PACIFICORP

Small Generator Interconnection

Utah Level 3 Facilities Study Report

Completed for

(“Interconnection Customer”)

C1-04

Proposed Interconnection

Distribution Circuit CPW11 out of Camp Williams Substation

November 1, 2022

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1.0 DESCRIPTION OF THE PROJECT

The Interconnection Customer has proposed to interconnect 6 megawatts ("MW") of new wind and battery storage generation to PacifiCorp's ("Public Utility") 12.5 kV circuit CPW11 out of Camp Williams substation located in Salt Lake County, Utah. The Interconnection Request is proposed to consist of one (1) Vestas V47 660 kW and one (1) GE 2.5 kVA wind turbine generators as well as three (3) ABB PCS100 battery storage inverters for a total output of 6 MW at the POI. The requested commercial operation date is January 31, 2023. Figure 1 below, is a one-line diagram that illustrates the interconnection of the proposed Generating Facility to the Public Utility's system.

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

The Public Utility has assigned the project "C1-04."

2.0 APPROVAL CRITERIA FOR LEVEL 3 INTERCONNECTION REVIEW

Pursuant to R746-312-10(1), A generating facility which meets the following criteria is eligible for Level 3 interconnection review:

(a) the generating facility has a capacity of greater than two megawatts but no larger than 20 megawatts;
(b) the generating facility is not certified; or
(c) the generating facility does not qualify for or failed to meet Level 1 or Level 2 interconnection review requirements.

3.0 SCOPE OF THE STUDY

Pursuant to R746-312-10(2)(f), the Facilities Study Report shall consist of:

(a) A detailed scope identifying the interconnection facilities and system upgrades required to safely interconnect the small generator facility including the electrical switching configuration of the equipment, including the transformer, switchgear, meters, and other station equipment as applicable;
(b) A reasonable schedule for completion of the study;
(c) A good-faith, non-binding estimate of the costs for the facilities and upgrades, including equipment, engineering, procurement, and construction costs (including overheads), and;
(d) A detailed estimate of the time required to procure, construct, and install the required interconnection facilities and system upgrades.

The information contained in this study report is based on preliminary information and not to be used for construction.

4.0 PROPOSED POINT OF INTERCONNECTION

The proposed Small Generating Facility is to be interconnected to the Public Utility's distribution circuit CPW11 out of Camp Williams substation via an existing primary meter.

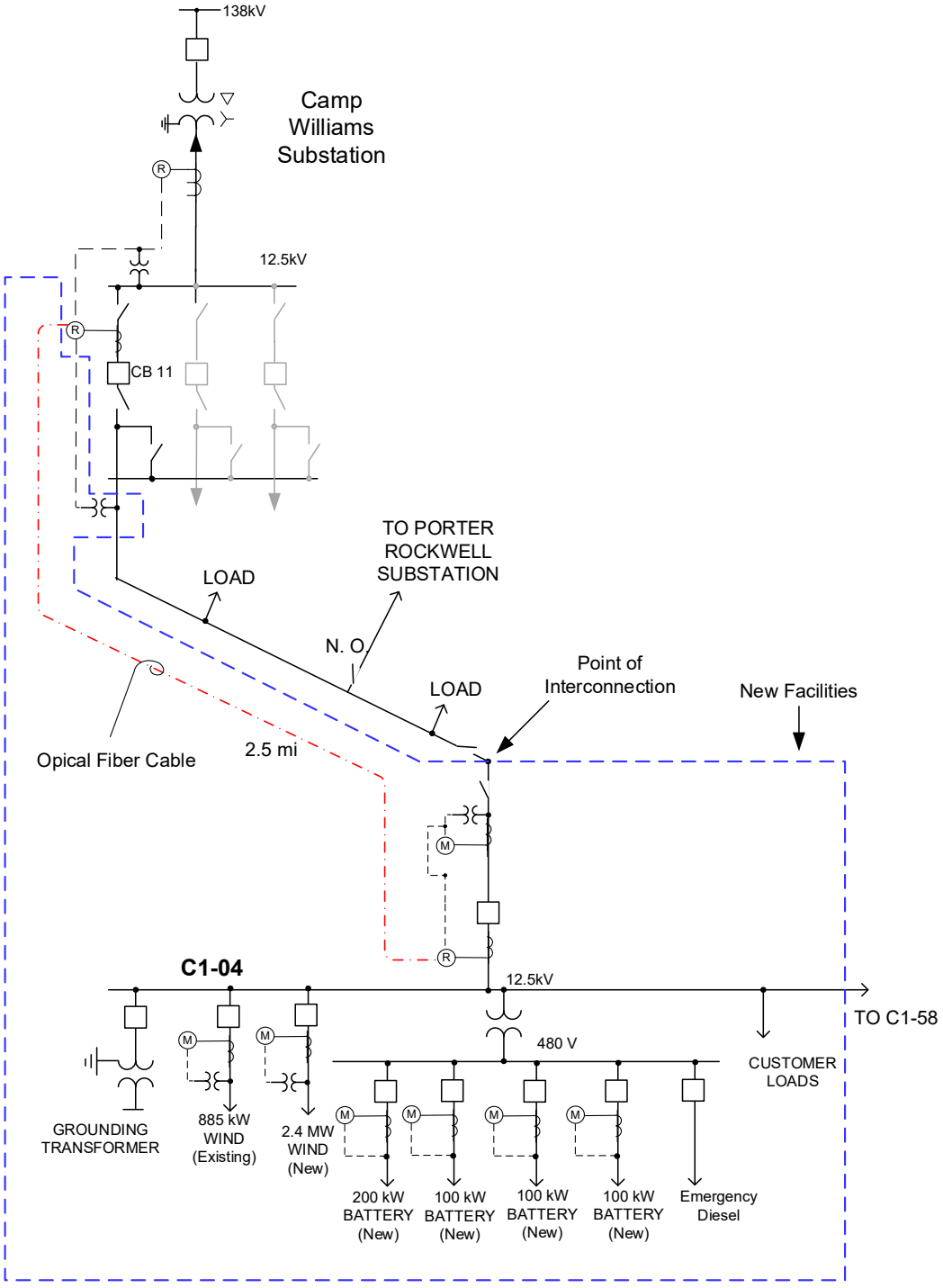

Figure 1: System One Line Diagram

5.0 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 Public Utility 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 Upgrades that are required to accommodate active transmission service requests will be modeled in this study.
  - Generation Interconnection Queue: All relevant 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.
- This study assumes the Project will be integrated into Public Utility's system at the agreed upon and/or proposed Point of Interconnection.
- The Interconnection Customer will construct and own any facilities required between the point of interconnection and the Project unless specifically identified by the Public Utility.
- Line reconductor or fiber underbuild required on existing poles will be assumed to follow the most direct path on the Public Utility'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 Public Utility performance and design standards.
- The Public Utility assumes that the C1-04 and C1-58 Small Generating Facilities will be constructed at the same time and therefore the shared requirements will also be constructed at the same time. In addition, the Public Utility assumes that the Interconnection Customer Interconnection Facilities for both C1-04 and C1-58 will be constructed such that the Public Utility will only require a single control building on the Interconnection Customer's campus. If the Interconnection Customer Interconnection Facilities are not brought to a single location the Public Utility will likely need additional facilities which will increase the costs to both Interconnection Requests.
- The Public Utility assumes that the Interconnection Customer will have a single, combined collector substation location for all existing and new generation at which the Public Utility can install its required metering and communications equipment. If this assumption is not accurate, the Public Utility will likely need to install additional equipment at other locations on the Interconnection Customer's campus which will result in increased costs for the Project.
- This report is based on information available at the time of the study. It is the Interconnection Customer's responsibility to check the Public Utility's web site regularly for transmission system updates (http://www.pacificorp.com/tran.html)

6.0 REQUIREMENTS

6.1 SMALL GENERATOR FACILITY REQUIREMENTS

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

6.1.1 INTERCONNECTION CUSTOMER TO BE RESPONSIBLE FOR

- Design, construct, own and maintain the Interconnection Customer's generating facility and associated collector system.
- Operate the Small Generating Facility under constant power factor mode with a unity power factor setting unless specifically requested otherwise by the Public Utility. The Small Generating Facility is expressly forbidden from actively participating in voltage regulation of the Public Utilities system without written request or authorization from the Public Utility. The Small Generating Facility shall have sufficient reactive capacity to enable the delivery of 100 percent of the plant output to the POI at unity power factor measured at 1.0 per unit voltage under steady state conditions.
- Equip the Small Generating Facility 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 Public Utility 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 Public Utility 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 Public Utility. The Small Generating Facility is expressly forbidden from actively participating in voltage regulation of the Public Utility's system without written request or authorization from the Public Utility.
- 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 Public Utility is required to specify voltage or reactive power schedule at the Point of interconnection. Under normal conditions, the Public Utility's system should not supply reactive power to the Small Generating Facility.
- Design the Small Generating Facility control system such that it can receive an analog output from the Public Utility for setpoint control and provide an analog input back to the Public Utility on the status of the setpoint.

- Provide the Transmission Provider a sufficient amount of space in the Interconnection Customer's control building for the Transmission Provider to install its communications and metering equipment. The Transmission Provider's portion of the building shall be a separate, lockable area accessible only by Transmission Provider personnel. The Interconnection Customer shall provide a Public Utility approved easement for its portion of the shared control building.
- Provide permanent AC power to the Public Utility's portion of the control building.
- Install Public Utility approved fiber optic cable from the Point of Interconnection to all locations on the Interconnection Customer campus necessary to support the transfer trip and data acquisition requirements. This will include, at a minimum, fiber to the Public Utility's control building and the Interconnection Customer's existing overcurrent relay location.
- Implement connectivity from Public Utility's fiber optic cable running from Camp Williams substation to Interconnection Customer's existing overcurrent relay so it can receive the transfer trip signal. In addition, the relay shall be set to perform the following functions:
    - Receive transfer trip from Camp Williams substation
    - Detect faults at the generation facility
    - Detect faults on the 12.5 kV line to Camp Williams substation
    - Monitor the voltage and react to under or over frequency, and / or magnitude of the voltage
- Input the settings provided by the Public Utility into the relay.
- Provide the Public Utility Level 2 password control of the relay to ensure settings changes do not occur without the permission of the Public Utility.
- Design, procure and install conduit and control cabling and hard wire the Interconnection Customer's source devices to Public Utility's portion of the shared control building. The Public Utility 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:
  <u>Analogs:</u>
    - Real power flowing through the 12.5 kV – 480V transformer
    - Reactive power flowing through the 12.5 kV – 480V transformer
    - 12.5 kV Real power 885 kW WIND breaker
    - 12.5 kV Reactive power 885 kW WIND breaker
    - 12.5 kV Real power 2.4 MW WIND breaker
    - 12.5 kV Reactive power 2.4 MW WIND breaker

- 480 V Real power 200 kW BATTERY breaker
- 480 V Reactive power 200 kW BATTERY breaker
- 480 V Real power 100 kW BATTERY-1 breaker
- 480 V Reactive power 100 kW BATTERY-1 breaker
- 480 V Real power 100 kW BATTERY-2 breaker
- 480 V Reactive power 100 kW BATTERY-2 breaker
- 480 V Real power 100 kW BATTERY-3 breaker
- 480 V Reactive power 100 kW BATTERY-3 breaker
- 480 V Real power Emergency Diesel breaker
- 480 V Reactive power Emergency Diesel breaker
- Average Wind Speed
- Average Plant Atmospheric Pressure (Bar)
- Average Plant Temperature (Celsius)
- Max Gen Limit MW Set Point Feed Back
- Potential Power MW
- 12.5 kV A phase voltage
- 12.5 kV B phase voltage
- 12.5 kV C phase voltage
- Analog Written to the RTU:
- Max Gen Limit MW Set Point

Status:

- 12.5 kV Main breaker
- 12.5 kV breaker 885 kW WIND breaker
- 12.5 kV 2.4 MW WIND breaker
- 12.5 kV 200 kW BATTERY breaker
- 12.5 kV 100 kW BATTERY-1 breaker
- 12.5 kV 100 kW BATTERY-2 breaker
- 12.5 kV 100 kW BATTERY-3 breaker
- 12.5 kV Emergency Diesel breaker

- Provide the Public Utility unfettered and maintained access to its interconnection facilities.
- Provide any construction or backup retail service necessary for the Project.
- Provide the Public Utility a Professional Engineer ("PE") stamped maintenance plan for all Interconnection Customer facilities.

6.1.2 Public Utility to be Responsible For

- Coordinate with the Interconnection Customer on the amount of space the Transmission Provider requires for its portion of the shared control building.
- Procure and install a backup DC battery system for the Public Utility portion of the shared control building.
- Develop and provide the settings for Interconnection Customer's relay associated with the Public Utility's system.

- Observe and provide acceptance of the relay settings in the Interconnection Customer recloser relay.
- Observe 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 Public Utility's portion of the shared control building and coordinate the termination of the control cable to be installed by the Interconnection Customer form its source devices.
- Design, procure and install two sets of 12.5 kV revenue metering equipment to separate the existing wind generation and new wind generation. The equipment will include instrument transformers metering panels, primary and secondary revenue quality meters, test switches, junction boxes and secondary metering wire.
- Design, procure and install five sets of 480 V revenue metering equipment to separate the existing diesel generation from each of the four battery storage strings. The equipment will include instrument transformers metering panels, primary and secondary revenue quality meters, test switches, junction boxes and secondary metering wire.
- Establish an Ethernet connection for retail sales and generation accounting via the MV-90 translation system.

6.2 Point of Interconnection

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

6.2.1 Public Utility to be Responsible For

- Design, procure and install 12.5 kV revenue metering equipment to serve as the main Point of Interconnection metering including instrument transformers metering panels, primary and secondary revenue quality meters, test switches, junction boxes and secondary metering wire.
- Splice the fiber optic cable running from Camp Williams substation to the fiber installed by the Interconnection Customer running to the various locations on the Interconnection Customer's campus.

6.3 Other

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

6.3.1 Public Utility to be Responsible For

- Distribution Circuit

- Install approximately 2.5 miles of fiber optic cable from Camp Williams substation to the Interconnection Customer Small Generating Facility.

- Camp Williams Substation
  - Install a new line side instrument transformer to support transfer trip and dead line check.
  - Install a dead line check control circuit.
  - Set the CB11 relay to be directional.
  - Terminate the fiber running from the Small Generating Facility.
  - Install communications equipment to integrate the fiber into the Public Utility's communications system.

- Transfer Trip Scheme
  - Develop and implement a transfer trip scheme to trip the Interconnection Customer's Small Generating Facility offline for the following contingencies.
    - Opening of Camp Williams CB11
    - Faults on the distribution circuit.
    - Faults in the Camp Williams substation transformer.

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

7.0 COST ESTIMATE

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

Project Specific Requirements

The following estimated costs are assigned directly to the Interconnection Customer's Interconnection Request and not shared with other Interconnection Requests within the Cluster Area:

C1-04 Metering $470,000
Metering equipment

C1-04 Collector Station $231,000
Communications equipment, relay settings

Cluster Area Shared Requirements

The following estimated costs are shared with other requests within the Cluster Area and are the portion assigned to the Interconnection Customer's Interconnection Request:

Distribution Circuit *Install ~2.5 miles of fiber optic cable*	$95,000
Camp Williams Substation *Protection and communications equipment*	$65,000
Total	**$861,000**

*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 Public Utility must develop the project schedule using conservative assumptions. The Interconnection Customer may request that the Public Utility 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 approximates the costs incurred by the Public Utility to interconnect this Small Generating Facility to Public Utility's electrical distribution or transmission system based upon the level of study completed to-date. The Interconnection Customer will be responsible for all actual costs, regardless of the estimated costs communicated to or approved by the Interconnection Customer.

8.0 SCHEDULE

Execute Interconnection Agreement	December 2, 2022
Provision of Financial Security	December 16, 2022
*Interconnection Customer Initial Design Package Provided	January 20, 2023
Interconnection Customer Energy Imbalance Market Submittal	January 20, 2023
Public Utility Engineering & Procurement Commences	February 6, 2023
Interconnection Customer Property/Permits/ROW Procured	May 12, 2023
Public Utility Property/Permits/ROW Procured	June 30, 2023
*Interconnection Customer Final Design Package Provided	August 25, 2023
Public Utility Engineering Design Complete	November 3, 2023
Public Utility Construction Commences	January 15, 2024
Interconnection Customer Maintenance and Commissioning	

Plans Provided	March 1, 2024
Interconnection Customer and Public Utility Construction Complete	April 3, 2024
Public Utility Commissioning Activities Complete	May 10, 2024
Public Utility Commissioning Document Review Complete	May 20, 2024
Interconnection Customer's Facilities Receive Backfeed Power	May 21, 2024
Initial Synchronization/Generation Testing	May 27, 2024
Commercial Operation	June 7, 2024

*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.

9.0 PARTICIPATION BY AFFECTED SYSTEMS

Public Utility has identified the following Affected Systems: None

10.0 APPENDICES

Appendix 1: Higher Priority Requests
Appendix 2: Property Requirements

10.1 APPENDIX A: HIGHER PRIORITY REQUESTS

All active higher priority 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 Public Utility 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: None

10.2 APPENDIX B: PROPERTY REQUIREMENTS

Requirements for rights of way easements
Rights of way easements will be acquired by the Interconnection Customer in the Public Utility's name for the construction, reconstruction, operation, maintenance, repair, replacement and removal of Public Utility'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 Public Utility's easement form.

Real Property Requirements for Point of Interconnection Substation
Real property for a point of interconnection substation will be acquired by an Interconnection Customer to accommodate the Interconnection Customer's project. The real property must be acceptable to Public Utility. Interconnection Customer will acquire fee ownership for interconnection substation unless Public Utility determines that other than fee ownership is acceptable; however, the form and instrument of such rights will be at Public Utility'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 Public Utility and are subject to the Public Utility'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 Public Utility. The real property shall be a permitted or permittable use in all zoning districts. The Interconnection Customer shall provide Public Utility with a title report and shall transfer property without any material defects of title or other encumbrances that are not acceptable to Public Utility. 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:

- 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 Public Utility unless waived by Public Utility.

- 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. Public Utility may require Interconnection Customer to procure various studies and surveys as determined necessary by Public Utility.

- Operational: inadequate access for Public Utility'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 Public Utility.