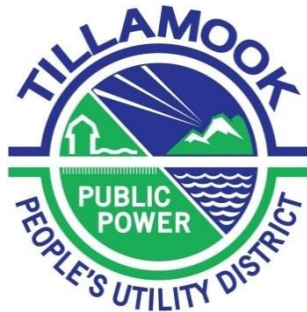


# **TILLAMOOK PEOPLE'S UTILITY DISTRICT**

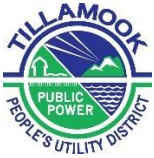
## **DISTRIBUTION INTERCONNECTION PROCEDURE**



### **Inverter Based Generators 25 kW and Smaller**

This document contains the interconnection requirements for inverter based generators, 25 kW and smaller, that operate in parallel with the Tillamook People's Utility District distribution system.

May 24, 2017



## **1.0 Introduction**

Customer-owned generators may be operated in parallel with Tillamook People's Utility District ("Company") distribution system pursuant to an Interconnection Agreement, provided that the generator and Interconnection Equipment meets the requirements of this policy, subject to all applicable statutory and regulatory requirements.

### **1.1 Purpose**

This procedure sets forth the minimum interconnection requirements, application process and procedures for connection and safe operation of generators in parallel with the Company's distribution system.

### **1.2 Scope**

This document sets forth the requirements for interconnection of Customer-owned, single and three phase inverter based generation equipment, up to an aggregate of 25 kW alternating current (AC), based on the nameplate(s), that operates in parallel with the Company's distribution system. Connections will be at the available service voltage. The rules of federal, state or local regulatory agencies shall take precedence over these requirements. If this document does not comply with any federal, state or local regulation, then this document is superseded by the applicable regulation.

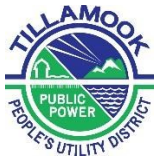
### **1.3 Safety**

The safety of the general public, Company employees and equipment shall in no way be reduced or impaired as a result of the interconnection. In general, the Customer's facilities will be held to the same standard of care that the Company is required to maintain.

### **1.4 Application Process**

The steps in the process to interconnect a generator to the Company's distribution system are:

- Contact the Company's designated representative and request interconnection information, including rules, rate options, guidelines and an application.
- Complete the application form, including information about the proposed system and send it to the Company representative.
- After review and approval of the application, installation may begin. Once the installation is complete, contact the Company representative to let him/her know your installation is complete.



## **2.0 Right to Disconnect**

The Company may disconnect generation equipment from the distribution system for any of the following conditions:

- Expiration, termination or lack of approved interconnection agreement.
- Non-compliance with the technical requirements.
- System emergency.
- Situations when continued interconnection endangers persons or property.
- Routine or emergency maintenance, repairs or modifications to the distribution system.
- Failure of Customer to comply with any existing or future regulations, rules, orders or decisions of any governmental or regulatory authority having jurisdiction over the Customer's electric generating equipment or the operation of such equipment, which failure of compliance would place in jeopardy the personnel, or property, or service capability of the Company, or would pose a threat of sanction or liability to the Company in the event that it continued interconnection.
- Adverse effect of Customer's generation to the Company's other electric consumers and/or system as determined by the Company.

## **3.0 Modifications to Company or Customer Facilities**

The Customer may be responsible for the cost of modifications that must be made by the Company on its distribution system in order to interconnect the generation.

## **4.0 Customer Responsibilities**

### **4.1 Operations and Maintenance**

The Customer is solely responsible for proper operation of the customer's generation facilities.

### **4.2 Energizing Dead Circuits**

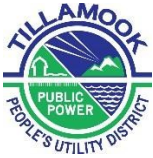
The Customer shall not energize a de-energized Company distribution circuit.

## **5.0 References**

UL 1741 – 2010, UL Standard for Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources.

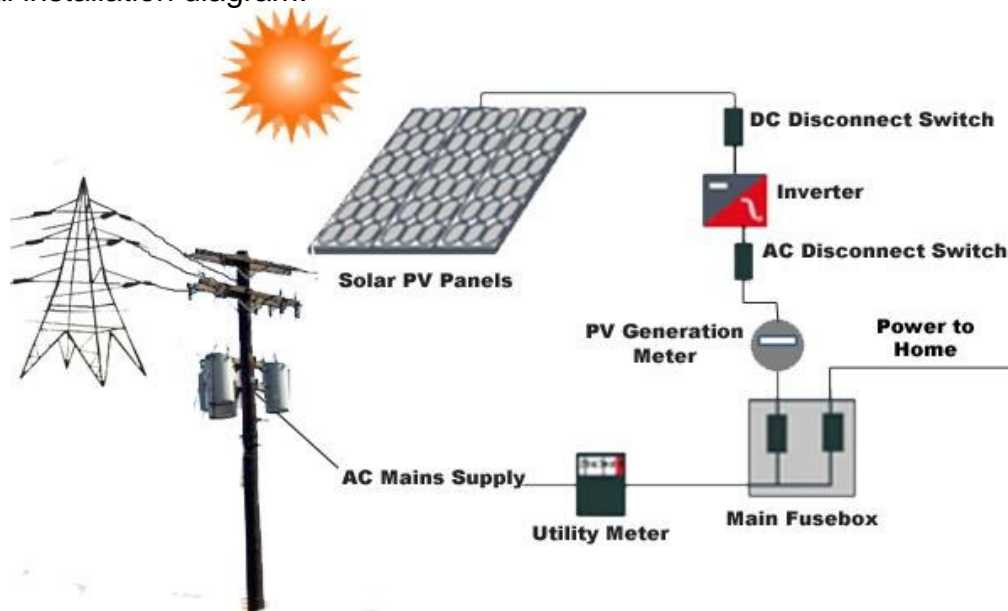
IEEE Std. 1547-2003, IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems.

Note: Where a later version of a standard exists, the current version will apply.



## Appendix A - Net Metering Requirements

Tillamook PUD customers that install renewable energy systems are eligible for Net Metering for up to 25 kW of generation. The most common Net Metering situation is when a residential customer installs roof top solar panels, an inverter to convert the DC electricity generated to AC, an AC lockable disconnect switch required by the utility and installed at a PUD approved readily accessible location, and a required meter base for installation of a PUD supplied production meter that measures the output of the generation. See Figure 1 for a typical installation diagram.

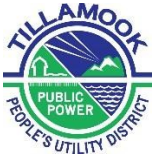


**Figure 1 – Typical Photovoltaic System**

The PV Generation Meter will be supplied by Tillamook PUD at no cost and no monthly charges. The Customer will be required to install a utility-approved meter base at an acceptable location. The Customer may monitor the amount of power produced on an hourly basis by logging in to their account through Smarthub (go to [www.tpud.org](http://www.tpud.org) for more information on Smarthub). Without the extra meter the Customer is only able to view net usage on the Utility Meter. The net usage is the amount of energy used minus the amount produced. If the amount produced is greater than the amount used at any particular time, the Utility Meter will credit the Customer's account for the amount of energy being fed back into the system.

Prior approval by Tillamook PUD Engineering is required before connecting an energy producing facility to the power system. A Tillamook PUD Application for Operation of Customer-Owned Generation is included as Appendix B. This document can be downloaded from the Tillamook PUD website ([www.tpud.org](http://www.tpud.org)).

A permit from Tillamook County is also required before installing a PV system. Contact the County Building Dept. for more information.



## Appendix B - Application

The generator-owner shall complete this application. A one-line diagram of the proposed system must be included with the application.

**Customer:** Name (as shown on Company account): \_\_\_\_\_

Company Account Number at Service Point where system will be located \_\_\_\_\_

Service Point Street Address: \_\_\_\_\_

Service Point City, State, Zip: \_\_\_\_\_

**Contractor:** Name \_\_\_\_\_ Phone No. \_\_\_\_\_

**Contact:** Name \_\_\_\_\_ Cell phone \_\_\_\_\_

Contact Email \_\_\_\_\_

### Inverter Data:

Please list all the inverters that will be interconnected to Company. For equipment ratings, please use the nameplate rating found on the equipment or in the equipment specifications.

Inverter: Manufacturer \_\_\_\_\_ Model No. \_\_\_\_\_

Inverter Capacity Rating (kW) \_\_\_\_\_ Inverter Output Voltage Rating \_\_\_\_\_

Single Phase \_\_\_\_\_ Three Phase \_\_\_\_\_

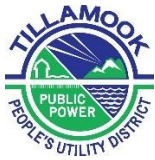
Does Inverter meet the requirements of UL Standard 1741? \_\_\_\_\_

Number of proposed Inverter(s) of this type \_\_\_\_\_

Comments: \_\_\_\_\_

\_\_\_\_\_

Customer's Signature \_\_\_\_\_



## **Appendix C - Interconnection Requirements**

### **C.1 General Interconnection Requirements**

The Customer's generation facilities shall meet the technical requirements as prescribed in this Appendix. The Company reserves the right to impose additional requirements as necessary; additional requirements will be made a part of the interconnection agreement.

### **C.2 Customer's Equipment and Interconnection Standards**

The Customer's generation and interconnection installation must meet all applicable federal, state, and local construction and safety codes.

The Customer shall be responsible for the design, installation, operation and maintenance of all equipment and facilities installed or that will be installed on the Customer's side of the point of interconnection. Such design shall meet the requirements of IEEE 1547, UL 1741, the NEC, other national codes and any local codes pertaining to the design and construction of electrical facilities. The facility shall be subject to the requirements of all authorities having jurisdiction and shall comply with all applicable codes and ordinances.

### **C.3 Protection of Customer's Equipment**

The Customer will be responsible for protecting its generating equipment in such a manner that distribution system outages, short circuits or other disturbances do not damage the Customer's generating equipment.

### **C.4 Voltage Regulation**

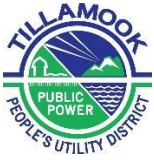
Unless otherwise specified by the applicable regulatory authority, the Customer will operate generating equipment within the ranges specified by ANSI C84.1 Table 1, Range A, measured at the point of interconnection. On a 120 volt basis, this range is 114-126 volts.

### **C.5 Requirements for Units 25 kW or Less**

Inverter based units shall be marked as meeting the requirements of UL 1741.

### **C.6 Metering Requirements**

Appendix A outlines the Net Metering requirements.



## Appendix D - Definitions

Company – Tillamook People's Utility District; Tillamook PUD

Customer - Customer, its agent, partner or other entity located on the customer's premise connected to the Company's distribution system for the purpose of receiving and/or exporting electric power through the Company's distribution system.

Distribution System – The Company's wires, equipment and facilities, with a voltage 24.9 kV and below, to which the generation equipment is interconnected.

Interconnection Agreement – The document that sets forth the contractual conditions under which the Company and a Customer agree that a facility may be interconnected with the Company's distribution system.

Interconnection Equipment - All equipment installed solely to interconnect and exchange power between the Customer's generation facility and the Company's distribution system.

Parallel Operation - The operation of electric generation connected to the utility electric distribution system.

Point of Interconnection - The point of connection of the Customer's service equipment to the utility electric system.

Power Delivered – Energy supplied by the utility to the Customer (generator-owner).

Power Received – Energy supplied by the Customer (generator-owner) to the utility.