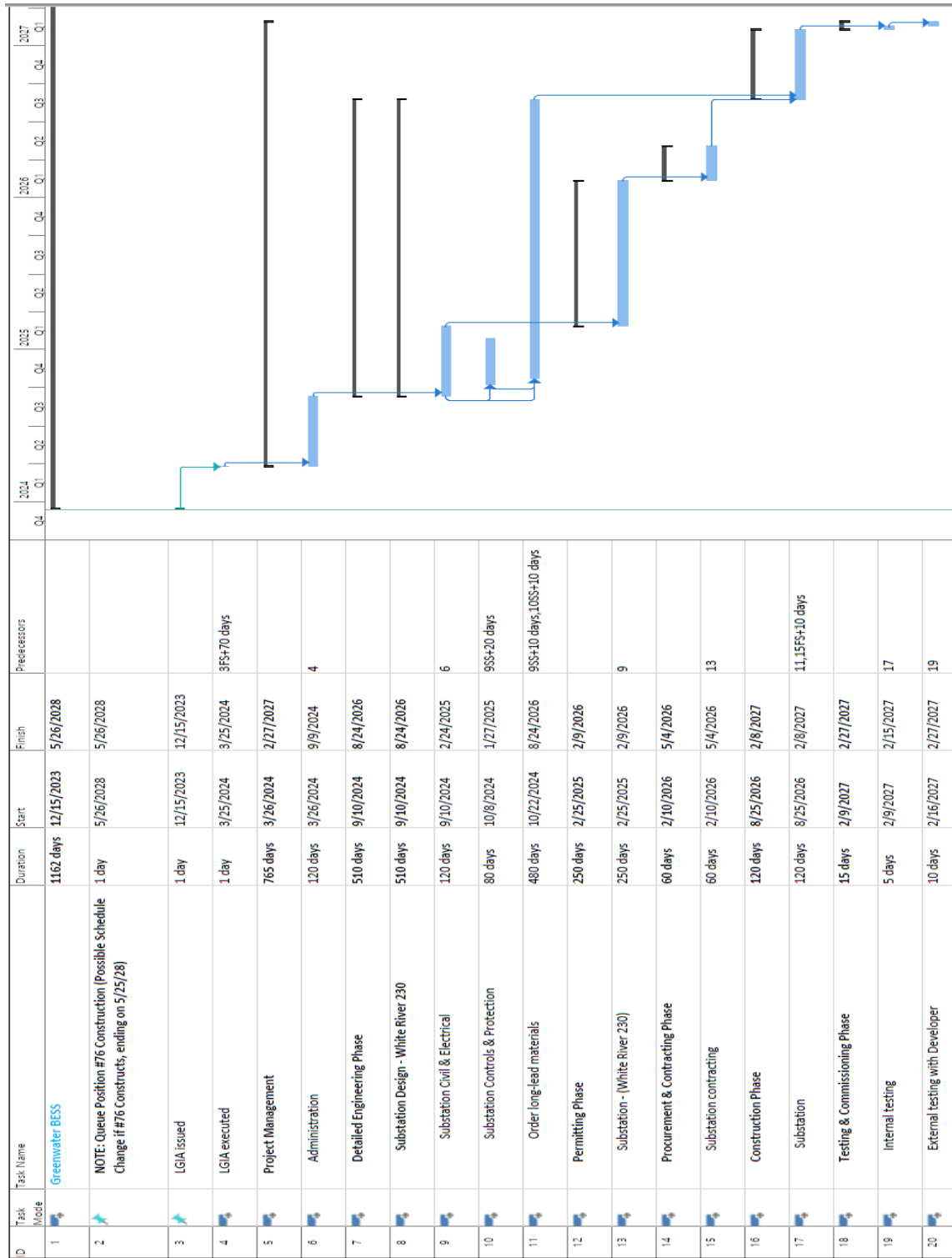


### Attachment 5: Proposed Substation Layout White River Substation





### Attachment 6: Proposed Schedule



**Attachment 7: Cost Estimate**

The cost estimate provided herein is for Transmission Provider’s Interconnection Facilities. The Project has no costs for Network Upgrades.

<b>Project Scope</b>	<b>Total</b>
Project Management	\$ 347,804
Sub - Electrical Assembly	\$ 1,005,238
Sub - Civil / Struct.	\$ 798,031
Sub - PAC	\$ 133,228
Metering	\$ 196,634
Communications / IT	\$ 145,398
<b>Pre-Contingency Total</b>	<b>\$ 2,626,334</b>
Base Contingency (25%)	\$ 656,583
<b>Grand Total</b>	<b>\$ 3,282,917</b>

<b>Estimate Range</b>	
Low Range (-20%)	\$ 2,640,000
<b>Base Total</b>	<b>\$ 3,300,000</b>
High Range (+20%)	\$ 3,960,000

*General Estimate Assumptions:*  
 All Costs are in 2023 USD  
 All Ranges /Contingencies per PSE Standards