OKANOGAN COUNTY PUD

FACILITY CONNECTION REQUIREMENTS

OVERVIEW

Version 4.0
December, 2011

Applicable to:
NERC Reliability Standard FAC-001

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1. Introduction

All connections to the Okanogan PUD (District's) System must be in compliance with all applicable Okanogan PUD Facility Connection Requirements and Reliability Standards of the North American Electric Reliability Corporation (NERC), as administered by the Western Electricity Coordinating Council (WECC).

2. General Requirements

These requirements shall apply to all new generation, interconnection, and end-use facilities connected to the District's System. Additionally, these requirements shall apply to all modifications of existing facilities in the categories mentioned above. These requirements shall also apply to co-generation entities that implement changes in their normal operations, which result in a change to the District's obligation to serve retail load.

All new or modified generation, interconnection, or end-use facilities shall comply with all applicable codes, standards, government regulations, environmental regulations, siting requirements, contracts, operating agreements, and tariff requirements related to the facilities identified above.

The reference documents that are made part of the Facility Connection Requirements document are listed as follows:

Appendix A - Procedures and Requirements for Okanogan PUD Electric System Interconnection

Appendix B - Technical Requirements

Appendix C - Protection Requirements and Guidelines

Appendix D - Exceptions to Connection Requirements

Appendix E - Connection and Operating Agreement

Facilities, which are connected to the District's System, must be inspected by appropriate District personnel and certified as meeting these Facility Connection Requirements prior to being placed in service. Facilities must be made available for subsequent inspection as needed.

3. Planning Requirements

Electric system planning studies must be performed as necessary to determine the impact on the interconnected transmission system when connecting new

and/or modified generation, interconnection, or end-use facilities. Project Sponsors should provide notification of the intent to connect new facilities or to modify existing facilities already connected to the District's System to the District's Engineering group as soon as possible to ensure that a review of the reliability impact of the facilities and their connections can be performed.

The District's System interconnects with the Bonneville System and Douglas PUD System at various locations. Douglas PUD also serves as the Balancing Authority for the District's System. Larger Projects connecting to the District'sSystem could have an effect on the Bonneville System, and/or the Douglas PUD System, as well as Douglas PUD's Balancing Authority Area. As a result, a Project may also be subject to all or portions of Douglas PUD's "Facility Connection Requirements", Bonneville's "Line and Load Interconnection Procedures", "Generator Interconnection – Large" (Business Practice), and "Technical Requirements for Interconnection with the BPA Transmission Grid". The Project location, interconnection voltage, transmission access requirements, and capacity will dictate the extent to which the Bonneville and/or Douglas PUD procedures and technical requirements apply to a given Project. The District will work with the Project Sponsor Douglas PUD and/or Bonneville to resolve any discrepancies arising from the use of multiple procedures and technical requirements applicable to a given Project.

A. Connection Study

New generation and utility interconnections can, without appropriate system upgrades, degrade system reliability and result in adverse effects on system stability, fault current levels, line loading, and voltage. The District must perform a Connection Study to evaluate the impact of adding generation or a new utility interconnection to the District's electric system.

The Connection Study has two parts: The Feasibility Study and the Detailed Connection Study.

The Feasibility Study provides a quick look at the local area electrical constraints that could affect Project viability and location.

The Detailed Connection Study is comprised of the following components:

a. Connection Configuration
b. Power Flow, Short Circuit, and Stability Analysis
c. Protection
d. Power Quality and Reliability

The results of these analyses will be used to determine if modifications must be made to maintain the reliability of the electrical system

Prior to commencing the Connection Study, the District's Engineering group requires, at a minimum, the following data:

Synchronous machine data
Exciter data and models
Governor data and models
Power system stabilizer data (if installed)
Step-up transformer data (positive and zero sequence)
Line impedance to connection point (positive and zero sequence)
System configuration (one-line diagram)
Short circuit data
Site load data
Point of delivery of excess generation
Power factor limitations of the units
Detailed location map

The procedure for notifying the District of new or modified generating facilities is attached as Appendix A (Procedures and Requirements for Okanogan PUD Electric System Interconnection).

B. System Impact Study

Addition of larger loads and smaller generation facilities (generally under 5 MW) will have an effect on the District's electric system, particularly in the vicinity of the point where the facility connects to District lines and equipment. A signed System Impact Study Agreement initiates a detailed analysis of the electrical impact of a small generator or end-use load on the District's System. If necessary, the District will work with the Sponsor, Douglas PUD, and/or Bonneville to coordinate performance of the System Impact Study with performance of any required Douglas PUD and/or Bonneville interconnection studies.

The System Impact Study will evaluate the effect of the Project on the District's electric system and is comprised of all the following components:

a. Connection Configuration
b. Power Flow, Short Circuit, and Stability Analysis
c. Protection
d. Power Quality and Reliability

If the Sponsor desires that the District study multiple sites, configurations, load levels, or generation output levels, such alternatives must be included in the System Impact Study agreement, either initially or through amendment to the initial System Impact Study Agreement. The District will recover all costs associated with the System Impact Study from the Sponsor pursuant to the terms of a System Impact Study Agreement.

4. Design Requirements

The design for generation, transmission, and end-use facilities shall comply with all the requirements identified in the Facility Connection Requirements. Additionally, the design process to integrate the new facility into the District's

electric system shall incorporate all the required upgrades identified in the Connection Study or System Impact Study. These requirements may include the following components:

- Supervisory control and data acquisition
- Telemetering and metering
- Equipment ratings
- Short circuit conditions
- System protection and other controls
- System grounding

5. Operations and Maintenance Requirements

All connecting facilities shall be maintained and operationally tested in order to meet current requirements as specified by the District in the Project's Connection and Operating Agreement and, where applicable, Bonneville facility testing and maintenance requirements. These requirements may include the following:

- Communications during normal and emergency conditions
- Voltage and power factor control
- Reactive power requirements
- Generation control
- Maintenance coordination
- Synchronizing facilities
- Responsibilities during emergency conditions
- Abnormal frequency and voltage operation
- Inspection requirements

These requirements are also covered in the following documents:

Appendix A - Procedures and Requirements for Okanogan PUD Electric System Interconnection

Appendix B - Technical Connection Requirements

Appendix C - Protection Requirements and Guidelines

6. Transmission Rights and Retail Service

A request to connect a generation facility, a utility electric system, or a new end-use load does not convey any rights for that facility to either inject power into, transfer power over, or purchase power from the District's electrical system. An approved interconnection request merely conveys an ongoing right to access the District's system at the point of connection. No such injection, transfer, or retail purchase right shall exist until the Project Sponsor has made appropriate contractual arrangements with the District for transmission service or retail load service.

Should a Sponsor desire transmission service over the District's electric system, the District may need to perform additional electric system studies in cooperation with Bonneville and/or Douglas PUD. These studies will likely conform to the procedures contained in Bonneville's Open Access Transmission Tariff and associated Business Practices.

The terms and conditions of the District's Electric Service Tariffs shall apply to retail service for end-use loads.

7. Version History

Version	Date	Action	Change/Tracking
1.0	2/25/2008	Created	
2.0	10/11/2011	Updated. Changed Facility affected by requirements from 25 kW to 100kW, to fall in line with other Entity Policies. Edited language from Dispatch Operators to Engineering Department. (Okanogan does not have Dispatch Center).	DD/RG/DM/TD/MH
3.0	12-2011	Edited Table of Contents. Corrected Headings to match documents.	TD/DD
4.0	12/28/2011	Relabeled appendices, new title for appendix A, Removed from Table of Contents Agreements under appendix A.	TD/DD