



OKANOGAN COUNTY PUD  
FACILITY INTERCONNECTION REQUIREMENTS  
OVERVIEW

Version 5.6  
December, 2022

Applicable to:  
NERC Reliability Standard FAC-001-3

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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 based on Public Utility District No. 1 of Okanogan County's (Okanogan) NERC registrations, which are Transmission Owner (TO) and Distribution Provider (DP). This is specified in Reliability Standard FAC-001-2, Facility Interconnection Requirements, 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-user 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.

FAC-001-2 Facility Interconnection Requirements is applicable to all NERC registered Transmission Owners (TOs), as well as Generation Owners (Gos). Requirements specific to Okanogan's registration are R1 and R3 as well as the Guidelines and Technical Basis sections of the standard.

**R1.** Each Transmission Owner shall document Facility interconnection requirements, update them as needed, and make them available upon request. Each Transmission Owner's Facility interconnection requirements shall address interconnection requirements for:

- 1.1. generation Facilities;
- 1.2. transmission Facilities; and
- 1.3. end-user Facilities.

**M1.** Each Transmission Owner shall have evidence (such as dated, documented Facility interconnection requirements) that it met all requirements in Requirement R1.(The Measure is used to help show compliance).

**R3.** Each Transmission Owner shall address the following items in its Facility interconnection requirements:

- 3.1. Procedures for coordinated studies of new or materially modified existing interconnections and their impacts on affected system(s).
- 3.2. Procedures for notifying those responsible for the reliability of affected system(s) of new or materially modified existing interconnections.
- 3.3. Procedures for confirming with those responsible for the reliability of affected systems of new or materially modified transmission Facilities are within a Balancing Authority Area's metered boundaries.

**M3.** Each Transmission Owner shall have evidence (such as dated, documented

Facility interconnection requirements addressing the procedures) that it met all the requirements in Requirement R3.

### **Guidelines and Technical Basis**

Each Transmission Owner and applicable Generator Owner should consider the following items in the development of Facility interconnection requirements:

- Procedures for requesting a new Facility interconnection or material modification to an existing interconnection
- Data required to properly study the interconnection
- Voltage level and MW and MVA<sub>r</sub> capacity or demand at the point of interconnection
- Breaker duty and surge protection
- System protection and coordination
- Metering and telecommunications
- Grounding and safety issues
- Insulation and insulation coordination
- Voltage, Reactive Power (including specifications for minimum static and dynamic reactive power requirements), and power factor control
- Power quality impacts
- Equipment ratings
- Synchronizing of Facilities
- Maintenance coordination
- Operational issues (abnormal frequency and voltages)
- Inspection requirements for new or materially modified existing interconnections
- Communications and procedures during normal and emergency operating conditions

All new or modified generation, interconnection, or end-user 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 Connection 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-user 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's System 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.

### **4. 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 will include information that shows that the new or materially modified transmission Facilities are within a Balancing Authority Area's metered boundaries.

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-user load on the District's System. If necessary, the District will work with the Project Sponsor, Douglas PUD, and Bonneville to coordinate analysis of the System Impact Study with analysis 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 an amendment to the 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.

## **5. Design Requirements**

The design for generation, transmission, and end-user facilities shall comply with all the requirements identified in the Facility Connection Requirements. Additionally, the design process to integrate the new facility or load 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 (SCADA)
- Telemetry and metering
- Fiber Optic Cable and supporting electronics
- Equipment ratings
- Short circuit conditions
- System protection and other controls
- System grounding
- New substation or modified substation and equipment
- New or modified transmission lines and equipment

## **6. 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:

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

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-user 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           |
| 4.1     | 12/31/14   | Changed performance to analysis in Section B. Small changes to Section 4.  | TD              |
| 5.0     | 12/21/16   | Updated Section 1. Introduction and Section 2. General Requirements  | DD/TD           |
| 5.1     | 12/15/17   | Minor changes to Sections 2 & 3. Added Sub & T-line to Section 4 and TOP to Section 5.   | TD              |
| 5.2     | 12/14/2018 | Reviewed- Added changes to Requirement 3 of FAC-001-3 to include within metered boundaries of Balancing Authority Area.  | AA              |
| 5.3     | 12/20/2019 | Reviewed No Changes  | AA              |
| 5.4     | 12/14/2020 | Reviewed no changes  | AA              |
| 5.5     | 12/14/2021 | Reviewed – No Changes  | DCS/AA          |
| 5.6     | 12/19/2022 | Reviewed – No Changes  | DS/AA           |