Rocky Mountain Power
Exhibit RMP___(RAV-5SS)
Docket No. 20000-520-EA-17
Witness: Rick A. Vail

BEFORE THE WYOMING PUBLIC SERVICE COMMISSION

ROCKY MOUNTAIN POWER

Exhibit Accompanying Second Supplemental Direct Testimony of Rick A. Vail

System Impact Study for Q0706

February 2018

PACIFICORP TRANSMISSION

Large Generator Interconnection
Facilities Study Report

Final

Completed for

("Interconnection Customer")
Q0706

Proposed Point of Interconnection

PacifiCorp's proposed Aeolus substation at 230 kV

March 3, 2017

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1.0 DESCRIPTION OF THE PROJECT

("Interconnection Customer") proposed interconnecting 250 MW of new generation to PacifiCorp's ("Transmission Provider") proposed Aeolus substation at 230 kV located in Carbon County, Wyoming. The project ("Project") will consist of 125 GE 2.0-116 turbines for a total output of 250 MW. The requested commercial operation date is November 1, 2018.

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

The Transmission Provider has assigned the Project "Q0706."

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 TYPE OF INTERCONNECTION SERVICE

The Interconnection Customer has selected Energy Resource (ER) Interconnection Service.

4.0 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 If any of these requests are withdrawn, the Transmission Provider reserves the right to restudy this request, as the results and conclusions contained within this study could significantly change.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 energy or network resource 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 provide network resource interconnection

service 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 proposed Aeolus 230 kV substation.
- The Interconnection Customer will construct and own any 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 Western Electricity Coordinating Council ("WECC"), North American Electric Reliability Corporation ("NERC"), and Transmission Provider performance and design standards.
- The most current transmission facility ratings were used for the analysis.
- All existing and proposed Remedial Action Schemes (RAS) are assumed to be in service for this study.
- The Energy Gateway West (2024) and Energy Gateway South (2024) projects are assumed to be in service; the Dave Johnston to Amasa (future) to Heward (future) to Aeolus (future) 230 kV line is assumed to be rebuilt as part of the Gateway projects. Note that these dates are inconsistent with the Q0706 Project's planned in-service date. A RAS that will drop up to 600 MW of generation for the following outages is assumed to be in-service:
  - Aeolus – Anticline 500 kV line
  - Anticline – Populus 500 kV line
  - Aeolus – Clover 500 kV line
  - Clover 500/345 kV auto transformer
- All system improvements associated with the prior queued projects are assumed to be in service before Q0706.
- Based on the Federal Energy Regulatory Commission's proposed revisions to the Pro Forma Large Generator Interconnection Agreement (Docket No RM16-1-000), the following power factor requirement was assumed for the Project:
  - "9.6.1 Power Factor Design Criteria. Interconnection Customer shall design the Large Generating Facility to maintain a composite power delivery at continuous rated power output at the POI at a power factor within the range of 0.95 leading to 0.95 lagging, unless Transmission Provider has established different requirements that apply to all generators in the Control Area on a comparable basis. Non-synchronous generators shall only be required to maintain the above power factor when their output is above 10 percent of the Generating Facility Capacity."
- The 2.0 MW GE wind turbines for Q0706 were assumed to have a +/- 0.9 power factor at turbine terminals.
- Transmission Provider reserves the right to restudy the Project if any of the above mentioned assumptions are changed or if any of the required mitigations are not in service at the time of interconnection.
- 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

5.0 PROPOSED POINT OF INTERCONNECTION

The Interconnection Customer's proposed Generating Facility is to be interconnected through a new 230 kV bay at the proposed Aeolus substation. The Interconnection Customer will construct a seven- to eight-mile 230 kV transmission line into the Aeolus substation from their 230 kV collector substation. Based on the data provided by the Interconnection Customer, the Project consists of two 230 - 34.5 kV transformers with the rating of 84/112/140 MVA each. Each one of the 230 - 34.5 kV transformers is connected to two separate 34.5 collector systems. The first collector system has sixty-two (62) 2.0 MW GE turbines connected to it totaling 124 MW and the second collector system has sixty-three (63) 2.0 MW GE turbines connected to it totaling 126 MW. The total maximum output of the Project shall not exceed 250 MW.

Figure 1 below is a one-line diagram that illustrates the interconnection of the proposed Generating Facility to the Transmission Provider's system.

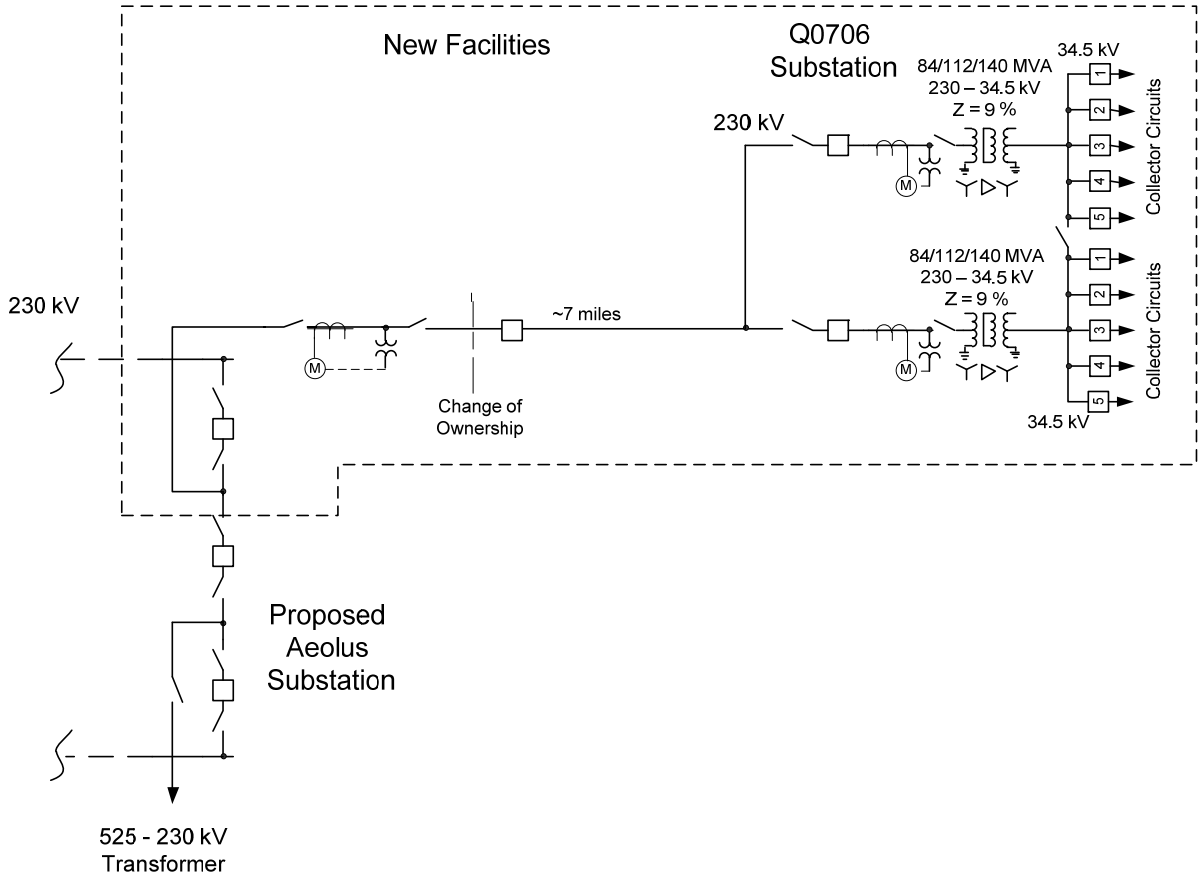

Figure 1: System One Line Diagram

6.0 SCOPE OF WORK

6.1 Generating Facility Modifications

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

6.1.1 INTERCONNECTION CUSTOMER TO BE RESPONSIBLE FOR

- Design, procure, install, and own all equipment required for the Large Generating Facility.
- Obtain all necessary permits, lands, rights of way and easements required for the construction and continued maintenance of the facilities required for the Q0706 Project. All easements and permits shall be recorded in the name of the Transmission Provider and shall be on forms acceptable to the Transmission Provider. All easements and rights of way will be obtained for durations acceptable to the Transmission Provider; this includes all permits/easements for ingress and egress prior to the start of construction.
  - Provide a separate fenced area along the perimeter of the Interconnection Customer's Generating Facility in which the Transmission Provider can install a control house for any protection and communication equipment. This area will share a fence and ground grid with the Generating Facility and have separate access. AC station service for the control house will be supplied by the Interconnection Customer.
- Provide a CDEGS grounding analysis.
- Design and install conduits, per Transmission Provider's standards, to the demarcation point.
- The collector substation batteries will be sized to carry the communication equipment with DC to DC converters.
- Demonstrate the reactive capability of the facility and the voltage control system prior to commercial operation. Conditions of operations include:
  - Operate in voltage control mode with the ability to deliver power output to the POI within the range of +/- 0.95 power factor. (Please see Standard Large Generator Interconnection Agreement, article 9.6.1 and 9.6.2 in OATT.) Any additional reactive compensation must be designed such that the discrete switching of the reactive device, if required, does not cause step voltage changes greater than ± 3% at any load serving bus on the Transmission Provider's system.
  - As required by NERC standard VAR-001-1a, the Transmission Provider will provide a voltage schedule for the POI. Generating Facilities should be operated so as to maintain the voltage at the POI, or other designated point as deemed appropriate by Transmission Provider, between 1.00 per unit to 1.04 per unit. The Transmission Provider may also specify a voltage and/or reactive power bandwidth as needed to coordinate with upstream voltage control devices such as on-load tap

changers. At the Transmission Provider's discretion, these values might be adjusted depending on operating conditions.
    - At low output levels, the Project needs to ensure that it maintains the power factor within ± 0.95 at the POI and minimize the reactive power flow towards the transmission system to prevent high voltages.
    - Generating Facilities capable of operating with a voltage droop are required to do so. Voltage droop control enables proportionate reactive power sharing among Generating Facilities. Studies will be required to coordinate voltage droop settings if there are other facilities in the area. It will be the Interconnection Customer's responsibility to ensure that a voltage coordination study is performed, in coordination with Transmission Provider, and implemented with appropriate coordination settings prior to unit testing.
    - For areas with multiple Generating Facilities, additional studies may be required to determine whether or not critical interactions, including but not limited to control systems, exist. These studies, to be coordinated with Transmission Provider, will be the responsibility of the Interconnection Customer. If the need for a master controller is identified, the cost and all related installation requirements will be the responsibility of the Interconnection Customer.
- Design, procure, install, and own Phasor Measurement Units (PMUs).
- Provide a standard model from the WECC Approved Dynamic Model Library prior to interconnection, since the Transmission Provider cannot submit a user written model to WECC for inclusion in base cases. The list of approved generator models is continually updated and is available on the http://www.WECC.biz website.
- All generators must meet the Federal Energy Regulatory Committee (FERC) and WECC low voltage ride-through requirements as specified in the interconnection agreement.
- Prior to construction, arrange construction power with the Transmission Provider. The Project is within the Transmission Provider's service territory and both station service and temporary construction power metering shall conform to the Six State Electric Service Requirements manual.
- Prior to back feed, arrange distribution voltage retail meter service for electricity consumed by the Project and arrange back up station service for power that will be drawn from the transmission or distribution line when the Project is not generating. Interconnection Customer must call the PCCC Solution Center 1-800-640-2212 to arrange this service. Approval for back feed is contingent upon obtaining station service.
- Provide the following data points from the Q0706 collector substation:
    - Analogs:
        - Transformer # 1 real power

- Transformer # 1 reactive power
- Real power flow through 34.5 kV line feeder breaker T1-1
- Reactive power flow through 34.5 kV line feeder breaker T1-1
- Real power flow through 34.5 kV line feeder breaker T1-2
- Reactive power flow through 34.5 kV line feeder breaker T1-2
- Real power flow through 34.5 kV line feeder breaker T1-3
- Reactive power flow through 34.5 kV line feeder breaker T1-3
- Real power flow through 34.5 kV line feeder breaker T1-4
- Reactive power flow through 34.5 kV line feeder breaker T1-4
- Real power flow through 34.5 kV line feeder breaker T1-5
- Reactive power flow through 34.5 kV line feeder breaker T1-5
- Transformer # 2 real power
- Transformer # 2 reactive power
- Real power flow through 34.5 kV line feeder breaker T2-1
- Reactive power flow through 34.5 kV line feeder breaker T2-1
- Real power flow through 34.5 kV line feeder breaker T2-2
- Reactive power flow through 34.5 kV line feeder breaker T2-2
- Real power flow through 34.5 kV line feeder breaker T2-3
- Reactive power flow through 34.5 kV line feeder breaker T2-3
- Real power flow through 34.5 kV line feeder breaker T2-4
- Reactive power flow through 34.5 kV line feeder breaker T2-4
- Real power flow through 34.5 kV line feeder breaker T2-5
- Reactive power flow through 34.5 kV line feeder breaker T2-5
- A phase 230 kV transmission voltage
- B phase 230 kV transmission voltage
- C phase 230 kV transmission voltage
- Average Wind speed
- Average Plant Atmospheric Pressure (Bar)
- Average Plant Temperature (Celsius)

o Status

- 230 kV breaker T1
- 34.5 kV collector circuit breaker T1-1
- 34.5 kV collector circuit breaker T1-2
- 34.5 kV collector circuit breaker T1-3
- 34.5 kV collector circuit breaker T1-4
- 34.5 kV collector circuit breaker T1-5
- 230 kV breaker T2
- 34.5 kV collector circuit breaker T2-1
- 34.5 kV collector circuit breaker T2-2
- 34.5 kV collector circuit breaker T2-3

- 34.5 kV collector circuit breaker T2-4
- 34.5 kV collector circuit breaker T2-5

6.1.2 TRANSMISSION PROVIDER TO BE RESPONSIBLE FOR

- Design, procure and install a small control building at a location provided and prepared by the Interconnection Customer inside the Generating Facility fence line.
- The list of major equipment identified for this portion of the Project is as follows:
  - (1) small control building AC and DC panels and temperature controlled
  - (1) 125VDC, 100Ah battery bank
  - (1) 130VDC, 12A battery charger
  - (1) GE D20 RTU
  - (1) 24" open frame rack (DNP 3.0 protocol with hard wired connections)
- Revenue metering is required for each of the two Interconnection Customer power transformers and will be located on the high side of each of the step-up transformers. The primary metering transformers shall be combination CT/VT extended range high accuracy metering with ratios to be determined during the design phase of the project.
- The Transmission Provider will design and procure the collector revenue metering panels. The panels shall be located inside the collector control house. The collector substation metering panel shall include two revenue quality meters, test switches, and all SCADA metering data terminated at a metering interposition block.
- An Ethernet or phone line is required for retail sales and generation accounting via the MV-90 translation system.

6.2 Tie Line Requirements and Point of Interconnection (Aeolus)

The following outlines the design, procurement, construction, installation, and ownership of equipment associated with the radial line connecting the Interconnection Customer's Generating Facility to the Transmission Provider's Point of Interconnection substation.

6.2.1 INTERCONNECTION CUSTOMER TO BE RESPONSIBLE FOR

- Obtain all necessary permits, lands, rights of way and easements required for the construction and continued maintenance of the facilities required for the Q0706 Project.
- Design and install approximately seven miles of 230kV transmission line between the Q0706 Generation Facility and the Aeolus substation. The Transmission Provider requires that the bus is built to the Transmission Provider's 230kV standard.
- Design and install ½" OPGW and attachment hardware per the Transmission Provider's standards with nodes and channel banks at both ends. The OPGW cable will be coiled on the above structure such that there is enough cable and conductor to reach the POI substation tower with normal sags. Also, provide all hardware for stringing of the last span of conductor and OPGW into the POI sub tower.

- This fiber is to be installed by the Interconnection Customer and upon acceptance will be owned and maintained by Transmission Provider. Channels will be crossed at Aeolus substation to the back bone communication system.
- Design and construct a single 230kV circuit breaker and associated equipment tie line substation adjacent to Aeolus substation with a common fence between the two facilities.
  - The ground mats between the Aeolus and the tie line substation will be tied together. Therefore, the Interconnection Customer must match the standards of the Aeolus substation.
- Conduit will be required to be installed between the Interconnection Customer's tie line substation and Aeolus substation. The Interconnection Customer will provide their conduit drawings and install the necessary conduit to demarcation point at the Point of Interconnection. The Transmission Provider will install the connecting conduit in the Aeolus substation.
- Design (per the Transmission Provider's standards) and install a dead-end structure with sufficient bus to allow for proper attachment to a 230kV disconnect switch inside the Transmission Provider's substation. The switch will be the Point of Change of Ownership.
- Provide the output from two sets of current transformers to be fed into the bus differential relays with a maximum current transformer ratio matching the maximum CT ratio of the breakers at Aeolus substation. The detection and clearing of faults on the tie line between the tie line and the collector substations will be the responsibility of the Interconnection Customer. Facilities must be installed to detect and isolate the line if it is faulted in five cycles or less.

6.2.2 TRANSMISSION PROVIDER TO BE RESPONSIBLE FOR

- Review the Interconnection Customer's design of the proposed new transmission line, OPGW and connection to the Aeolus substation structure for general conformance with Transmission Provider's construction standards.
- Provide a CDEGS grounding analysis of the Aeolus substation.
- Provide the Transmission Provider's construction standards and review the Interconnection Customer's design for the last bus support structure located outside the POI substation fence line to ensure compatibility with the termination switch.
- Connect the Interconnection Customer's last span of bus to the 230kV, disconnect switch at the change of ownership location including the OPGW cable. The Transmission Provider will maintain this last bus span at the Interconnection Customer's expense.
  - This short span of bus will be protected with a redundant bus differential relay systems. The bus differential relays will be located in Aeolus substation. The

Interconnection Customer will need to provide the output from two sets of current transformers to be fed into the bus differential relays with a maximum current transformer ratio matching the maximum CT ratio of the breakers at Aeolus substation. If a fault is detected, both the 230 kV breakers in Aeolus substation and the 230 kV breaker in the Interconnection Customer's tie line substation will be tripped.

- A relay at Aeolus substation will monitor the voltage magnitude and frequency. If the magnitude or frequency of the voltage is outside of normal range of operation a signal will be sent over the communication system to the collector substation. At the collector substation this signal is to trip open all of the 34.5 kV feeder breakers to disconnect the wind turbine generators. By tripping the 34.5 kV breakers instead of the 230 kV breakers the station service to the Generating Facility is maintained to facilitate the restoration of the generation. This relay will also have phase and ground directional overcurrent elements set to operate for faults in the line between Shirley Basin substation and the Interconnection Customer's collector substation and serve as a back-up to the main protection installed by the Interconnection Customer.

6.3 Point of Interconnection (Aeolus substation)

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

6.3.1 Interconnection Customer to be Responsible For

- Obtain all necessary permits, rights of way and easements required for the construction at Aeolus substation.

6.3.2 Transmission Provider to be Responsible For

- Complete design and construction of one transformer bay at Aeolus to terminate the tie line in. Three (3) feet of panel space will be required in the 230 kV control house. The following equipment will be installed:
  - (1) – 230 kV circuit breaker
  - (3) – 230 kV CCVT
  - (2) – 230 kV group operated breaker disconnect switch
  - (1) – 230 kV group operated line disconnect switch, with ground blade, with motor operator
  - (3) – 144 kV MCOV surge arrester
  - (1) – RTAC
- The interchange metering will be designed bidirectional and rated for the total net generation of the Project including metering the retail load (per tariff) delivered to the Interconnection Customer. The Transmission Provider will specify and order all

interconnection revenue metering, including the instrument transformers, metering panels, junction box and secondary metering wire. The primary metering transformers shall be combination CT/VT extended range for high accuracy metering with ratios to be determined during the design phase of the Project.

- The metering design package will include two revenue quality meters, test switch, with DNP real time digital data terminated at a metering interposition block. One meter will be designated a primary SCADA meter and a second meter will be used designated as backup with metering DNP data delivered to the alternate control center. The metering data will include bidirectional KWH KVARH, revenue quantities including instantaneous PF, MW, MVAR, MVA, including per phase voltage and amps data.
- An Ethernet connection is required for retail sales and generation accounting via the MV-90 translation system.
- Listed below is the data that will be supplied by the Aeolus substation.
  - Analogs:
    - Net Generation real power
    - Net Generator reactive power
    - Interchange energy register
- From Tie Substation Adjacent to Aeolus
  - Status:
    - 230 kV breaker

7.0 COST ESTIMATE (+/- 20%)

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.

Interconnection – Direct Assignment Facilities	
Q0706 collector substation – Add RTU	$450,000
Q0706 collector substation – Add metering	$434,000
Aeolus substation – Add metering	$230,000
Aeolus substation – Add 230 kV line position	$1,584,000
Tie line substation – Add relay settings and grounding	$62,000
Total Cost	**$2,760,000**

*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.

8.0 SCHEDULE

Execute Interconnection Agreement	April 28, 2017
Provision of Financial Security	May 2, 2023
Interconnection Customer Design Information Provided	June 27, 2023
*Transmission Provider Engineering & Procurement Commences	August 7, 2023
**Energy Imbalance Market Modeling Data Submittal	August 7, 2023
Transmission Provider Engineering Design Complete	February 27, 2024
Interconnection Customer Property/Permits/ROW Procured	February 6, 2024
Construction Begins	May 1, 2024
Interconnection Customer's Facilities Receive Backfeed Power	January 31, 2025
Initial Synchronization/Generation Testing	February 28, 2025
Commercial Operation	March 28, 2025

*As applicable and determined by the Transmission Provider, within 60 days of the Interconnection Customer's authorization for the Transmission Provider to begin engineering, the Interconnection Customer shall provide a detailed short circuit model of its generation system. This model must be constructed using the ASPEN OneLine short circuit simulation program and contain all individual electrical components of the Interconnection Customer's generation system.

**Any design modifications to the Interconnection Customer's Generating Facility after this date requiring updates to the Transmission Provider's network model will result in a minimum of 3 months added to all future milestones including Commercial Operation.

Please note, the time required to perform the scope of work identified in this report appears to result in a timeframe that does not support the Interconnection Customer's requested Commercial Operation date of November 1, 2018.

9.0 PARTICIPATION BY AFFECTED SYSTEMS

Transmission Provider has identified the following affected systems: None.

10.0 APPENDICES

Appendix 1: Higher Priority Requests
Appendix 2: Property Requirements

10.1 Appendix 1: Higher Priority Request

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 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:

Q0199 (200 MW)
Q0200 (100 MW)
Q0201 (100 MW)
Q0267 (88 MW)
Q0290 (252 MW)
Q0306/335 (80 MW)
Q0375 (230 MW)
Q0409 (320 MW)
Q0542 (240 MW)

10.2 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 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 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 permittable 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.