

Policy Bulletin No. 43

Electrical Interconnection Requirements

1. Introduction

These Klickitat PUD Electric Interconnection Technical Requirements shall apply to all new generation, utility interconnection, and large end-use facilities connected to the Klickitat PUD electric 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 Klickitat PUD's obligation to serve retail load.

The Klickitat PUD electric system connects to the Bonneville Power Administration ("BPA") electric system at a number of locations, as well as to the PacifiCorp electric system at the Bingen Substation and the Benton PUD electric system at the MA Collins Substation. Klickitat PUD interconnects load service distribution substations and third party generation integration facilities to the BPA electric system.

Klickitat PUD registered with NERC as a Transmission Owner, Distribution Service Provider, Load Serving Entity, Transmission Planner (beginning 2018), and Purchasing-Selling Entity. BPA acts as Klickitat PUD's Transmission Operator, Balancing Authority, Transmission Planning Coordinator, and Transmission Service Provider. RC West (CAISO) acts as Klickitat PUD's Reliability Coordinator.

2. General Requirements

All transmission, generation, or end-use loads in excess of 2500 kW instantaneous peak demand or 1000 average kw, connected to the Klickitat PUD electric system must comply with all applicable Klickitat PUD Facility Connection Requirements, Electric Service Schedules, Policy Bulletins, Procedure Bulletins, the "Technical Requirements for Interconnection to the BPA Transmission Grid" ("BPA Technical Requirements" and Reliability Standards of the North American Electric Reliability Corporation (NERC) or its successor, as administered by the Western Electricity Coordinating Council (WECC) and RC West or their successors.

Furthermore, generators shall execute an interconnection agreement with Klickitat PUD and, where appropriate, with BPA. The BPA agreement will be the "Balancing Authority Area Service Agreement" (BAASA). Large End-Use Load customers if required, will enter into and execute a Large Load Interconnect Study through the BPA Large Load Interconnect Procedure (LLIP).

Klickitat PUD has organized these Facility Connection Requirements to address the design, operation, and maintenance of facilities in the following categories:

Load Service Facilities –

Load service facilities include new substations, large end-use load connections, and new transmission lines used to connect retail load service facilities to the Klickitat PUD

or Bonneville electric systems. The District's "Policy Bulletin 21 – Customer Service Policy Electric" applies to such new load connections along with this policy.

Klickitat PUD facilities connect to BPA at various locations for load service purposes at 230 kV, 115 kV and 69 kV. BPA also delivers power to Klickitat PUD via the PacifiCorp system at the Bingen Substation and the Benton PUD system at the MA Collins Substation. Should Klickitat PUD or a third party elect to connect a new transmission line or substation facility to the BPA electric system for load service purposes, the District shall apply to BPA for interconnection pursuant to the BPA "Line and Load Interconnection Procedures". In circumstances where construction or modification of a Klickitat PUD substation or transmission line does not require direct connection to the BPA electric system, the District shall coordinate planning and operation of such facility with BPA (or any other affected system) as provided in the District's "Procedure Bulletin 41 – Coordination of Plans for New Facilities", along with this Policy.

Transmission Voltage Generation Interconnection Facilities –

Klickitat PUD provides transmission service between third party generation facilities and the BPA transmission system. In such circumstances, Klickitat PUD designs, constructs, operates, and maintains high voltage transmission and substation facilities that connect the generating facilities to the BPA transmission system. Klickitat PUD provides this transmission service and interconnection facility construction and operation service to customers pursuant to the District's "Policy Bulletin 20 - Transmission Service and Generation Interconnection", as well as separate transmission service and generation interconnection agreements.

Project Sponsors of generation facilities above 5 MW will need to execute a Balancing Authority Area Service Agreement (BAASA) with BPA. Klickitat PUD is currently discussing with BPA how best to coordinate interconnected generation operation among BPA, Klickitat PUD, and the Project Sponsors. Such coordination may occur through the auspices of the BPA BAASA, or a separate interconnection agreement between BPA and Klickitat PUD.

Small Generation Facilities –

In some cases, 5 MW or smaller generating facilities may interconnect with the Klickitat PUD electric system at distribution voltages (generally 12.47 kV). In such circumstances, design, operation, and maintenance of such facilities must also conform to either Policy Bulletin 20 (generation projects over 25 kW) and these Facility Connection Requirements; or the District's "Policy Bulletin 25 - Net Metering Policy" (generation under 25 kW).

Depending on the interconnection circumstances, BPA may require that the Project Sponsor of a small generation facility execute a BAASA.

Klickitat PUD has discussed with BPA how best to coordinate interconnected generation operation among BPA, Klickitat PUD, and the Project Sponsors. Such coordination may occur through the auspices of the BPA BAASA or a separate interconnection agreement between BPA and Klickitat PUD.

3. Planning Requirements

Electric system planning studies must be performed 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 Klickitat PUD electric system to the Klickitat PUD 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 initial notification of the intent to connect shall be in writing via mail or electronic. The good faith cost estimates of the costs of Studies and review will be provided to the customer by the Klickitat PUD Engineering Department, and shall be paid in advance by the customer. For Large End Use Loads, these studies and the details of the studies are outlined in Appendix A and B of this document.

Any transmission voltage facility installation or modification to existing facilities that affects the BPA transmission system requires that Klickitat PUD coordinate facility planning, design, operation, and maintenance with BPA. Klickitat PUD coordinates facility planning with BPA and other affected entities pursuant to Procedure Bulletin 41 – Coordination of Plans for New Facilities. Klickitat PUD prepared Procedure Bulletin 41(Coordination of Plans for New Facilities) to comply with the requirements of the latest version of NERC Standard FAC-002.

4. Facility Design Technical and Operational Requirements

To minimize technical and operational inconsistencies between Klickitat PUD and BPA electrical design, operation, and maintenance requirements, Klickitat PUD has generally adopted the BPA Technical Requirements as its own facility connection requirements. The District intends that this integration of the BPA Technical Requirements with KPUD Policies and Procedures demonstrate compliance with the technical and operational requirements contained in NERC Standard FAC-001-0 (Facility Connection Requirements). Furthermore, the following quote from the Scope section of the BPA Technical Requirements acknowledges the relationship between the BPA Technical Requirements and the design of facilities that connect to a Host Utility, such as Klickitat PUD, rather than directly to BPA:

“Requests to interconnect generating resources or loads (Projects) are typically submitted by the project developer but may be made in conjunction with what Transmission Services refers to as a “Host Utility”, a utility located within BPA’s Balancing Authority Area. BPA refers to the entity that submits the interconnection request as the Requester. BPA evaluates and studies each Project individually, as it was described in the request and determines impacts to BPA transmission facilities and, if applicable, impacts to neighboring affected systems.”

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. New generation facilities require execution of a Generation Interconnection Agreement with Klickitat PUD.

New facilities connected to the Klickitat PUD electric system must be inspected by appropriate Klickitat PUD personnel (and BPA personnel, if required by a BPA agreement and/or the BPA Technical Requirements) and certified as meeting these Facility Connection Requirements prior to being placed in service. Facilities must be made available for subsequent inspection as needed.

As determined by KPUD Engineering, the Large End-Use-Load Facility may be metered at the primary voltage level, with the ownership demarcation being at this

point or at a downstream protective device. BPA requires communications to the PUD owned metering system for these large loads. Communications system costs will be at the customers' expense.

**4.1. Klickitat PUD Exceptions to BPA Technical Requirements:
BPA Document TSD-N-000001-00-01, Technical Requirements for
Interconnection to the BPA Transmission Grid**

1. Section 6.5.1: transmission lines will be designed for NESC clearances at 212 degrees F, (100 degrees C).
2. Section 6.5.1: surge protection requirements for transmission line terminals in substations will be determined on a case by case basis.
3. Section 6.5.1: Isolation of transmission line OHGWs from the substation ground grid will be evaluated on a case by case basis
4. Section 6.8.3: metering will be tested once per year.
5. Section 9, Data Requirements is replaced with data requirements for KPUD's standard SCADA and Metering system interface requirements. This in no way limits BPA's Data Requirements.
6. Section 10, Telecommunication Requirements is replaced with KPUD requirement for full communication as required to link the substation SCADA system with KPUD's SCADA master Goldendale. This in no way limits BPA's Telecommunication Requirements.

5. Application Process and Studies

Policy Bulletin 20 – Transmission Service and Generation Interconnection Procedures contains the application and facility study process applicable to Project Sponsors proposing new larger generation facilities that connect to the Klickitat PUD electric system. The District's Policy Bulletin 25 – Net Metering Requirements governs the application process for interconnection of smaller generating facilities (under 25 kW).

Policy Bulletin 43 Electrical Interconnection Requirements provides the requirements and application process for connecting new Large End-Use Loads to the District and load service transmission facilities to the District's Electric System.

Policy Bulletin 21 – Customer Service Policy Electric provides the process to connect new end-use loads to the district electric system that are not subject to the requirements of Policy Bulletin 43.

A. System Impact Study

Once it receives an application for Generation Interconnection Service, transmission service loads pursuant to Policy Bulletin 20, or application for new Large End Use Load pursuant to the District's Policy Bulletin 43 – Electrical Interconnection Requirements, Klickitat PUD will offer the Project Sponsor a System Impact Study Agreement. A System Impact Study evaluates the impact of adding generation or a new utility load service connection to the Klickitat PUD electric system. Klickitat PUD may coordinate a generation project System Impact Study with BPA's "Interconnection System Impact Study" process (see the description of the Interconnection System Impact Study contained in BPA's Large Generator Interconnection Procedures found in BPA's Open Access Transmission Tariff),

particularly where the new facilities could have a material electrical impact on the BPA transmission system.

Prior to commencing the System Impact Study, Klickitat PUD's Engineering group requires, at a minimum, the data described in Section 9 of BPA's Technical Requirements (generator connection), or the District Policy Bulletin 43 – Electrical Interconnection Requirements for new utility load service connections. The requirements may be in the form of a completed "Klickitat PUD Large End-Use Interconnect Application (at a minimum), and as determined by the Klickitat PUD Engineer. The Engineer will provide the applicant with a good faith estimate to provide the System Impact Study. Those costs will be paid to Klickitat PUD in the form of an application fee. Should the costs incurred be less than the amount of the fee, the applicant will be refunded the difference by Klickitat PUD. Should the costs be more than the amount of the application fee, the applicant will pay the difference to Klickitat PUD. Costs for the BPA studies will be discussed individually with the applicant and may be a "pass through cost" to BPA and are not a part of the good faith estimate deposit. Application fees will be found in "attachment B" of this policy.

New generation and new utility load service connections can, without appropriate system upgrades, degrade system reliability and result in adverse effects on system stability, fault current levels, line loading, and voltage.

The System Impact Study evaluates the effects of the proposed generation or utility load service connections on the Klickitat PUD electric system and contains but is not limited to the following elements:

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

If the Project Sponsor desires that Klickitat PUD study multiple sites¹, 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. Klickitat PUD will recover all costs associated with the System Impact Study from the Project Sponsor pursuant to the terms of a System Impact Study Agreement.

The results of these analyses will be used to determine if modifications must be made to maintain the reliability of the electrical system. The System Impact Study will also determine the plan of service for the project, or whether a Facilities Study is Required.

B. Facility Study

(Note: For new Large End-Use Load connections, Klickitat PUD and the Project Sponsor may elect to combine the System Impact Study and Facilities Study into a single study and study agreement.)

After delivering the results of the System Impact Study to the Project Sponsor, Klickitat PUD will present the Project Sponsor with a Facility Study Agreement

¹ Multiple Sites will require a separate KPUD Interconnect Application and fee(s) for each site

pursuant to Policy Bulletin #20. A signed Facility Study Agreement initiates a detailed technical analysis of requirements for facility interconnection, including an estimate of the cost and preliminary design and construction schedules of required interconnection facilities. As with the System Impact Study, the District may coordinate preparation of the Facility Study with BPA's "Interconnection Facility Study" process (see the description of the Interconnection Facility Study contained in BPA's Large Generator Interconnection Procedures found in BPA's OATT). The Engineer will provide the applicant with a good faith estimate to provide the Facilities Study. Those costs will be paid to Klickitat PUD in the form of an advance application fee. Should the costs incurred be less than the amount of the fee, the applicant will be refunded the difference by Klickitat PUD. Should the costs be more than the amount of the application fee, the applicant will pay the difference to Klickitat PUD. Costs for the BPA studies will be discussed individually with the applicant and may be a "pass through cost" to BPA and are not a part of the application fee.

Once presented with the results of the Facility Study, the Project Sponsor for an end-use load or utility connection project may elect to proceed to negotiate a definitive agreement to construct the facilities necessary to connect the project to the Klickitat PUD electric system.

C. Offer of Transmission Service Agreement, Generation Interconnection Agreement, and Pre-Construction Development Agreement

For generation projects, after delivery of the results of the Facility Study to the Project Sponsor, Klickitat PUD will provide the Project Sponsor with a draft Transmission Service Agreement, Generation Interconnection Agreement, and, if so elected by Klickitat PUD, a Pre-Construction Development Agreement. The purpose of the Pre-Construction Development Agreement is to compensate Klickitat PUD for the cost of finalizing technical details associated with the project plan of service and to negotiate the Transmission Service Agreement and Generation Interconnection Agreement as well as a Transmission Facilities Design and Construction Agreement to define details for the required construction and system integration.

D. Execution of Transmission Service Agreement, Generation Interconnection Agreement, and Design and Construction Agreement

The final step of the generation interconnection process is the execution of the Transmission Service Agreement, Generation Interconnection Agreement, and the Transmission Facility Design and Construction Agreement.

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 Klickitat PUD's electrical system. An approved interconnection request merely conveys an ongoing right to access Klickitat PUD'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 Klickitat PUD for retail load service and with Klickitat PUD and BPA for transmission service.

Although a Project Sponsor may elect to apply to BPA for interconnection service and defer application for BPA transmission service to a later date, all generators that interconnect with the Klickitat PUD electric system require transmission service to deliver power to BPA. Should a Project Sponsor desire transmission service over the BPA electric system, Klickitat PUD will coordinate the electric system studies described in Section 5 above with BPA studies required to evaluate the effects of project interconnection and transmission service on the transmission system. These studies will conform to the procedures contained in BPA's OATT and associated Business Practices.

The terms and conditions of Klickitat PUD's Electric Service Schedules shall apply to retail service for end-use loads.

7. Referenced Documents

The following documents further define the process for requesting interconnection to the Klickitat PUD electric system and the associated facility design, operation, and maintenance requirements:

- Appendix A: Large End Use-Load Interconnect Application
- Appendix B: KPUD Large End-Use Load Connection Process
- Policy Bulletin 20 - Transmission Service and Generation Interconnection
- Policy Bulletin 21 – Customer Service Policy Electric
- Policy Bulletin 25 - Klickitat PUD Net Metering Requirements
- Procedure Bulletin 41 – Coordination of Plans for New Facilities
- KPUD Electric Rate Service Schedule 3A8 – Industrial Service
- Form of Klickitat PUD Generation Interconnection Agreement
- Technical Requirements for Interconnection to the BPA Transmission Grid
http://transmission.bpa.gov/business/generation_interconnection and
http://transmission.bpa.gov/business/generation_interconnection/documents/tech_requirements_interconnection.pdf
- BPA Line and Load Interconnection Procedures
(<http://www.transmission.bpa.gov/includes/get.cfm?ID=1076>)
- BPA Generation Interconnection – Large Business Practice:
(<http://www.transmission.bpa.gov/includes/get.cfm?ID=1506>)

By referencing the above documents, Klickitat PUD intends that they be included as elements of these Electrical Interconnection Requirements.

This policy will be reviewed by staff annually.

KPUD Large End-Use Load Interconnection Process

Attachment “B” PB 43

- **Large End-Use Load Interconnect Request (LEULIR)** is received in writing by KPUD, this can be email. Request date/time is posted to the Preliminary Queue.
- KPUD responds to customer within 15 business days with an acknowledgement letter and **Large End-Use Load Interconnect Application (LEULIA)**.
- Customer has 15 business days to return the LEULIA with a non-refundable application fee. Application fee will be applied to studies performed as part of the application process.
- KPUD has 15 business days to review the application and determine if it is complete. If deemed complete the Customer is placed in the queue position based on the date and time the **original LEULIR was received**.
 - If the application is deemed incomplete the application is returned to the Customer who has 10 business days to revise the application and provide back to KPUD.
- If the Customer is the Leading Queue position at the desired Substation, KPUD will arrange a meeting or conference call to:
 - Provide the Customer with a **System Impact Study Agreement (SISA)** along with the application fee to perform the study.
 - Explain the study process, timelines and expectations.
 - Identify additional, internal and external processes that may need to be undertaken.
- Customer has 15 business days to return the executed SISA with required study application fee after being notified of the fee by KPUD Engineering. If the Customer fails to return the agreement and application fee within 15 business days, the Customers application will be considered withdrawn and the Customer will be deleted from the queue.
- KPUD or KPUD consultant performs the SIS study typically within 30 to 60 business days.
 - Only one SIS will be conducted at a time for each substation, and is based on queue position. Upon completion of the SIS for the Leading Queue position, KPUD will begin the SIS process for the next queue position.
- KPUD sends the completed study to the Customer and conducts a meeting with them to review results and if necessary provide the Customer with a **Facilities Study Agreement (FSA)**, along with the application fee to perform the study. This may take up to 30 business days.
- Customer has 15 business days to return the executed FSA and study application fee. If the Customer fails to return the agreement and application fee within 15 business days, the Customers application will be considered withdrawn and the Customer will be deleted from the queue.
- KPUD or KPUD consultant performs Facility study typically within 90 to 120 business days.

- KPUD sends the completed study to the Customer and conducts a meeting with them to review results.
- After presenting the results of the FS to the Customer, Customer may elect to proceed to negotiate a definitive agreement to construct or modify the facilities necessary to connect the project to the KPUD electric system. If the KPUD Engineer determines that the FS results indicate the project can be completed utilizing the normal Construction Work Order (CWO Process), the KPUD Engineering Dept. will provide the Customer a CWO cost estimate for the project within 15 business days
- The Customer will have 15 business days to make the payment for the project and agree to the terms of the CWO. Failure of the Customer to agree to the terms of the CWO or make the required payment will terminate the process, and the Customer application will be considered withdrawn and the Customer will be deleted from the queue.
- If the PUD engineer determines that new facilities or major modifications are required, KPUD will offer the Customer a **Pre-Construction Development Agreement** and/or a **Design and Construction Agreement and estimated fee as the KPUD engineer deems appropriate.**
- Customer will have 30 business days to return the executed Pre-Construction or Design and Construction Agreement. If the Customer fails to return the Agreement and application fee within 30 business days, the Customers application will be considered withdrawn and the Customer will be deleted from the queue.
- The Customer will agree to pay KPUD for the full costs of any studies done under this process, as well as costs to finalize any technical details and complete any outstanding study details.
- A new facility that requires transmission service will also be subject to the terms of the TSA and O&M costs as outlined in the latest version of Klickitat PUD Policy Bulletin 20 “Transmission Service and Generation Interconnection Process”.

System Impact Study and Facility Study Application Fee Matrix

Application Fee:

0 to 5MW: Minimum of \$5,000

Over 5 to 20MW: Minimum \$10,000

Over 20MW: Minimum \$10,000 plus a good faith engineers estimate, to be determined by project load and complexity

(These study timeframes and application fees are estimates. Unspent fees will roll over to the next study, or be credited back to the Customer if the application is withdrawn.) NOTE: BPA study fees are not included in the KPUD estimates, and may be in the form of “pass through” costs to BPA.