

## **ATTACHMENT F**

### **Interconnection Standards**

### **for Electric Generators With Generating Capacity no Larger than 100 kW**

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#### **Chapter 1            Purpose and Scope**

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- (1) The purpose of this chapter is to establish rules for determining the terms and conditions governing the interconnection of electric generating facilities with a nameplate generating capacity no larger than 100 kilowatts to the electric system of Public Utility District No. 1 of Okanogan County.
- (2) These rules are intended to be consistent with the requirements of chapter 80.60 RCW, Net Metering of Electricity; to partially comply with Section 11004 of the Energy Policy Act of 2005, Pub. L. No. 109-58 (2005); and to promote the purposes of Substitute Senate Bill 5101, Chapter 300, Laws of 2005 (effective July 1, 2005).

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#### **Chapter 2            Application of rules**

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- (1) These rules include various requirements applicable to the utility, the applicant, and the generator.
- (2) These rules modify, if necessary, any existing interconnection rules of the utility, including but not limited to, rules implementing chapter 80.60 RCW, Net Metering of Electricity.

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#### **Chapter 3            Definitions**

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“Applicant” means any person, corporation, partnership, government agency, or other entity applying to interconnect a generating facility to the utility’s electric system pursuant to this chapter.

“Application” means the written notice as defined in WAC 480-108-030 provided by the applicant to the utility that initiates the interconnection process.

“Certificate of completion” means the attached certificate furnished by the utility and completed by the applicant or generator and the electrical inspector having jurisdiction over the installation of the facilities indicating completion of installation and inspection of the interconnection.

“District” used interchangeably with “Utility” means Public Utility District No. 1 of Okanogan County owns and operates the electrical distribution system, or the electrical distribution system itself, onto which the applicant seeks to interconnect a generating facility.

“Electric system” means all electrical wires, equipment, and other facilities owned or provided by the utility that are used to transmit electricity to customers.

“Generating facility” means a source of electricity owned by the applicant or generator that is located on the applicant’s side of the point of common coupling, and all facilities ancillary and appurtenant thereto, including interconnection facilities, which the applicant requests to interconnect to the utility’s electric system.

“Generator” means the entity that owns and/or operates the generating facility interconnected to the utility’s electric system.

“Initial operation” means the first time the generating facility is in parallel operation with the electric system.

“In-service date” means the date on which the generating facility and any related facilities are complete and ready for service, even if the generating facility is not placed in service on or by that date.

“Interconnection” means the physical connection of a generating facility to the electric system so that parallel operation may occur.

“Interconnection agreement” means the standardized terms and conditions that govern the interconnection of generating facilities pursuant to these rules.

“Interconnection facilities” means the electrical wires, switches and other equipment used to interconnect a generating facility to the electric system.

“Net metering” means measuring the difference between the electricity supplied by the utility and the electricity generated by a generating facility that is fed back to the utility over the applicable billing period.

“Network distribution system (grid or spot)” means electrical service from a distribution system consisting of two or more primary circuits from one or more substations or transmission supply points arranged such that they collectively feed secondary circuits serving one (a spot network) or more (a grid network) utility customers.

“Parallel operation” or “operate in parallel” means the synchronous operation of a generating facility while interconnected with the utility’s electric system.

“Point of common coupling” or “PCC” means the point where the generating facility’s local electric power system connects to the utility’s electric system, such as the electric power revenue meter or at the location of the equipment designated to interrupt, separate, or disconnect the connection between the generating facility and the utility.

“Utility” used interchangeably with “District” means Public Utility District No. 1 of Okanogan County owns and operates the electrical distribution system, or the electrical distribution system itself, onto which the applicant seeks to interconnect a generating facility.

## **Chapter 4            Technical Standards for Interconnection**

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The technical standards listed in this section shall apply to all generating facilities to be interconnected to the utility under this chapter.

### **(1) General interconnection requirements.**

- (a) Any generating facility desiring to interconnect with the utility’s electric system or modify an existing interconnection must meet all minimum technical specifications applicable, in their most current approved version, as set forth in this chapter.
- (b) The specifications and requirements in this section are intended to mitigate possible adverse impacts caused by the generating facility on utility equipment and personnel and on other customers of the utility. They are not intended to address protection of the generating facility itself, generating facility personnel, or its internal load. It is the

responsibility of the generating facility to comply with the requirements of all appropriate standards, codes, statutes and authorities to protect its own facilities, personnel, and loads.

- (c) The specifications and requirements in this section shall apply generally to the non-utility-owned electric generation equipment to which this standard and agreement(s) apply throughout the period encompassing the generator's installation, testing and commissioning, operation, maintenance, decommissioning, and removal of said equipment. The utility may verify compliance at any time, with reasonable notice.
- (d) The generator shall comply with the requirements in subsections (d)(i), (d)(ii) and (d)(iii).
  - (i) Code and standards. Applicant shall conform to all applicable codes and standards for safe and reliable operation. Among these are the National Electric Code (NEC), National Electric Safety Code (NESC), the Institute of Electrical and Electronics Engineers (IEEE), American National Standards Institute (ANSI), and Underwriters Laboratories (UL) standards, and local, state and federal building codes. The generator shall be responsible to obtain all applicable permit(s) for the equipment installations on its property.
  - (ii) Safety. All safety and operating procedures for joint use equipment shall be in compliance with the Occupational Safety and Health Administration (OSHA) Standard 29, CFR 1910.269, the NEC, Washington Administrative Code (WAC) rules, the Washington Industrial Safety and Health Administration (WISHA) Standard, and equipment manufacturer's safety and operating manuals.
  - (iii) Power Quality. Installations will be in compliance with all applicable standards including IEEE Standard 519-1992 Harmonic Limits.
- (2) Specific interconnection requirements.
  - (a) Applicant shall furnish and install on applicant's side of the meter, a UL-approved safety disconnect switch which shall be capable of fully disconnecting the applicant's generating facility from the utility's electric system. The disconnect switch shall be located adjacent to utility meters and shall be of the visible break type in a metal enclosure which can be secured by a padlock. The disconnect switch shall be accessible to utility personnel at all times.
  - (b) The requirement in subsection (2)(a) above may be waived by the utility if: (i) applicant provides interconnection equipment that applicant can demonstrate, to the satisfaction of the utility, performs physical disconnection of the generating equipment supply internally; and (ii) applicant agrees that its service may be disconnected entirely if generating equipment must be physically disconnected for any reason.
  - (c) Utility shall have the right to disconnect the generating facility at the disconnect switch under the following circumstances: when necessary to maintain safe electrical operating conditions; if the generating facility does not meet required standards, or these rules; if the generating facility at any time adversely affects or endangers any person, the property of any person, the utility's operation of its electric system or the quality of the utility's service to other customers; or failure of the owner of record, as filed with the

utility, to notify the utility of a sale or transfer of the generator, interconnecting facilities or the premises on which the generator is located.

- (d) Nominal voltage and phase configuration of applicant's generating facility must be compatible to the utility system at the point of common coupling.
  - (e) Applicant must provide evidence that its generation will never result in reverse current flow through the utility's network protectors. All instances of interconnection to secondary spot distribution networks shall require review and written pre-approval by the utility. Interconnection to distribution secondary grid networks is not allowed. Closed transition transfer switches are not allowed in secondary network distribution systems.
- (3) Specifications applicable to all inverter-based interconnections. Any inverter-based generating facility desiring to interconnect with the utility's electric system or modify an existing interconnection must meet the technical specifications, in their most current approved version, as set forth below.
- (a) IEEE Standard 1547-2003, Standard for Interconnecting Distributed Resources with Electric Power Systems.
  - (b) UL Standard 1741, Inverters, Converters, and Controllers for Use in Independent Power Systems. Equipment must be UL listed.
  - (c) IEEE Standard 929-2000, IEEE Recommended Practice for Utility Interface of Photovoltaic (PV) Systems.
- (4) Requirements applicable to all non-inverter-based interconnections. Non-inverter based interconnection requests may require more detailed review, testing, and approval by the utility, at applicant cost, of the equipment proposed to be installed to ensure compliance with applicable technical specifications, in their most current approved version, including:
- (a) IEEE Standard 1547-2003, Standard for Interconnecting Distributed Resources with Electric Power Systems.
  - (b) ANSI Standard C37.90, IEEE Standard for Relays and Relay Systems Associated with Electric Power Apparatus.
  - (c) Applicants proposing such interconnection may also be required to submit a power factor mitigation plan for utility review and approval.

## **Chapter 5            Application for Interconnection**

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- (1) When an applicant requests interconnection from the utility, the applicant shall be responsible for conforming to the rules and regulations that are in effect and on file with the utility. The utility will designate a point of contact and provide a telephone number or website address for this purpose. The applicant seeking to interconnect a generating facility under these rules must fill out and submit a signed application form (Attachment A). Information must be accurate, complete, and approved by the utility prior to installing the generating facility.
- (2) Application Fees. Utility requires a non-refundable interconnection application fee of \$0.
- (3) Application Prioritization. All generation interconnection requests pursuant to this chapter will be prioritized by the utility in the same manner as any new load requests. Preference

will not be given to either request type. The utility will process the application and provide interconnection in a time frame consistent with the average of other service connections.

- (4) Application evaluation. All generation interconnection requests pursuant to this chapter will be reviewed by the utility for compliance with these rules. If the utility in its sole discretion finds that the application does not comply with this chapter, the utility may reject the application. If the utility rejects the application it shall provide the applicant with written notification stating its reasons for rejecting the application.

## **Chapter 6            General Terms and Conditions of Interconnection**

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The general terms and conditions listed in this section shall apply to all generating facilities interconnecting to the utility.

- (1) Any electrical generating facility with a maximum electrical generating capacity of 100 kW or less must comply with these rules to be eligible to interconnect and operate in parallel with the utility's electric system. The rules under this chapter shall apply to all interconnecting generating facilities that are intended to operate in parallel with the utility's electric system irrespective of whether the applicant intends to generate energy to serve all or a part of the applicant's load; or to sell the output.
- (2) In order to ensure system safety and reliability of interconnected operations, all interconnected generating facilities shall be constructed and operated by generator in accordance with this chapter and all other applicable federal, state, and local laws and regulations.
- (3) Prior to initial operation, all generators must submit a completed certificate of completion (Attachment B) to the utility; execute the appropriate interconnection agreement (Attachment C), and any other agreement(s) required by these rules for the disposition of the generating facility's electric power output. The interconnection agreement between the utility and generator outlines the interconnection standards, cost allocation and billing agreements, and on-going maintenance and operation requirements.
- (4) Applicant or generator shall promptly furnish the utility with copies of such plans, specifications, records, and other information relating to the generating facility or the ownership, operation, use, or maintenance of the generating facility, as may be reasonably requested by the utility from time to time.
- (5) For the purposes of public and working personnel safety, any non-approved generation interconnections discovered will be immediately disconnected from the utility system.
- (6) To ensure reliable service to all utility customers and to minimize possible problems for other customers, the utility will review the need for a dedicated-to-single-customer distribution transformer. Interconnecting generating facilities under 100 kW may require a separate transformer. If the utility requires a dedicated distribution transformer, the applicant or generator shall pay for all costs of the new transformer and related facilities.
- (7) Metering.
  - (a) Net Metering for solar, wind, hydropower, biogas, and fuel cells as set forth in RCW 80.60: the utility shall install, own and maintain a kilowatt-hour meter, or meters as the installation may determine, capable of registering the bi-directional flow of electricity at the point of common coupling at a level of accuracy that meets all applicable standards,

regulations, and statutes. The meter(s) may measure such parameters as time of delivery, power factor, voltage, and such other parameters as the utility shall specify. The applicant shall provide space for metering equipment and meter base as per utility requirements. It will be the applicant's responsibility to provide the current transformer enclosure (if required), meter socket(s), and junction box after the applicant has submitted drawings and equipment specifications for the utility approval. The utility may approve other generating sources for net metering but is not required to do so.

(b) Production Metering: The utility may require separate metering for production. This meter will record all generation produced and may be billed separately from any net metering or customer usage metering. All costs associated with the installation of production metering will be paid by the applicant.

- (8) Common labeling furnished or approved by the utility and in accordance with NEC requirements must be posted on meter base, disconnects, and transformers informing working personnel that generation is operating at or is located on the premises.
- (9) As currently set forth for qualifying generation under RCW 80.60, for solar, wind, hydro, biogas, or fuel cells no additional insurance will be necessary. For other generating facilities permitted under these standards and rules but not contained within RCW 80.60, additional insurance, limitations of liability, and indemnification may be required by the utility.
- (10) Prior to any future modification or expansion of the generating facility, the generator will obtain utility review and approval. Utility reserves the right to require the generator, at the generator's expense, to provide corrections or additions to existing electrical devices in the event of modification of government or industry regulations and standards.
- (11) For the overall safety and protection of the utility system, RCW 80.60 currently limits interconnection of generation for net metering to 0.1% of the utility's peak demand during 1996. Additionally, interconnection of generating facilities to individual distribution feeders will be limited to 10% of the feeder's peak capacity.
- (12) It is the responsibility of the generator to protect its facilities, loads, and equipment and comply with the requirements of all appropriate standards, codes, statutes, and authorities.
- (13) Charges by the utility to the applicant or generator in addition to the application fee, if any, will be cost-based and applied as appropriate. Such costs may include, but are not limited to, transformers, production meters, and utility testing, qualification, and approval of non-UL 1741 listed equipment. The generator shall be responsible for any costs associated with any future upgrade or modification to its interconnected system required by modifications in the utility's electric system.
- (14) This chapter governs the terms and conditions under which the applicant's generating facility will interconnect with, and operate in parallel with, the utility's electric system. This chapter does not govern the settlement, purchase, or delivery of any power generated by applicant's generating facility. The purchase or delivery of power, including net metering of electricity pursuant to Chapter 80.60. RCW, and other services that the applicant may require will be covered by separate agreement or pursuant to the terms, conditions and rates as may be from time to time approved by the utility. Any such agreement shall be complete prior to initial operation and filed with Utility.

- (15) Generator may disconnect the generating facility at any time; provided that the generator provides reasonable advance notice to the utility.
- (16) Generator shall notify utility prior to the sale or transfer of the generating facility, the interconnection facilities, or the premises upon which the facilities are located. The applicant or generator shall not assign its rights or obligations under any agreement entered into pursuant to these rules without the prior written consent of the utility, which consent shall not be unreasonably withheld.

**Chapter 7            Certificate of completion**

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All generating facilities must obtain an electrical permit and pass electrical inspection before they can be connected or operated in parallel with the utility's electric system. Generator shall provide written certification to the utility that the generating facility has been installed and inspected in compliance with the local building and/or electrical codes.

**Chapter 8            Required filings – Exceptions**

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- (1) The utility shall maintain on file for inspection at its place of business, the charges, terms, and conditions for interconnections pursuant to these rules. Such filing includes forms of the following documents and contracts:

- Attachment A:            Application for Interconnecting a Generating Facility No Larger Than 100kW
- Attachment B:            Generating Facility Certificate of Completion
- Attachment C:            Net metering Interconnection Agreement
- Attachment D:            Production Metering Agreement
- Attachment F:            Interconnection Standards for Electric Generators With Generating Capacity no Larger than 100kW