PACIFICORP

Small Generator Interconnection
Qualifying Facility
Facilities Study Report

Completed for

("Interconnection Customer")
TCS-15

Proposed Point of Interconnection

Distribution circuit 5Y312 out of Sunnyside substation at 12.5 kV

July 2, 2021

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1.0 DESCRIPTION OF THE PROJECT

("Interconnection Customer") proposed interconnecting 2 MW of new generation to PacifiCorp's ("Transmission Provider") distribution circuit 5Y312 out of Sunnyside substation located in Yakima County, Washington. The project ("Project") will consist of one (1) 2,125 KVA Power Electronics FP2125K2 solar inverter for a total output of 2 MW at the Point of Interconnection ("POI"). The requested commercial operation date is December 31, 2020.

Interconnection Customer will operate this generator as a Qualifying Facility as defined by the Transmission Provider Regulatory Policies Act of 1978 (PURPA).

The Transmission Provider has assigned the project "TCS-15"

2.0 STUDY SCOPE AND OBJECTIVES

The objective of the facilities study is to:

- complete a facilities analysis, which shall specify and estimate the cost of equipment, engineering, procurement, and construction required to address issues as outlined in the system impact study, and
- provide a scope of work and an estimated cost and schedule for completing the scope of work.

3.0 STUDY ASSUMPTIONS

- All active higher priority transmission service and/or generator interconnection requests will be considered in this study and are listed in Appendix 1. If any of these requests are withdrawn, the Transmission Provider reserves the right to restudy this request, as the results and conclusions contained within this study could significantly change.
- For study purposes there are two separate queues:
  - Transmission Service Queue: to the extent practical, all network upgrades that are required to accommodate active transmission service requests will be modeled in this study.
  - Generation Interconnection Queue: Interconnection Facilities associated with higher queue interconnection requests will be modeled in this study.
- The Interconnection Customer's request for interconnection service in and of itself does not convey transmission service. Only a Network Customer may make a request to designate a generating resource as a Network Resource. Because the queue of higher priority transmission service requests may be different when a Network Customer requests network resource designation for this Generating Facility, the available capacity or transmission modifications, if any, necessary to deliver 100% of the Project output to network load may be significantly different. Therefore, the Interconnection Customer should regard the results of this study as informational rather than final.
- This study assumes the Project will be integrated into Transmission Provider's system at the agreed upon and/or proposed POI.
- The Interconnection Customer will construct and own any facilities required between the POI and the Project unless specifically identified by the Transmission Provider.
- Under normal conditions, the Transmission Provider does not dispatch or otherwise directly control or regulate the output of generating facilities. Therefore, the need for transmission

modifications, if any, which are required to deliver 100% of Project output to the Network Customer's network load will be evaluated (i.e., no displacement of other resources in the same area).

- Line reconductor or fiber underbuild required on existing poles will be assumed to follow the most direct path on the Transmission Provider's system. If during detailed design the path must be modified it may result in additional cost and timing delays for the Interconnection Customer's project.
- Generator tripping may be required for certain outages.
- All facilities will meet or exceed the minimum Western Electricity Coordinating Council ("WECC"), North American Electric Reliability Corporation ("NERC"), and Transmission Provider performance and design standards.
- The Transmission Provider assumes that TCS-14 and TCS-15 will proceed on the same design and construction schedule. If TCS-14 does not proceed on the same schedule as TCS-15 the milestones for the Interconnection Customer's Interconnection Request may need to be modified.
- The Transmission Provider assumes that it will not be required to install meters to separate the DC coupled battery and solar circuits. However, if this assumption is incorrect it will increase the cost estimate for the Transmission Provider's requirements.
- This report is based on information available at the time of the study. It is the Interconnection Customer's responsibility to check the Transmission Provider's web site regularly for Transmission system updates at http://www.pacificorp.com/tran.html

4.0 PROPOSED POINT OF INTERCONNECTION

The Interconnection Customer's proposed Generating Facility is to be interconnected through distribution circuit 5Y312 out of Sunnyside substation located in Yakima County, Washington. Figure 1 below, is a one-line diagram that illustrates the interconnection of the proposed Generating Facility to the Transmission Provider's system.

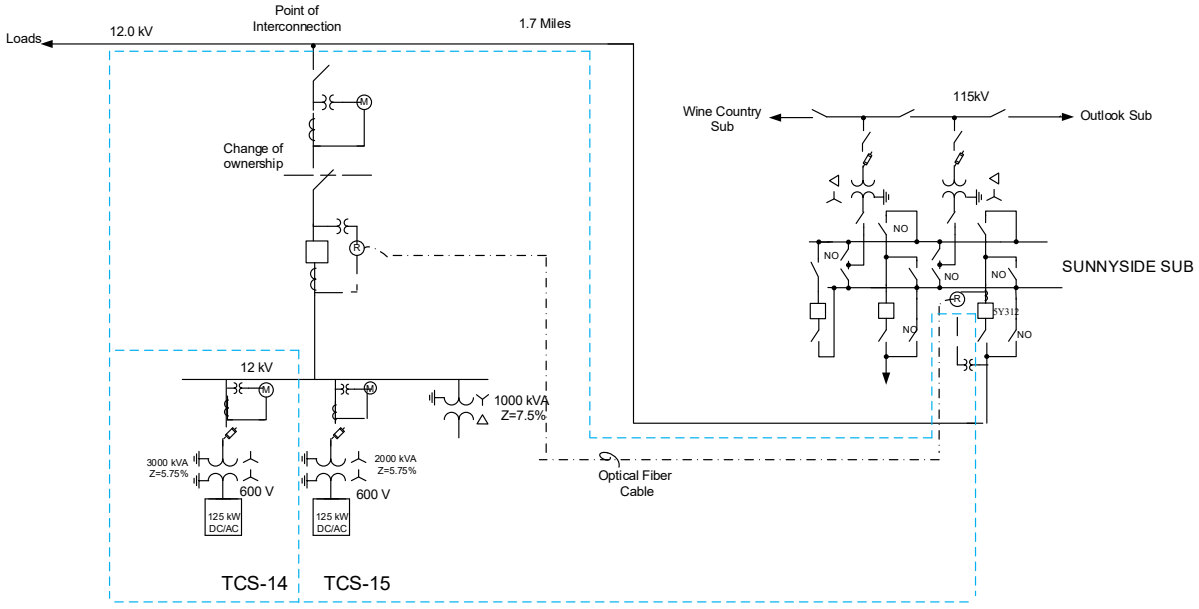

Figure 1: System One Line Diagram

5.0 SCOPE OF WORK

5.1 Generating Facility Modifications

The following outlines the design, procurement, construction, installation, and ownership of equipment at the Interconnection Customer's Generation Facility.

5.1.1 INTERCONNECTION CUSTOMER TO BE RESPONSIBLE FOR

- Provide the Transmission Provider a copy of the agreement (i.e. shared facilities agreement) demonstrating the single point of contact for the operation of the shared TCS-14 and TCS-15 Small Generating Facilities.
- Design, construct, own and maintain the Interconnection Customer's Small Generating Facility and associated collector system.
- Design the Small Generating Facility with reactive power capabilities necessary to operate within the full power factor range of 0.95 leading to 0.95 lagging as measured at the POI. The reactive compensation must be designed such that the discreet switching of all reactive devices (if required by the Interconnection Customer) does not cause step voltage changes greater than +/-3% on the Transmission Provider's system.
- Equip the Small Generating Facility with generators capable of operating under voltage reactive power mode, active power reactive power mode, and constant reactive power mode as per IEEE standard 1547-2018. This project shall be capable of activating each of these modes one at a time. The Transmission Provider reserves the right to specify any mode and settings within the limits of IEEE standard 1547-2018 needed before or after the Small Generating Facility enters service. The Interconnection Customer shall be responsible for implementing settings modifications and mode selections as requested by the Transmission Provider within an acceptable timeframe.
- Operate the Small Generating Facility under constant power factor mode with a unity power factor setting unless specifically requested otherwise by the Transmission Provider. The Small Generating Facility is expressly forbidden from actively participating in voltage regulation of the Transmission Provider's system without written request or authorization from the Transmission Provider.
- Operate the Small Generating Facility so minimum power quality requirements in PacifiCorp's Engineering Handbook section 1C are met, the standards are available at https://www.pacificpower.net/about/power-quality-standards.html. Requirements specified in the System Impact Study that exceed requirements in the Engineering Handbook section 1C power quality standards shall apply.
- As per NERC standard VAR-001-1, the Transmission Provider is required to specify voltage or reactive power schedule at the POI. Under normal conditions, the Transmission Provider's system should not supply reactive power to the Small Generating Facility.

- Install a transformer that will hold the phase to neutral voltages within limits when the generation facility is isolated with the Transmission Provider's local system until the generation disconnects.
- Design the Small Generating Facility control system such that it can receive an analog output from the Transmission Provider for setpoint control and provide an analog input back to the Transmission Provider on the status of the setpoint.
- Provide a separate graded, grounded and fenced area along the perimeter of the Interconnection Customer's shared collector substation for the Transmission Provider to install as control building. The site will have separate, unencumbered access for the Transmission Provider. Fencing, gates and road access shall meet Transmission Provider standards. The Interconnection Customer shall provide a Transmission Provider approved easement for its control building.
- Perform a CDEGS grounding analysis for the Transmission Provider control building and provide the results to the Transmission Provider.
- Provide permanent AC power to the Transmission Provider's control building.
- Design, procure, install, and own a Transmission Provider approved 12 kV recloser containing a Schweitzer Engineering Laboratories ("SEL") 351R relay/controller to perform the following functions:
  - Receive transfer trip from Sunnyside substation
  - Detect faults on the 12 kV at the generation facility
  - Detect faults on the 12 kV line to Sunnyside substation
  - Monitor the voltage and react to under or over frequency, and / or magnitude of the
  - voltage
- Procure and install instrument transformers on the Transmission Provider side of the recloser.
- Input the settings provided by the Transmission Provider into the recloser relay.
- Provide the Transmission Provider Level 2 password control of the recloser relay.
- Terminate the control cable provided by the Transmission Provider in the recloser relay.
- Design, procure and install conduit and control cabling and hard wire the Interconnection Customer's source devices to Transmission Provider's control building. The Transmission Provider will terminate the control cable to its communications rack. Replicated values are not acceptable.
- Provide the following data points which are based on the Interconnection Customer's most recent design information. Please note that this list of points could change if the Interconnection Customer's final design changes:
  Analogs:
  - Net Generation MW
  - Net Generator MVAR
  - Energy Register

  - Real power flow TCS-15
  - Reactive power flow Circuit TCS-15
  - A phase 12 kV voltage
  - B phase 12 kV voltage
  - C phase 12 kV voltage
  - Global Horizontal Irradiance (GHI)
  - Average Plant Atmospheric Pressure (Bar)
  - Average Plant Temperature (Celsius)
  - Max Generator Limit MW (set point control)
  - Potential Power MW

  Status:
  - 12.5 kV tie recloser
  - Relay alarm

- Provide the Transmission Provider the necessary easement to allow the Transmission Provider to construct its line extension between its existing facilities and the Point of Change of Ownership.
- Provide the Transmission Provider unfettered and maintained access to its interconnection facilities.
- Construct the Interconnection Customer's last pole at the Point of Change of Ownership to Transmission Provider standard.
- Provide any construction or backup retail service necessary for the Project.
- Arrange for and provide permanent retail service for power that will flow from the Transmission Provider's system when the Project is not generating. Interconnection Customer shall coordinate with the Transmission Provider's customer service group establish a request number and account number.
- Provide the Transmission Provider a Professional Engineer ("PE") stamped maintenance plan for all Interconnection Customer facilities.

5.1.2 TRANSMISSION PROVIDER TO BE RESPONSIBLE FOR

- Coordinate with the Interconnection Customer to establish request and account numbers.
- Install a control building on the property prepared by the Interconnection Customer.
- Procure and install a backup DC battery system for the Transmission Provider control building.
- Develop and provide the settings for Interconnection Customer's recloser relay.
- Observe and provide acceptance of the relay settings in the Interconnection Customer recloser relay.
- Observe and provide acceptance of the installation of the Interconnection Customer's final pole at the point of change of ownership.
- Terminate the final span of conductor onto the Interconnection Customer's final pole.
- Provide the Interconnection Customer control cable for Interconnection Customer to terminate to its recloser relay. Observe the installation and

confirm connectivity and functionality of the transfer trip communications path.

- Procure and install a communications rack and associated communications equipment including a remote terminal unit ("RTU") in the Transmission Provider's control building and coordinate the termination of the control cable to be installed by the Interconnection Customer form its source devices.
- Procure and install a set of 12 kV instrument transformers to be installed on the high side of the Interconnection Customer's main step up transformer.
- Design, procure and install a set of 12 kV revenue metering equipment including metering panels, primary and secondary revenue quality meters, test switches, junction boxes and secondary metering wire.
- Install control cable from the Transmission Provider's instrument transformers to the Transmission Provider's control building.
- Establish an Ethernet connection for retail sales and generation accounting via the MV-90 translation system.

5.2 Point of Interconnection

The following outlines the design, procurement, construction, installation, and ownership of equipment at the POI.

5.2.1 Transmission Provider to be Responsible For

- Design, procure, install, own and maintain the required extension of the 12 kV facilities from Transmission Provider's existing facilities to the point of change of ownership including a minimum of three poles, conductor, cutouts, fuses, jumpers and a gang operated switch.
- Procure and install a pole mounted enclosure to house the Transmission Provider's communications equipment for fiber termination.
- Procure and install a set of 12 kV instrument transformers to be installed at the POI.
- Design, procure and install a set of 12 kV revenue metering equipment including metering panels, primary and secondary revenue quality meters, test switches, junction boxes and secondary metering wire.
- Install control cable from the Transmission Provider's instrument transformers to the Transmission Provider's control building.
- Establish an Ethernet connection for retail sales and generation accounting via the MV-90 translation system.

5.3 Other

The following outlines the design, procurement, construction, installation, and ownership of equipment past the POI.

5.3.1 Transmission Provider to be Responsible For

- Distribution Circuit

- Relocate existing voltage regulator bank installed on Outlook Road to a new location on Maple Grove Road south of Outlook Road. Update the settings of the regulator.
- Install approximately 1.7 miles of fiber optic cable from Sunnyside substation to the POI.

- Sunnyside Substation
  - Procure and install the following equipment in the substation to support protection and control requirements:
    - (3) 12 kV voltage transformers
  - Modify the existing line relay to detect faults and send transfer trip signal.
  - Implement a deadline checking scheme.
  - Develop and implement a transfer trip scheme to trip the Interconnection Customer's Small Generating Facility offline for various fault conditions.
  - Modify the settings of the LTC for transformer T-3798.
  - Replace the existing MAS radio system communicating with the Transmission Provider's Prosser Hill communications site with a multiple channel radio system.

- Prosser Hill Site
  - Replace the existing MAS radio system communicating with the Sunnyside substation with a multiple channel radio system.

- System Operations Centers
  - Update databases to include the Small Generating Facility, Interconnection Facilities and system upgrades.

6.0 SHARED COST ESTIMATE TCS-14 & TCS-15

The following estimate represents only scopes of work that will be performed by the Transmission Provider. Costs for any work being performed by the Interconnection Customer are not included.

Collector Substation $448,000
Install control building, communications, fiber and develop relay settings

Metering $74,000
Projects metering equipment

Sunnyside Substation $260,000
Install VT And communications

Prosser Hill Communications Site $55,000
Install communications

Distribution $99,000

Line extension, relocate regulator bank

Total TCS-14 and TCS-15	**$936,000**
TCS-15 Portion Total	**$468,000**

*Any distribution line modifications identified in this report will require a field visit analysis in order to obtain a more thorough understanding of the specific requirements. The estimate provided above for this work could change substantially based on the results of this analysis. Until this field analysis is performed the Transmission Provider must develop the project schedule using conservative assumptions. The Interconnection Customer may request that the Transmission Provider perform this field analysis, at the Interconnection Customer's expense, prior to the execution of an Interconnection Agreement in order to obtain more cost and schedule certainty.

Note: Costs for any excavation, duct installation and easements shall be borne by the Interconnection Customer and are not included in this estimate. This estimate is as accurate as possibly given the level of detailed study that has been completed to date and approximates the costs incurred by Transmission Provider to interconnect this Generator Facility to Transmission Provider's electrical distribution or transmission system. The Interconnection Customer will be responsible for all actual costs, regardless of the estimated costs communicated to or approved by the Interconnection Customer.

7.0 SCHEDULE

Execute Interconnection Agreement	August 20, 2021
Provision of Financial Security	September 10, 2021
Interconnection Customer and Transmission Provider Establish Retail Service Request	October 1, 2021
*Interconnection Customer Initial Design Package Provided	October 1, 2021
Interconnection Customer Provides Shared Facilities Agreement	October 1, 2021
Transmission Provider Engineering & Procurement Commences	October 18, 2021
Interconnection Customer Property/Permits/ROW Procured	January 10, 2021
Transmission Provider Property/Permits/ROW Procured	March 18, 2022
*Interconnection Customer Final Design Package Provided	May 20, 2022
Transmission Provider Engineering Design Complete	September 16, 2022
Construction Begins	October 31, 2022
Interconnection Customer Maintenance and Commissioning Plans Provided	January 6, 2023
Interconnection Customer and Transmission Provider Construction Complete	March 3, 2023
Transmission Provider Commissioning Activities Complete	April 3, 2023
Transmission Provider Commissioning Document Review Complete	April 10, 2023
Interconnection Customer's Facilities Receive Backfeed Power	April 11, 2023
Initial Synchronization/Generation Testing	April 14, 2023
Commercial Operation	April 25, 2023

*Interconnection Customer initial design package shall include final generating facility location, inverter/turbine selection, basic protection package, tie line route and collector system locations and data as applicable. Interconnection Customer final design package shall include PE stamped issued for construction ("IFC") drawings for generating facility, collector substation, tie line as well as an updated PSS/e model and updated WECC approved model, electromagnetic transient ("EMT") model and a detailed short circuit model of its generation system using the ASPEN

OneLine short circuit simulation program as applicable. The WECC model parameters must be adjusted to reflect the plant's actual anticipated performance. The plant controller must be included in the model. If there is to be coordination between facilities or a master VAR controller, this must be included in the detailed WECC dynamic model, as well as in the PSS/e user-written model.

Please note, the time required to perform the scope of work identified in this report does not support the Interconnection Customer's requested Commercial Operation date of December 31, 2020.

8.0 Participation by Affected Systems

Transmission Provider has identified the following affected systems: None

9.0 APPENDICES

Appendix 1: Higher Priority Requests
Appendix 2: Property Requirements

9.1 Appendix 1: Higher Priority Requests and Contingent Facilities

All active higher priority Transmission Provider projects, and transmission service and/or generator interconnection requests will be considered in this study and are identified below. If any of these requests are withdrawn, the Transmission Provider reserves the right to restudy this request, as the results and conclusions contained within this study could significantly change.

Transmission/Generation Interconnection Queue Requests considered:
Q1008 (94 MW)
Q0953 (80 MW)

Bonneville Power Administration requests considered:
G0634 (80 MW)
G0596 (80 MW)
G0578 (80 MW)

9.2 Appendix 2: Property Requirements

Property Requirements for Point of Interconnection Substation

Requirements for rights of way easements
Rights of way easements will be acquired by the Interconnection Customer in the Transmission Provider's name for the construction, reconstruction, operation, maintenance, repair, replacement and removal of Transmission Provider's Interconnection Facilities that will be owned and operated by PacifiCorp. Interconnection Customer will acquire all necessary permits for the project and will obtain rights of way easements for the project on Transmission Provider's easement form.

Real Property Requirements for Point of Interconnection Substation
Real property for a POI substation will be acquired by an Interconnection Customer to accommodate the Interconnection Customer's project. The real property must be acceptable to Transmission Provider. Interconnection Customer will acquire fee ownership for interconnection substation unless Transmission Provider determines that other than fee ownership is acceptable; however, the form and instrument of such rights will be at Transmission Provider's sole discretion. Any land rights that Interconnection Customer is planning to retain as part of a fee property conveyance will be identified in advance to Transmission Provider and are subject to the Transmission Provider's approval.

The Interconnection Customer must obtain all permits required by all relevant jurisdictions for the planned use including but not limited to conditional use permits, Certificates of Public Convenience and Necessity, California Environmental Quality Act, as well as all construction permits for the project.

Interconnection Customer will not be reimbursed through network upgrades for more than the market value of the property.

As a minimum, real property must be environmentally, physically, and operationally acceptable to Transmission Provider. The real property shall be a permitted or able to be permitted use in all zoning districts. The Interconnection Customer shall provide Transmission Provider with a title report and shall transfer property without any material defects of title or other encumbrances that are not acceptable to Transmission Provider. Property lines shall be surveyed and show all encumbrances, encroachments, and roads.

Examples of potentially unacceptable environmental, physical, or operational conditions could include but are not limited to:

1. Environmental: known contamination of site; evidence of environmental contamination by any dangerous, hazardous or toxic materials as defined by any governmental agency; violation of building, health, safety, environmental, fire, land use, zoning or other such regulation; violation of ordinances or statutes of any governmental entities having jurisdiction over the property; underground or above ground storage tanks in area; known remediation sites on property; ongoing mitigation activities or monitoring activities; asbestos; lead-based paint, etc. A

phase I environmental study is required for land being acquired in fee by the Transmission Provider unless waived by Transmission Provider.

2. Physical: inadequate site drainage; proximity to flood zone; erosion issues; wetland overlays; threatened and endangered species; archeological or culturally sensitive areas; inadequate sub-surface elements, etc. Transmission Provider may require Interconnection Customer to procure various studies and surveys as determined necessary by Transmission Provider.

Operational: inadequate access for Transmission Provider's equipment and vehicles; existing structures on land that require removal prior to building of substation; ongoing maintenance for landscaping or extensive landscape requirements; ongoing homeowner's or other requirements or restrictions (e.g., Covenants, Codes and Restrictions, deed restrictions, etc.) on property which are not acceptable to the Transmission Provider.