PACIFICORP

Small Generator Interconnection
Tier 4 Facilities Study Report

Completed for

(“Interconnection Customer”)
C1-15

Proposed Interconnection
On ’s
Circuit 5L49 out of Lakeport substation

February 8, 2022

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1.0 DESCRIPTION OF THE PROJECT

The Interconnection Customer has proposed to interconnect 2.3 megawatts ("MW") of new battery storage generation to 's ("Public Utility") 12 kV distribution circuit 5L49 out of Lakeport substation located in Klamath County, Oregon. The Interconnection Request is proposed to consist of one (1) SMA SCS2475-US, 2.475 MVA battery storage inverter for a total output of 2.0 MW at the POI. The requested commercial operation date is February 1, 2023.

Interconnection Customer will not operate this generator as a Qualified Facility as defined by the Public Utility Regulatory Policies Act of 1978 (PURPA).

The Public Utility has assigned the project "C1-15."

2.0 APPROVAL CRITERIA FOR TIER 4 INTERCONNECTION REVIEW

Pursuant to 860-082-0060(1), a public utility must use the Tier 4 interconnection review procedures for an application to interconnect a small generator facility that meets the following requirements:

(a) The small generator facility does not qualify for or failed to meet Tier 1, Tier 2, or Tier 3 interconnection review requirements; and
(b) The small generator facility must have a nameplate capacity of ten (10) megawatts or less.

3.0 SCOPE OF THE STUDY

Pursuant to 860-082-0060(8) 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, 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 Interconnection Customer's proposed Small Generator Facility is to be interconnected to the Public Utility's 12 kV distribution circuit 5L49 out of Lakeport substation via a primary meter. The Small Generating Facility will be located near existing facility point 01438009.0173180 in Klamath County, Oregon. Figure 1 below is a one-line diagram that that illustrates the interconnection of the proposed generating facility to the Public Utility's system.

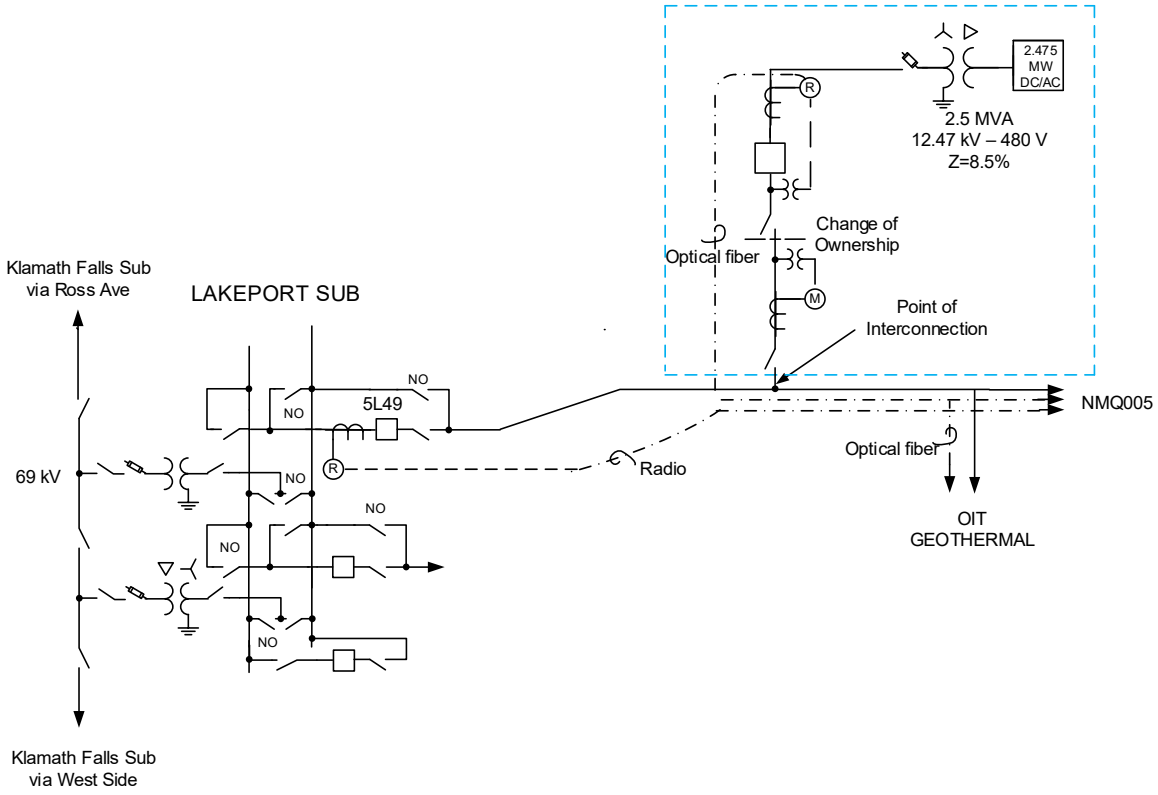

Figure 1: System One Line Diagram

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 network upgrades that are required to accommodate active transmission service requests and are expected to be in-service on or after the Interconnection Customer's requested in-service date for the Project will be modeled in this study.
  - Generation Interconnection Queue: when relevant, interconnection facilities associated with higher queue interconnection requests will be modeled in this study. However, no generation will be simulated from any higher queued project unless a commitment has been made to obtain transmission service.
- 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 the facilities required between the point of interconnection and the Project.
- Generator tripping may be required for certain outages.

- All facilities will meet or exceed the minimum WECC, NERC, and Public Utility performance and design standards.
- 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..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

- Procure all necessary permits, lands, rights of way and easements required for the construction and continued maintenance of the C1-15 Small Generator Facility and collector substation.
- Design, procure, construct, own and maintain the Interconnection Customer's Small Generator Facility and associated collector substation.
- 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 Applicant) does not cause step voltage changes greater than +/-3% on the Public Utility's system.
- 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 Applicant 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 '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 POI. Under normal conditions, the Public Utility's system should not supply reactive power to the Small Generating Facility.
- Design, procure, install, and own a Public Utility approved 12 kV recloser containing a Schweitzer Engineering Laboratories ("SEL") 651R relay/controller to perform the following functions:
    - Receive transfer trip from Lakeport substation
    - Detect faults on the 12 kV at the battery facility
    - Detect faults on the 12 kV line to Lakeport substation
    - Monitor the voltage and react to under or over frequency, and / or magnitude of the voltage
- Procure and install instrument transformers on the Public Utility side of the recloser.
- Input the settings provided by the Public Utility into the recloser relay.
- Provide the Public Utility Level 2 password control of the recloser relay.
- Terminate the control cable provided by the Public Unity in the recloser relay.
- 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 Public Utility's system when the Project is not generating and/or in charge mode. Applicant shall coordinate with the Public Utility's customer service group establish a request number and account number.
- Provide the Public Utility a Professional Engineer ("PE") stamped maintenance plan for all Applicant facilities.
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6.1.2 PUBLIC UTILITY TO BE RESPONSIBLE FOR

- Coordinate with the Applicant to establish request and account numbers.
- Develop and provide the settings for Applicant's recloser relay.
- Observe and provide acceptance of the relay settings in the Applicant's recloser relay.
- Provide the Applicant control cable for Applicant to terminate to its recloser relay. Observe the installation and confirm connectivity and functionality of the transfer trip communications path.
- Provide

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 INTERCONNECTION CUSTOMER TO BE RESPONSIBLE FOR

- Procure and install a Public Utility approved vault for the Public Utility's metering transformers.
- Procure and install a meter socket for the Public Utility's meter.
- Extend primary conductor in conduit from the primary metering enclosure to the Public Utility's switchgear location. Leave sufficient conductor for the Public Utility to terminate into the switchgear.
- Provide the Public Utility unencumbered access to its metering equipment.

6.2.2 PUBLIC UTILITY TO BE RESPONSIBLE FOR

- Extend approximately 1,080 feet of primary cable from existing fuse enclosure 01438009.0173180 to the Point of Interconnection.
- Install fuses in fuse enclosure 01438009.0173180.
- At the Point of Interconnection install a switchgear with a visible open gang operated switch.
- Install communications equipment and terminate the fiber optic cable running from the OIT Solar facility.
- Terminate the conductor provided by the Interconnection Customer from the primary metering enclosure into the switchgear.
- Provide the Interconnection Customer the specifications for the Public Utility's metering enclosure.
- Design, procure and install 12 kV revenue metering equipment for the Project including a revenue quality meter and instrument transformers.
- Provide and install a cellular connection for retail sales and generation accounting via the MV-90 translation system.
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6.3 OTHER

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

6.3.1 PUBLIC UTILITY TO BE RESPONSIBLE FOR

- Distribution Circuit
- Install fiber optic cable from the Point of Interconnection to the OIT Solar facility.
- Develop and implement a transfer trip scheme to disconnect the Interconnection Customer's Small Generating Facility when Lakeport circuit breaker 5L49 is open.
- OIT Solar Facility

- Install or modify the necessary communications equipment to terminate the fiber running from the Small Generating Facility and to tie the signal in to the existing radio link to Lakeport substation.
- Lakeport Substation
- Install or modify the necessary communications equipment to support the transfer trip signal to the Small Generating Facility.

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.

C1-15

Project Administration *Project management, administrative support*	$17,000
Develop Relay Settings *P&C Engineer and Relay Technician*	$15,000
C1-15 Collector substation *Metering, relay settings*	$11,000
Distribution *Extend conductor, install fuses and switchgear*	$47,000
Communications *Install communications equipment at Lakeport substation and C1-15 Site*	$41,000
Other Costs *Capital surcharge and contingency*	$30,000
	Total: $161,000

*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 Generator Facility to the 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	March 4, 2022
Provision of Financial Security	March 4, 2022
*Interconnection Customer Initial Design Package Provided	March 10, 2022
**Public Utility Engineering & Procurement Commences	
Interconnection Customer Property/Permits/ROW Procured	June 10, 2022
Public Utility Property/Permits/ROW Procured	June 10, 2022
*Interconnection Customer Final Design Package Provided	July 15, 2022
Public Utility Engineering Design Complete	September 30, 2022
Construction Begins	November 7, 2022
Interconnection Customer Maintenance and Commissioning Plans Provided	December 2, 2022
Interconnection Customer and Public Utility Construction Complete	January 6, 2023
Public Utility Commissioning Activities Complete	January 20, 2023
Public Utility Commissioning Document Review Complete	January 26, 2023
Interconnection Customer's Facilities Receive Backfeed Power	January 27, 2023
Initial Synchronization/Generation Testing	January 30, 2023
Commercial Operation	February 1, 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 appears to result in a timeframe that may support the Interconnection Customer's requested commercial operation date of February 1, 2023.

9.0 PARTICIPATION BY AFFECTED SYSTEMS

Public Utility has identified the following Affected Systems: None

Copies of this report will be shared with each Affected System.

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:

GI Queue	Size (MW)	GI Queue	Size (MW)
687	415.8	OCS020	0.17
721	55	OCS025	2.80
741	40	OCS034	0.98
757	20	OCS036	1.13
825	10	OCS037	1.50
826	10	OCS039	2.25
827	10	OCS042	0.13
		OCS044	0.36
829	10	OCS046	2.25
830	10	OCSO47	2.25
849	100	OCS048	1.50
905	50	OCS049	2.99
906	80	OCS054	0.90
907	80	OCS055	1.35
971	2.7	OCS058	1.25
1055	4.2	OCS059	0.63
OCS003	0.8	OCS067	1.00
OCS004	0.8	OCS072	1.00
OCS019	0.88		

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 . 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.