

Town of Highlands

Standards to Interconnect a Photovoltaic Generation Facility No Larger than 10 kW

Any retail customer (“Customer”) installing generation with plans to interconnect with the Town of Highlands’ distribution grid must contact and receive approvals from the Town. This document sets forth the “Interconnection Standard” established by the Town that must be satisfied by any retail customer installing renewable generation with an aggregate nameplate rating of 10 kW or less. The Town expressly reserves the right to change this Interconnection Standard from time to time.

Any Customer installing renewable generation with an aggregate nameplate rating of 10 kW or less must request interconnection by submitting an Application to Interconnect a Photovoltaic (PV) Solar Panel Generating Facility No Larger than 10 kW (“Application”). Upon approval of the Application and prior to interconnection, the Customer’s system must be verified by Highlands as meeting the Interconnection Standard and the Customer will be required to enter into a written Interconnection Agreement with Highlands, which specifies the installation and operating requirements to ensure that safety and system reliability will not be compromised.

Requirements for Interconnection

Requirements for Interconnection: The Customer understands and agrees that it must furnish or provide verification of the following items before interconnection will be made:

- That any renewable generation system equipped with a voltage inverter has been manufactured, installed and shall be operated in compliance with Underwriters’ Laboratory (UL) standard 1741 for distributed generation systems and has been identified and listed as “Utility Interactive.”
- That the system installation complies with the National Electric Code (NEC) and all applicable local codes (latest editions) and that the system has been inspected and approved by an electrical inspector with legal jurisdiction. See list of applicable standards set forth in the attached PV Interface Criteria.
- Provide a copy of property deed verifying Customer’s ownership of the property on which the PV system is installed.
- That the system shall be installed, operated and maintained in accordance with the manufacturer’s, government and industry standards and specifications.
- Provide a one-line drawing of small generator system inverter wiring.
- Customer shall furnish a properly executed certificate of insurance to Highlands clearly evidencing the required coverage and any exclusions applicable to such coverage. For a non-residential Customer the minimum coverage shall be comprehensive general liability insurance with coverage at least \$300,000 per occurrence, and for a residential Customer the minimum coverage shall be at a standard homeowner’s insurance policy with liability coverage in the amount of at least \$100,000 per occurrence. This insurance shall be primary for all purposes, and shall name the Town as additional insured. The Town reserves the right to refuse to establish or continue the interconnection of the Customer’s Generator with the Town’s system if such insurance is not in effect.

Note: A distributed generation equipment system (meaning all interface components including switchgear, inverters, integrated generator or other interface devices) may be considered eligible for interconnected generation if it has been submitted by a manufacturer to a nationally recognized testing and certification

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laboratory (NRTL) and has been tested, identified, and listed by the NRTL as meeting UL standard 1741 for continuous interactive operation with a utility grid.

Is this a solar induction type system? ___ Yes ___ No

If yes, the solar generator must meet all requirements stated in the Town of Highlands Photovoltaic (PV) Interface Criteria, which is attached to and is part of this Interconnection Standard.

If no, please contact the Town because other interconnection standards will apply.

The Customer agrees to provide the Highlands with any additional information required to complete the interconnection and agrees that the generation system's metering point shall be designed, installed, operated, and maintained in accordance with:

1. The guidelines and specifications set forth in the Application and this Interconnection Standard
2. Highlands' Service Regulations

Customer acknowledges receiving copies of these documents: ___ Yes ___ No

Customer Understands and Agrees

- Tests of the Customer's generator system to insure that the system is installed and meets the Highlands' guidelines and requirements shall be documented by the installer, or their qualified designated representative; and Highlands reserves the right to witness testing of the system. Customer understands and agrees that it is responsible for reimbursing Highlands for costs the Town incurs for having an electrical engineer test the renewable Facility. These tests shall be successfully completed in accordance with the manufacturer's published recommendation prior to interconnection to Highlands' distribution system. Maintenance to the generator system shall also be performed in accordance with the manufacturer's published maintenance procedures.
- The accepted Application is for the original applicant only. Future owner/operators must submit a new Application to Highlands. The initial owner/operator assumes the responsibility of ensuring any new owner/operator is aware it must re-apply or provide evidence that the generation system has been removed or disabled to prevent future interconnection.
- Upon acceptance and approval of an Application, Highlands will advise the Customer of any specific interconnection wiring requirements and costs, if applicable. Customer understands and agrees that payment of these costs must be made prior to Highlands making the interconnection and that they must enter into an Interconnection Agreement with Highlands before interconnection can be made and that the actual interconnection will not be made until all requirements have been satisfied.
- The Customer understands and agrees it is liable for and shall bear any costs associated with any power quality, reliability, safety issues or problems created by the interconnection and operation of its generation system at any time, and that it is prohibited from altering the accepted design without submitting a new "Application to Interconnect a Photovoltaic (PV) Solar Panel Generating Facility No Larger than 10 kW" and obtaining new approval.

Highlands Status of Application

Date of Application Rec'd: _____ Application Approved: ____ Yes ____ No

Reviewed by: _____

If no, specify reason (s):

Applicant notified on: _____ (date)

By: _____

**Town of Highlands
Highlands, North Carolina
Photovoltaic (PV) Interface Criteria**

The Town of Highlands supports the development of renewable resources for generation of electric power. In order to maintain current levels of safety and power quality for the general public, electric system employees and customers, certain criteria must be applied to all alternative sources of electric power. Specific criteria applying to photovoltaic solar panel (PV) installations are as follows:

- All PV installations must be connected to Highlands' electric system through a separate meter with only the PV system connected to the sources side of the PV interconnection meter. See attached illustration.
- All PV equipment must comply with the requirements of and be labeled under **Underwriters Laboratories Standard 1741 "Inverters, Converters, Controllers, and Interconnection Systems Equipment for Use With Distributed Energy Resources."**
- All PV installations must comply with **IEEE Standard 929** "IEEE Recommended Practice for Utility Interface of Photovoltaic (PV) Systems."
- All PV systems must comply with **IEEE Standard 1547** "IEEE for Interconnecting Distributed Resources with Electric Power Systems."
- All PV systems must comply with **IEEE Standard 1547.1** "IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems."
- All PV systems must comply with **IEEE Standard 1547.3** "IEEE P1547.3 Draft: Guide for Monitoring, Information Exchange, and Control of Distributed Resources Interconnected with Electric Power Systems."
- All PV installations shall be made in accordance with the National Electrical Code (**NFPA 70**), latest published edition. Specific compliance with Article 690 and Article 705 is required. Installations shall be inspected and approved by the Town of Highlands.
- All PV installations shall have a service disconnect installed immediately adjacent to the meter for the PV system. The disconnect shall be fully accessible to and operable by Highlands' personnel at all times. The disconnect shall include provisions for locking in the open position. The disconnect shall be labeled in accordance with **NEC 705.10**.
- All PV installations are subject to review and testing by Highlands prior to connection and at subsequent time of their choosing.
- All interconnected PV systems shall be non-islanding. Systems found to produce voltage when disconnected from the electric distribution system will be disconnected without notice and will remain disconnected until installations are brought into compliance with specified standards.

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- PV systems shall not interfere with the power quality of any customer of Highlands' distribution system. PV systems found to interfere with utility industry-accepted power quality standards will be disconnected from the system.
- Highlands will design and install reasonable and practical modifications to the electric distributions system to allow the interconnection of PV resources which would otherwise interfere with power quality delivered to other connections. In such cases, the PV system owner shall make an advance payment to Highlands in an amount equal to the costs of the required facility modifications.
- All PV systems shall operate within the range of 0.90 lead to 0.90 lag power factor.
- All PV systems shall be limited to 10 kW maximum AC output.
- Owners of PV systems shall obtain, and retain in effect as long as the PV system is interconnected, comprehensive general liability insurance with limits of at least \$100,000 per occurrence for residential consumers and \$300,000 per occurrence for non-residential consumers which protects the owner from claims for bodily injury and/or property damage. This insurance shall be primary for all purposes, and shall name the Town as additional insured. The owner shall provide certificates evidencing this coverage as required by Highlands. Highlands reserves the right to refuse to establish or to continue the interconnection of the PV system if such insurance is not in effect.