


WE ENERGIES WORK PROCEDURE

 Work Procedure	MANUAL SECTION: 021 Distribution Engineering – Technical – Part 3	
	Work Procedures Dept.: Call 262-574-6045	DOCUMENT NO.: 021-001.80
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ASSOCIATED DOCUMENTS: Wisconsin Administrative Code Rules, Chapter PSC 119, Rules for interconnecting distributed generation facilities		
SUBJECT: Customer-owned Generation Commissioning – Inverter Based		

SCOPE

This document provides guidance and required actions in regards to commissioning customer-owned, renewable energy projects that utilize an inverter-based system. Generally, these systems are interconnected with the electric distribution system. This work procedure applies to residential or commercial systems.

GENERAL

All customer-owned generation systems with a capacity of 15 megawatts (MW) or less must comply with Wisconsin Administrative Code Rules, Chapter PSC 119 Rules for interconnecting distributed generation facilities. The customer and installer are responsible for following the interconnection rules of the Public Service Commission of Wisconsin (PSCW) and for meeting all We Energies tariff requirements. Customer-owned generation systems include, but are not limited to, photovoltaic, battery, wind, and biogas.

All customer-owned generation installations interconnected to the utility must be evaluated for proper operation, interconnection method, and metering per current We Energies requirements. We Energies personnel shall perform both anti-islanding and grid-reconnection commissioning tests for all customer-owned generation systems. These tests verify that the system automatically disconnects from the utility system upon loss of voltage and then waits to reconnect once the utility system is stable. Testing for systems significantly larger (greater than 20 kW) or more complicated systems should be coordinated between the field application and protection engineering groups.

PROCEDURE

1. INVERTER BASED CUSTOMER-OWNED GENERATION SYSTEM TESTING

- 1.1. After notification that an installation is complete, We Energies personnel shall perform the anti-islanding and grid-reconnection tests to verify protective equipment settings and proper system operation.
- 1.2. Verify all equipment (e.g., photovoltaic panels, inverter, utility disconnect switch, etc.) matches the one-line diagram submitted with the customer-owned generation application.
- 1.3. We Energies meter
 - 1.3.1. Verify meter is installed in the customer-owned generation meter socket.
- 1.4. Utility required customer-owned generation disconnect
 - 1.4.1. Verify the disconnect switch is located in a readily-accessible location.
 - 1.4.2. Verify the disconnect switch blades are in the open position.

1.5. Measurements

- 1.5.1. Installer shall turn on the customer-owned generation system inverter(s).
- 1.5.2. Determine an appropriate location to measure voltage and backfeed from the customer-owned generation system. (A typical location is the load side of the disconnect switch.)
 - 1.5.2.1. Measure proper voltage on the line side of the customer-owned generation system.
 - 1.5.2.2. Measure voltage on the load side of the customer-owned generation disconnect switch. Voltage shall be zero (0) V.
- 1.5.3. Close disconnect switch.
 - 1.5.3.1. Measure current on load side of the utility disconnect switch. Current shall be 0 (zero) A.

Note: Some inverter systems (typically micro inverters) will not have zero (0) A of current due to parasitic losses of the inverter(s).
- 1.5.4. The customer-owned generation inverter(s) shall wait a minimum of five (5) minutes before interconnection with the utility system is established.
 - 1.5.4.1. Measure current on load side of the disconnect switch. Depending on atmospheric conditions, the current should be greater than zero (0) A.

*Note: The current should be greater than previously measured in step 1.5.3.1. If it is not, the system will need to be retested once atmospheric conditions improve.
- 1.5.5. Open disconnect switch.
 - 1.5.5.1. Measure voltage on the load side of the customer-owned generation disconnect switch. Voltage shall be zero (0) V within approximately five (5) seconds after disconnection.

2. TESTING PASS/FAIL

2.1. Approval/Pass

- 2.1.1. If the system passes, the job owner shall provide a written statement of final acceptance to the customer and installer.
- 2.1.2. For field employees only.
 - 2.1.2.1. Install the meter and complete the order.
 - 2.1.2.2. Complete the "Construction Job Feedback" form referring the job to the lead who will forward the results to the job owner.

2.2. Rejected/Failed

- 2.2.1. If the system fails, the job owner shall provide a written statement of failure to the customer and installer.
- 2.2.2. The installer shall take corrective action to fix the system. After which, the system shall be retested for proper operation.
- 2.2.3. For field employees only.

- 2.2.3.1. Install a meter seal on the PV disconnect switch handle in the open position.
- 2.2.3.2. Install the meter and complete the order.
- 2.2.3.3. Complete the “Construction Job Feedback” form noting the commissioning failed due to [insert reason]. The lead will forward the results to the job owner for follow up with the customer.”

3. INTERCONNECTION AGREEMENT

- 3.1. After the customer receives the interconnection approval, an energy services agreement must be signed.