DISTRIBUTED RESOURCE GENERATION

Feed-In-Tariff

Three Phase

USE: Requirements and guidelines for interconnection of three phase customer owned, (DR) Distributed Resource generation source, to NIPSCO's electric system, configured for "Feed-In-Tariff."

PREVIOUS REVISION	ORIGINATED	PREVIOUS NUMBER
09-01-11	07-00	

LATEST REVISION: Revised Standard due to new legislation and filings with the IURC. Changed title to "Three Phase", added additional reference, and added inspection requirements.

REFERENCE: 170 IAC 4-4.3-12, IURC Rule for "Interconnection"
Rule 51 of Electric Tariff, "General Rules and Regulations Applicable to Electric Service"
IEEE 1547, latest revision
EPRI TR-111489
UL 1741, latest revision
ANSI/IEEE C37.2 (Device Function Numbers), latest revision
NIPSCO's Standard ER 16-600, latest revision
National Electric Safety Code, latest revision
IEC/NEC (Indiana Electrical Code/National Electrical Code), latest revision
Other applicable national, state, and local codes and ordinances.
MISO Business Practice Manual Generator Interconnection BPM-015-R3, latest revision

SPECIFICATION:

1. DEFINITIONS:

1.1 Distributed Resource (DR) Generation - The use of **power generation technology**, which may be interconnected with NIPSCO's electric system.

1.2 Feed-In-Tariff - A tariff that allows a customer to interconnect to NIPSCO's electric system and to sell electric production to NIPSCO.

1.3 Islanding - A condition when the DR generation unit becomes separated from NIPSCO's electric system, but continues to operate in an energized state. Islanding may be intentional for reliability purposes when NIPSCO's electric system has an outage. Intentional islanding is allowed only if the DR generation unit and load are isolated from NIPSCO's de-energized electric system prior to islanding. (See Spec. 6)

1.4 Static Power Converters (SPC) (Also known as Inverter) - A device used to convert DC power into AC power. SPC's may be line-commutated or self commutated. SPC's solid state components may include such protective functions as over current protection, phase sequence, synchronizing, under/over voltage, under/over frequency, etc.

1.4.1 Line-Commutated - The SPC requires the presence of NIPSCO's electric line frequency for it's internal switching devices, in order to operate.

1.4.2 Self-Commutated - The SPC does not require NIPSCO's electric line frequency for it's internal switching devices, in order to operate.

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1.5 Visible Break Disconnect Switch (Utility-Generator Disconnect Switch) - A switch which allows for viewing of the break in contacts when in the open position, and therefore provides direct visual evidence of positive interruption.

2. ELIGIBILITY:

Any customer in good standing may install, own, and operate a "Feed-In-Tariff" generation source(s), interconnected with NIPSCO's electric system if the following are met:

2.1 The generation source is of a solar, wind, new hydro, biomass, biogas, or landfill gas type.

2.2 The total nameplate capacity of the generation source is 5 kilowatts (kW) to 5 megawatts (MW) (if multiple units are installed, the aggregate total nameplate shall be 5 MW or less).

2.3 A "Feed-In-Tariff" customer shall sell the total production to NIPSCO and shall receive service for their load separately at the appropriate retail rate; however, a customer may elect to utilize up to 1 MW of its own production for its own load at the same site or premise. A Feed-In- Tariff customer may not simultaneously qualify for "Net Metering" for any generation produced.

2.4 The generation source is located on the eligible customer's premises, is operated by said customer, and is interconnected with NIPSCO's electric system.

2.5 The customer must submit the "Interconnection Application" to NIPSCO, with proof of insurance coverage to be considered for, and to obtain approval for Feed-In-Tariff.

2.6 NIPSCO shall perform a feasibility review for the proposed generation source interconnection as an initial screening for the impact it may have to its electric system. The feasibility review will evaluate system readiness for the interconnection and will determine if there is a need for a more extensive study. If an Interconnection Evaluation Study needs to be performed by NIPSCO, any fees associated with this study will be the responsibility of the customer. Additionally if it is found that the proposed generation source requires system infrastructure upgrades to NIPSCO's electric system, the customer will be required to pay the total cost of the required system improvements.

2.7 Eligible customers shall enter into an "Interconnection Agreement" with NIPSCO; and if any upgrades to NIPSCO's electric system are required, the customer must pay for these, in full, before the generation source is allowed to interconnect to NIPSCO's electric system.

2.8 Any customer that wishes to connect to our electric transmission system (69kV, 138kV, or 345kV) must follow all rules and regulations of MISO (**M**idwest **I**ndependent Transmission **S**ystem **O**perator) and abide to NIPSCO's rules and regulations for "Feed-In-Tariff".

3. GENERAL:

3.1 Listed below are the minimum requirements for Distributed Resource (DR) generation and more stringent requirements may be imposed if warranted by conditions existing on NIPSCO's electric system. NIPSCO **shall** be contacted, and the installation must be approved, before any DR generation facility will be interconnected to NIPSCO's electric system. The appropriate Electric Planning Department will approve the interconnection plan. (See 2.5 and 2.6)

3.2 All DR generation facility installations shall comply with all applicable codes and standards, including but not limited to the codes listed in the reference section of this standard.

3.3 Interconnection will not be allowed to NIPSCO's electric system until the installation has been approved by an authorized municipal, county, or other governmental inspector where such inspection procedures are established.; and, by a final inspection, and system checks if necessary, by a NIPSCO Representative.

3.4 DR generation shall not adversely affect NIPSCO's electric system or any of its customers. Refer to standard ER 16-600 for power quality requirements.

3.5 It shall be the responsibility of the DR generation customer to protect their own equipment and facilities. This protection shall include protection against electrical system over voltages, line frequency disturbances, faults, lightning surges, and any other phenomenon resulting from the interconnection.

3.6 The DR generation customer shall be responsible for costs incurred for any modifications to NIPSCO's electric system, which are required for the DR generation interconnection. (See 2.6 and 2.7)

4. INTERCONNECTION:

4.1 The DR generation source shall trip offline within 10 cycles, in the case of any fault conditions existing on NIPSCO's electric system. It shall remain isolated until all faults are cleared and NIPSCO's electric system is re-energized. (See specification 6 for intentional islanding requirements.)

4.2 A visible break disconnect switch, which will isolate the DR generation source from NIPSCO's electric system, shall be installed on the customer side of the meter at a readily accessible location. A plaque shall be provided by the customer and placed on the switch cabinet, stating 'Utility-Generator Disconnect Switch'. If the switch is located at a site other than at the metering point, an additional plaque shall be provided by the customer and placed on the meter enclosure, stating the existence and location of the switch. The switch shall be accessible to NIPSCO personnel at all times, and shall be lockable in the open position by NIPSCO (when necessary).

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5. PROTECTIVE FUNCTIONS:

The following protective functions shall be in place. If the DR generation source does not contain these functions as part of it's electronic or microprocessor based design, or if the incorporation of these functions in the DR generation source design are not acceptable to NIPSCO, then utility or industrial grade relays shall be installed to provide the required functions.

	ANSI Device Function Number or Abbreviation
5.1 Anti-Islanding Protection	
5.1.1 Under / Over Frequency Function	***81 O/U***
Acceptable Upper Limit . . . . . 61 Hz	
Acceptable Lower Limit . . . . 58 Hz	
5.1.2 Under / Over Voltage Function	***27/59***
Acceptable Upper Limit . . . . . 108 % of nominal	
Acceptable Lower Limit . . . . 80% of nominal	
5.2 Interconnection Protection	
5.2.1 Phase Sequence Function (Three phase units only)	***47***
5.2.2 Synchronizing Function	***25***
5.3 Over current / Fault Protection	
5.3.1 Instantaneous / Time Over Current Function	***50/51***
5.3.2 Circuit Breaker (Appropriately Sized)	**52**

6. INTENTIONAL ISLANDING:

Intentional islanding is permitted only if the DR generation unit has been isolated from NIPSCO's electric system, by an isolation relay device function and manually opening the visible "Utility-Generator Disconnect Switch".