

ATTACHMENT G

Network Operating Agreement

1. PURPOSE OF NETWORK OPERATING AGREEMENT

The purpose of this Agreement is to identify contractual requirements related to Network Integration Transmission Service over the Transmission Provider's Transmission System. The parties to this agreement (Parties) agree to adhere to Good Utility Practice, including all applicable reliability criteria as observed in the region.

- (a) This Agreement requires the Parties to recognize that:
 - (1) The Transmission Provider's Transmission System is directly or indirectly interconnected with transmission systems owned or operated by others;
 - (2) The flow of power and energy between such systems shall be controlled by the physical and electrical characteristics of the facilities involved and the manner in which they are operated; and
 - (3) Part of the power and energy being delivered under these Provisions may flow through such other systems rather than through the Transmission Provider facilities. The Parties shall determine methods and take appropriate actions to assure capability for delivery of power and energy at the points of receipt and delivery, and at additional or alternate points of receipt and delivery as established by the Parties.

- (b) The Parties shall:
 - (1) Operate and maintain equipment¹ necessary for interconnecting the Transmission Customer with the Transmission Provider's Transmission System.
 - (2) Transfer data² between their respective control centers as required to maintain reliability of the Transmission System.
 - (3) Use software programs required for data links and constraint dispatching.

¹ Necessary equipment includes, but is not limited to, remote terminal units, metering, communications, telemetering and relaying equipment.

² Data may include, but is not limited to, data pertaining to instantaneous Spinning and Non-Spinning Operating Reserves, heat rates, fuel costs and operational characteristics of Network Resources, generation schedules for Network Resources, interchange schedules, unit outputs for redispatch, voltage schedules, flows of real and reactive power, loss factors, switch status, breaker status, megawatt (MW)/megaVAr flow on lines, bus voltages, transformer taps and other Supervisory Control and Data Acquisition System (SCADA) and real-time data.

- (4) Exchange data on forecasted loads and resources necessary for planning and operation.
- (5) Address other technical and operational considerations required for Tariff implementation, including scheduling protocols.

2. TERM

This Agreement shall remain effective through the term of the Service Agreement.

3. ADMINISTRATION OF THE PROVISIONS

In the event of any irreconcilable differences between the Tariff and this Agreement, the language of the Tariff shall govern.

4. NOTICE

Notices or requests made by either Party regarding these provisions shall be made to the representative of the other Party as indicated in the Service Agreement.

5. DEFINITIONS

Unless otherwise defined herein, capitalized terms refer to terms defined in the Tariff or in the Rate Schedules.

- (a) Automatic Generation Control (AGC)
The real-time control scheme used by all Balancing Authorities to meet the NERC requirement that Balancing Authorities continually adjust generation, as necessary and within predetermined limits, to meet Balancing Authority load requirements and scheduled interchange commitments and its obligation to support interconnected frequency.
- (b) Effective Control Action (ECA)
An action which results in a specific mitigating response at a location(s) in the power system related to the disturbances of concern, thereby providing acceptable power system performance.
- (c) Hourly Data Reported Hourly (HDRH)
Hourly kilowatt hour (kWh) and kilovar hour (kVArh) data provided to the Transmission Provider at the end of each hour. HDRH is taken from sources such as the interchange kWh system.
- (d) Hourly Data Reported Monthly (HDRM)
Hourly kWh and kVArh data provided at least monthly to the Transmission Provider. HDRM is taken from sources such as the Revenue Metering System.
- (e) Operating Reserves
The sum of Contingency Reserves and Regulating Reserves plus any on-demand obligations plus any reserves required for interruptible imports.
- (f) Operational Constraints
Limitations on the ability of the Transmission System to operate due to any system emergency, loading condition, or maintenance outage on the

Transmission Provider facilities, or on facilities of an interconnected utility, that makes it prudent to reduce Transmission System loadings, whether or not all facilities are in service.

- (g) Remedial Action Schemes (RAS)
Sets of fast automatic control actions employed to ensure acceptable power system performance following electrical disturbances as determined by the Transmission Provider power flows and/or stability studies. These may include generator dropping and load tripping.
- (h) Revenue Metering System (RMS)
A data collection system that electronically measures hourly demand and energy quantities for both kilowatt (kW) and kiloVars. The Transmission Provider uses this data on a HDRM basis.
- (i) Single Contingency
The loss of a single generator, transmission line, transformer, bus section or DC monopole under any operating condition or anticipated mode of operation.
- (j) Technical Requirements For Interconnection To The BPA Transmission Grid
A document that includes the detailed technical requirements for connecting transmission lines, loads and generation resources into the BPA Grid. The Technical Requirements for the Connection of Transmission Lines and Loads and the Technical Requirements for the Interconnection of Generation Resources are posted on the Transmission Provider's OASIS.
- (k) Telemetry
A data collection system that provides the Transmission Provider with kilowatt information on load, generation and powerflow, on a continuous, instantaneous basis.
- (l) Transmission Customer Resource
Any Transmission Customer-owned resource, regardless of resource location, and any Third Party (consumer or independent power producer) resource directly connected to the Transmission Customer's transmission or distribution system.

6. INTERCONNECTED FACILITY REQUIREMENTS

- (a) **Ownership**
 - (1) Equipment or salvageable facilities owned by one Party and installed on the property of the other Party shall remain the property of the owner, except as noted in this Agreement.
 - (2) A Party must identify its facilities installed on the other Party's property. Facilities include all movable equipment and other salvageable facilities which said Party installed on the other Party's property. Ownership of facilities must be made by affixing permanent suitable markers with the owner's

name. The Parties shall jointly prepare an itemized list of the aforementioned equipment.

- (3) Each Party agrees to be responsible for the cost of complying with all applicable Federal, State and local environmental laws for its own facilities, regardless of where the facilities are located.

(b) Safety Design

The Transmission Provider requires clearance of equipment during maintenance, modification and testing. Facility interconnections between the Transmission Provider and the Transmission Customer are to be designed and constructed to allow clearance of equipment using isolation devices. Isolation devices must produce a visible air gap between the energized facilities and the equipment to be worked on. Operating procedures associated with this interconnection must comply with the Transmission Provider's Accident Prevention Manual and also with the Transmission Customer's safety manual as specified in writing by the Transmission Customer.

(c) Access to Interconnected Facilities

- (1) Each Party agrees to grant permission to the other to enter its property to perform operations and maintenance, meter reading, inspection or removal of the other's equipment and facilities installed on the first Party's property.
- (2) In providing the above permission, the first Party waives no rights or remedies with respect to any injury, loss or damage resulting from the other's activities on the first Party's property.

7. RESOURCE AND INTERCONNECTION PRINCIPLES AND REQUIREMENTS

(a) Remedial Action Schemes

- (1) The Transmission Customer may be required (at its cost), to provide or assure the provision of its pro rata share of RAS required to support the transmission capability of the transmission paths the Transmission Customer uses.
- (2) If the Transmission Customer is required to provide RAS, then the Transmission Provider and the Transmission Customer shall jointly plan and coordinate the implementation of the RAS. No Party shall unduly withhold consent regarding the implementation of the RAS. The Transmission Customer may implement the required RAS where it chooses on its system, as long as the required level of ECA is obtained. The level of reliability of the RAS design on the Transmission Customer's system shall be at least equal to the level of reliability employed in the design of the overall RAS required to support the transmission capability of the transmission path the Transmission Customer uses.

- (A) The Transmission Customer's contribution to the total operational responsibility for the RAS shall be the ratio of the Transmission Customer's usage of the Transmission Provider's share of the transmission path, to the total rating of the Transmission Provider's share of the transmission path.
 - (B) The Transmission Provider shall provide the appropriate control signals to the Transmission Customer.
 - (C) The Transmission Customer shall provide the necessary equipment to receive and transmit control signals to and from its transmission, generation and control center facilities to arm and initiate the appropriate ECA or actions determined by the Transmission Provider.
- (3) Additional information regarding RAS can be found in the Technical Requirements For Interconnection To The BPA Transmission Grid.
- (b) Operation of Resources
- (1) The Transmission Customer shall operate its generation resources that interconnect with the Transmission Provider's Transmission System or which are located in the Transmission Provider's Balancing Authority in a manner consistent with Good Utility Practice, and the standards, criteria and requirements of NERC, WECC, NWPP, the Transmission Provider and any applicable reliability authority.
 - (2) The Transmission Customer shall pay the cost of necessary communications installations, and modification of the Transmission Provider's computer hardware and software, including accommodating the Transmission Customer's decisions to change Balancing Authorities.
 - (3) Any resources used by the Transmission Customer to meet its Operating Reserve obligations to the Transmission Provider's Balancing Authority shall meet the same NERC, WECC, NWPP and other applicable requirements, practices and procedures as the Transmission Provider's generating resources providing these same services including, AGC capability, reserve availability, ramp rate, governor response, random testing and a monthly startup test.
- (c) Interconnection with Third Parties
- (1) Each Party shall cooperate with other interconnected systems in establishing arrangements or mitigation measures to minimize operational impacts on the other Party's system.
 - (2) Each Party recognizes that a Party's proposed new interconnection or modification of an existing interconnection between its system and the system of a Third Party, may cause adverse effects on the system of the other Party. The

Party making such interconnection or modification shall minimize or otherwise compensate for adverse operational impacts to the other Party's system.

(d) Interconnection with the Transmission Provider

The Transmission Customer shall plan, construct, operate and maintain its facilities and system that interconnect with the Transmission Provider's Transmission System in accordance with Good Utility Practice, including, but not limited to, all applicable guidelines of NERC, WECC and NWPP, the Transmission Provider and any applicable reliability authority, and generally accepted regional practices.

Additional information regarding Interconnection Requirements can be found in the Technical Requirements For Interconnection To The BPA Transmission Grid.

(e) Generation Integration

(1) Resources connected directly to the Transmission Provider's Transmission System or which are in the Transmission Provider's Balancing Authority are subject to compliance with the Transmission Provider's generation integration requirements, Good Utility Practice and all applicable standards of NERC, WECC, NWPP, the Transmission Provider and any applicable reliability authority, and any generally accepted regional practices that are adopted by the Transmission Provider.

All resources integrated into a Transmission Customer's system which, by virtue of their point of interconnection, are capable of energizing the Transmission Provider's facilities, must comply with safety requirements of the above standards, including those for relay protection, insulation coordination, switchgear and safety. This requirement typically applies to generators that are integrated into a system that is connected radially from a tapped Transmission Provider transmission line or Transmission Provider substation. With respect to other resources integrated into a Transmission Customer's network, all points of interconnection between the Transmission Provider and the Transmission Customer must be operated and maintained in a manner consistent with Good Utility Practice.

(2) The Transmission Customer agrees to notify the Transmission Provider a minimum of eighteen (18) months prior to energization of a resource if such resource is expected to impact the Transmission Provider's Transmission System.

(f) The Transmission Provider has the right to revise the Technical Requirements for Interconnection to the BPA Transmission Grid as it deems necessary or appropriate. Upon request, the Transmission Provider shall provide to the Transmission Customer a copy of the Technical Requirements, including any revisions thereto.

8. CUSTOMER INFORMATION REQUIREMENT

The Transmission Customer shall provide to the Transmission Provider load forecasts, generation forecasts, schedules and any other information necessary to implement Curtailment, Load Shedding and congestion management procedures, and for ATC computations when requested by the Transmission Provider.

9. POWER QUALITY

Requirements and information regarding Power Quality can be found in the Technical Requirements For Interconnection To The BPA Transmission Grid.

10. SERVICE INTERRUPTIONS

(a) Temporary Load Shifts and Maintenance Notification

(1) The Parties may temporarily curtail, reduce or shift deliveries of electric power if any such Party determines that such Curtailment, reduction or load shift is necessary or desirable in case of system emergencies or operational constraints on the system of either Party, or to install equipment in, make repairs to, make replacement within, conduct investigations and inspections of, or perform other maintenance work on the Parties' facilities. To the extent reasonable or appropriate, the Parties shall use temporary facilities or equipment to minimize the effect of any such interruption, reduction or load shift.

(2) The Transmission Customer must submit a report concerning any such curtailment, reduction or load shift on its transmission system to the Transmission Provider within four (4) days of such curtailment, reduction or load shift. Reports may be made by telephone, mail or other electronic processes. The point of contact for each Party shall be designated pursuant to the Service Agreement. On receipt of the Transmission Customer's report, the Transmission Provider shall adjust the Transmission Customer's billing determinants pursuant to the Transmission Provider's billing procedures. If the Transmission Customer does not submit the report within four (4) days of the curtailment, reduction or load shift, the Transmission Provider shall assess charges based on available data.

(b) Additional information regarding Service Interruptions can be found in the Technical Requirements For Interconnection To The BPA Transmission Grid. See paragraph 5(j) above.

11. EMERGENCY PLANNING AND OPERATION

(a) The Transmission Provider shall be responsible for planning, coordinating and implementing emergency operation schemes. Examples of such schemes include the NWPP under- frequency Load Shedding program, the under- voltage Load Shedding program and the system restoration plan. There may be additional schemes that meet the NWPP, WECC and applicable reliability authority planning objectives. If the Transmission Provider identifies reliability objectives

beyond the NWPP, WCC and applicable reliability authority objectives, they shall be communicated to the Transmission Customer(s). The need to identify additional objectives may involve anticipated reduction in system restoration time following blackout or brownout emergencies.

- (b) The Transmission Customer shall:
- (1) participate in the development and implementation of Load Shedding programs for system security;
 - (2) install and maintain the required Load Shedding relays, including under-frequency and under-voltage relays; and
 - (3) participate in system restoration planning. Disputes with any of the requirements specified by the Transmission Provider shall be resolved through the dispute resolution process described in the Tariff.

Additional information regarding Emergency Planning and Operation can be found in the Technical Requirements For Interconnection To The BPA Transmission Grid.

12. INFORMATION AND METERING REQUIREMENTS

Requirements and information regarding Information and Metering Requirements can be found in the Technical Requirements For Interconnection To The BPA Transmission Grid.

13. METERING COSTS

(a) Metering of Existing Facilities

The Transmission Provider shall be responsible for costs of all Transmission Provider-required new meter installation or meter replacements at a Transmission Customer facility existing on the Effective Date of this Service Agreement.

The Transmission Customer shall be responsible for the costs of:

- (1) Any meter replacement or new installation at points of delivery which are not required to achieve the best overall plan of service (convenience points of delivery); and
- (2) Any meters needed because the Transmission Customer changes Balancing Authorities or is displacing transmission from the Transmission Provider; and/or meters requested by the Transmission Customers.

(b) Metering of New Transmission Customer Facilities

The Transmission Provider shall be responsible for costs associated with installation of the Transmission Provider-approved metering at new facilities established after the Effective Date of this Service Agreement that are connected to the Transmission Provider's Transmission System.

The Transmission Customer shall be responsible for the costs of the Transmission Provider approved metering for:

- (1) all points of generation (resource) integration;
- (2) all AGC interchange points; and
- (3) all other points of electrical interconnection, including convenience points of delivery.

14. COMMUNICATIONS

Requirements and information regarding Communications can be found in the Technical Requirements For Interconnection To The BPA Transmission Grid.