

NYSEG and RG&E

# REQUIREMENTS FOR THE INTERCONNECTION OF DISTRIBUTED ENERGY RESOURCES

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## 1.0 Introduction

### a. Purpose and Scope

The purpose of this Bulletin is to establish the application process and technical requirements for the interconnection of Distributed Energy Resources (DER) or other generator projects seeking to operate in parallel with NYSEG/RGE electric systems. These requirements are necessary to maintain the safety of the public and NYSEG/RGE personnel while ensuring that NYSEG/RGE's and other Utility customers' equipment are protected from damage and maintain a high quality of electric service.

This Bulletin is not applicable to backup generators using automatic transfer schemes in which the load is transferred between the generator and NYSEG/RGE in a momentary make-before-break operation, provided the duration of paralleling the sources is less than 100ms. Additionally, this document is not applicable to electric vehicle installations or systems participating in demand response programs. However, electric vehicles proposing to discharge onto NYSEG/RGE's system, known as Vehicle-to-Grid technology, are covered within this document for the generation/export component only.

This document does not include requirements for protection of the DER system, as this is solely the responsibility of the DER owner. Finally, this document does not include all requirements for microgrid installations or secondary network interconnections.

Before a DER interconnection applicant (Applicant) is allowed to install and operate any facility in parallel with the Utility system, the Applicant shall submit design and operating information for the proposed facility to the Utility for its review and acceptance in accordance with the applicable application and review processes described in this Bulletin.

The Utility's review and acceptance of the Applicant's proposed facility and protection design and operating information for the proposed facility shall not be construed as confirming or endorsing the design, or as any warranty of safety, desirability, or reliability of any of the Applicant's facilities. The Applicant will be responsible for all Utility costs incurred during the Application and Review Process as set forth in this Bulletin. The Applicant will also be responsible for all Utility costs incurred to connect the proposed generation system to the Utility system, including any other associated system upgrades needed to maintain the reliability of the Utility system.

Engineering and Interconnection agreements are required to cover each stage of application review and system interconnection. Example agreements can be found in the NYS PSC SIR appendices and the NYISO OATT, as applicable to the interconnection request. See New

York Independent System Operator (NYISO) Open Access Transmission Tariff (OATT) 40 Attachment HH - Standard Interconnection Procedures for NYISO jurisdiction interconnections.

This Bulletin documents the Utility's application process, review process and technical requirements for Applicants with generating sources operating in parallel with the Utility system. These requirements have been developed based on (i) regulatory requirements as set forth by the NYS PSC and/or FERC, (ii) the NYISO guidelines, and (iii) typical Utility industry design standards, operating procedures and safety practices to ensure the safety of Utility personnel and equipment, Utility customers and the public.

This document satisfies the requirements of NERC Standard FAC-001-4, Facility Interconnection Requirements, effective January 1, 2024.

#### b. NYISO-Jurisdictional Generators

This Bulletin does not apply to DER or other generator projects subject to the jurisdiction of the NYISO. DER or other generator interconnection requests that meet the following requirements must follow the NYISO's interconnection process:

- the Applicant will not seek Net Metering service.
- the proposed project will be connected to a transmission line or transmission substation bus and the Applicant intends to participate in the NYISO's wholesale market; or
- the proposed project will be connected to existing FERC jurisdictional facilities such as a distribution bus or circuit and the Applicant intends to participate in the NYISO's wholesale market.

The Applicant is required to submit the interconnection application directly to the NYISO. For information on the appropriate NYISO application process, visit the NYISO's website at [www.nyiso.com](http://www.nyiso.com). The below table provides guidance on the appropriate study process depending on the Applicant's intended market and size:

Intended Market	Interconnection Point	Project Size	Study Process
Wholesale	NYS Transmission System or Distribution subject to NYISO's OATT Interconnection Procedures	> 5MW	NYISO
		≤ 5MW	NYISO
	Distribution not subject to NYISO's OATT Interconnection Procedures	> 5MW	Utility
		≤ 5MW	SIR
Retail	NYS Transmission System	Any Size	Utility
	Distribution	> 5MW	Utility
		≤ 5MW	SIR

### c. Interconnection Costs

All costs incurred to accommodate the interconnection of a DER system or other generation to a NYSEG/RGE distribution or transmission circuit, or system must be borne by the Applicant. The upgrade costs for which the Applicant is responsible to fund include, but are not limited to, the following items:

1. Engineering studies and design work necessary to permit the interconnection of the Applicant's generation to the NYSEG/RGE distribution system.
2. New overhead and/or underground line extensions to interconnect the Applicant's generation to the distribution system.
3. Conversion of single-phase or two-phase lines to three-phase construction to accommodate the generation, if necessary.
4. Alterations, modifications, or additions to distribution system protection schemes necessitated by the interconnection of the Applicant's generation.
5. Telemetry facilities, including the cost of equipment and communication facilities as well as maintenance costs associated with these facilities.
6. Alterations, modifications, or additions to the distribution and transmission systems to maintain the quality of electrical service to other electric customers of the Utility.
7. Upgrades / alterations to distribution and transmission substations, as applicable.

8. A recloser at the PCC: A distribution line recloser shall be installed, owned and operated by the Utility and all cost associated with the design and installation of the equipment shall be the responsibility of the Applicant.

9. A Power Quality Meter

## 2.0 Application Process

### a. Applications – 5 MW or Smaller (“SIR Process”)

#### **Introduction**

For DER systems with an AC nameplate rating of 5 MW and below proposing to operate in parallel with the distribution system and not participate in the NYISO market, NYSEG/RGE will follow the application process as listed within the New York State Standardized Interconnection Requirements (NYS SIR). This is known as the SIR Process.

The steps, timelines, and costs associated within the application process are dictated within the NYS SIR and depend on the characteristics of the DER system including, but not limited to, the type of generator, the AC nameplate rating, protective equipment, and the existing distribution circuit characteristics at the Point of Interconnection (POI). See NYS SIR Appendix F “Application Package Checklist” of application requirements for guidance.

Visit the Department of Public Service’s Distributed Generation website, <https://dps.ny.gov/distributed-generation-information>, for additional information and to download the most current version of the NYS SIR. Additional application information can be found on NYSEG/RGE [Distributed Generation - NYSEG](#) or [Distributed Generation - RGE](#) websites, along with the ability to submit an online application via NYSEG/RGE Interconnection Online Application Portal (IOAP), [NYSEG | Your Energy](#) or [Online Portal - RGE](#) website, as applicable.

For questions regarding the interconnection process, refer to the contact information listed on NYSEG/RGE [Distributed Generation - NYSEG](#) or [Distributed Generation - RGE](#) website.

Note that the NYS SIR application process does not include the steps and requirements to open a new NYSEG/RGE account. If the Applicant is not an existing NYSEG/RGE customer and therefore requires a new service for the DER system, NYSEG [Builder Portal](#) ; or [Request New Construction - RGE](#); includes account setup, metering and service requirements.

## b. General Requirements

All DER systems shall comply with NYS SIR and the current version of IEEE-1547. Inverters must be certified compliant to UL1741 SB and listed on “UL 1741 SB Certified Equipment” list on the NYS DPS website.

Individual or aggregated generation 500 kW and greater shall require a recloser at Point of Common Coupling (PCC). Some individual or aggregated generation 300 kW and greater may require a recloser at the PCC, depending on system conditions. The recloser shall be installed, owned, and operated by the Utility. All costs associated with the design and installation of recloser equipment shall be the responsibility of the Applicant.

The Applicant shall provide appropriate protection and control equipment, including a protective device that utilizes an automatic disconnect device that will disconnect the generation if the portion of the utility system that serves the generator is de-energized for any reason or for a fault in the Applicant’s system. The Applicant’s protection and control equipment shall be capable of automatically disconnecting the generation upon detection of an islanding condition and upon detection of a utility system fault.

The protection and control scheme shall be designed to ensure that the generation remains in operation when the frequency and voltage of the utility system is within the limits specified by the utility’s required operating ranges. Upon request from the utility, the Applicant shall provide documentation detailing compliance with the requirements set forth in this document. The specific design of the protection, control and grounding schemes will depend on the size and characteristics of the proposed generation, as well the expected generation site load level, in addition to the characteristics of the portion of the utility’s system where the Applicant is interconnecting.

The Applicant shall have, as a minimum, an automatic disconnect device(s) sized to meet all applicable local, state, and federal codes and operated by over and under voltage and over and under frequency protection. For three-phase installations, the over and under voltage function should be included for each phase and the over and under frequency protection on at least one phase. All phases of a generator or inverter interface shall disconnect for voltage or frequency trip conditions sensed by the protective devices.

Voltage protection shall be wired phase to ground for single phase installations and for applications using wye grounded-wye grounded service transformers.

### **Required Over/Under Voltage/Frequency Protection Functions vs generation type**

<b>SYNCHRONOUS GENERATORS</b>	<b>INDUCTION GENERATORS</b>	<b>INVERTERS</b>
<b>OVER/UNDER VOLTAGE (FUNCTION 27/59)</b>	<b>OVER/UNDER VOLTAGE (FUNCTION 27/59)</b>	<b>OVER/UNDER VOLTAGE (FUNCTION 27/59)</b>
<b>OVER/UNDER FREQUENCY (FUNCTION 81O/81U)</b>	<b>OVER/UNDER FREQUENCY (FUNCTION 81O/81U)</b>	<b>OVER/UNDER FREQUENCY (FUNCTION 81O/81U)</b>
		<b>ANTI-ISLANDING PROTECTION</b>

The settings below are listed for single-phase and three-phase applications using wye grounded-wye grounded service transformers or wye grounded-wye grounded isolation transformers. For applications using other transformer connections, a site-specific review will be conducted by the utility and the revised settings identified in Step 6 of the NYS SIR Application Process.

The requirements set forth in this document are intended to be consistent with those contained in IEEE Std 1547, Standard for Interconnecting Distributed Resources with Electric Power Systems. The requirements in IEEE Std 1547 above and beyond those contained in this document shall be followed.

Protection Item	Description	Lower Limit	Upper Limit	IEEE Standard
Voltage Response	For excursions outside these limits the protective device shall automatically initiate a disconnect sequence from the utility system	88%	110%	1547
Frequency Response	>30kW: For excursions outside these limits the protective device shall automatically initiate a disconnect sequence from the utility system	59.3Hz	60.5Hz	1547

## **Required Smart Inverter Protection Settings**

Refer to the NYSEG/RGE Distributed Generation webpage for the latest Smart Inverter standard protection settings.

### **Disconnect /Reconnect**

If the generation facility is disconnected because of the operation of a protective device, the Applicant's equipment shall remain disconnected until the utility's service voltage and frequency have recovered to acceptable voltage and frequency limits for a minimum of five (5) minutes. Systems greater than 25 kW that do not utilize inverter-based interface equipment shall not have automatic recloser capability unless otherwise approved by the utility.

If the utility determines that a facility must receive permission to reconnect, then any automatic reclosing functions must be disabled and verified to be disabled during verification testing.

### **Monitoring Specific Requirements**

These requirements represent the most basic monitoring components that can provide situational awareness at the PCC. Additional monitoring points may be needed per Utility requirements, including Power Quality Metering. Monitoring data shall be remotely accessible using communications technology per the utility's protocols.

The minimum required data values at the PCC are as follows:

- Per phase voltage and current,
- Three phase values for real (watts) and reactive (VARs) power, and
- Power factor

### **Control Specific Requirements**

The control portion is defined as the remote trip and block closing of the interrupting device on the PV supply side, as specified by the utility protection, relay, and control scheme implementation. Any solar PV system requiring control shall also require monitoring. The following are general requirements of the control system:

- The PCC recloser or RTU points list shall be mapped in accordance with DNP3, IEC 61850 or ANSI/C37.2 as specified by the utility.

- The RTU, PCC Recloser, or Energy Control Center data retention shall be capable of capturing sequence of event analysis.
- In addition to meeting the monitoring and remote trip and close capabilities, the RTU or PCC recloser must report the status of the disconnecting device.

### c. Metering

NYSEG/RGE will specify the location and arrangement of all equipment required for the revenue or Net Metering of the Applicant's generation. Reference NYSEG's and RGE's SP-1099 Customer Service 2.4kV to 34.5kV for Distribution Primary Metering and Requirements for Installation of Electric Services & Meters for Distribution Secondary Metering requirements. The NYS SIR describes qualifications for Net Metering and for those generating installations where Net Metering does not apply, the NYSEG/RGE's revenue metering will be a bidirectional meter to prevent generation flowing into the utility grid from spinning a standard meter backwards thereby providing unearned credits to the generating facility.

Any incremental metering costs will be included in the interconnection costs paid by the Applicant.

NYSEG/RGE will determine the telecommunication requirements, if any, for the DER system for utility owned revenue metering. As required by the Utility, it is the responsibility of the generator owner to supply a telecom land line and any communication protection devices necessary for the utility to interrogate the meter.

For generating systems located in adjacent parcels of land, it is acceptable for the generator owner to have one POTS line installed for the multiple systems when a utility approved Teltone Gateway line switch is used for adding the data-phone connections to the systems.

#### **Other Metering**

The need for additional revenue metering or modifications to existing metering will be reviewed on a case-by-case basis and shall be consistent with metering requirements adopted by the Commission. Any incremental metering costs are included in interconnection costs that may be required of an applicant. (As described in NYS SIR Section C, Step 6) net metered Solar, Farm Waste, Farm Wind (25 kW or Less) and Residential-Wind Applicants are only required to contribute to the cost of dedicated transformer(s) and other safety equipment, and Farm Wind and Non-Residential Wind Applicants with systems of 25

kW and larger are only responsible for payment of one-half of interconnection costs other than dedicated transformer(s) and other safety equipment.

The following Table summarizes the New York Net Metering Rules

### New York (PSL 66-j) - Net Metering<sup>2</sup>

Incentive Type:	Net Metering Rules			
Eligible Renewable/Other Technologies:	Solar		Biogas	Micro CHP / Fuel Cell
Applicable Sectors:	Residential	Non-Residential	Farm-Waste	Residential
Limit on System Size:	25 kW	Up to 2MW	1 MW	10 kW
Limit on Overall Enrollment:	1% of 2005 Demand per IOU for Solar, Biogas, Micro CHP, and Fuel Cells Combined			

### New York (PSL 66-l) - Net Metering<sup>2</sup>

Incentive Type:	Net Metering Rules		
Eligible Renewable/Other Technologies:	Wind		
Applicable Sectors:	Residential	Non-Residential	Farm-Service Wind
Limit on System Size:	25 kW	Up to 2MW	500 kW
Limit on Overall Enrollment:	.3% of 2005 Demand per IOU		

<sup>2</sup> Refer to specific utility tariff leaves for more detailed rules and regulations applicable to net metering.

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### 3.0 Applications – Larger than 5MW to 20MW (“Utility Non-SIR Process”)

#### a. Introduction

This section provides the framework for processing applications for the interconnection of DER systems or other generation rated greater than 5MW but less than or equal to 20 MW to the NYSEG/RGE electric system, also known as the Utility Non-SIR Process.

#### b. General Requirements

The Utility Non-SIR application review process, known as the Engineering Review Process, is more complex than the NYS SIR process. As part of this process, NYSEG/RGE may identify the need for detailed engineering studies, additional system impact studies, additional protection requirements, and distribution system upgrades.

The Applicant shall furnish the following information required to support the Utility’s Engineering Review Process to completion. Items marked with an asterisk (\*) in the next table (Utility Non-SIR Application Checklist) are required by NYSEG/RG&E to complete the Preliminary Technical Review:

Utility Non-SIR Application Checklist	
1	* Applicable application for Inverter Based Interconnection (Appendix B) or Non-Inverter Based Interconnection (Appendix C) or Energy Storage Systems (Appendix K) found on NYSEG/RGE Interconnection Online Application Portal (IOAP), NYSEG   Your Energy or Online Portal - RGE website.
2	* Letter of authorization, signed by the Customer, to provide for the Applicant/contractor to act as the customer's agent
3	* A site plan with the proposed interconnection point identified by a Google Earth, Bing Maps, or similar satellite image containing GPS reference coordinates.
4	* Description / Narrative of the project and site proposed. If multiple DG systems are being proposed at the same site/location, this information needs to be identified and explained in detail. The narrative must clearly state total AC MW system output based on Nameplate AC MW rating.
5	* Generation technology type
6	* Generation fuel source / configuration
7	* Proposed project size (aggregate site AC nameplate kW/kVA)
8	* Copy of the certificate of compliance referencing UL 1741 SB
9	* Copy of the manufacturer's data sheet for the interface equipment
10	* System Diagram - A three-line diagram for designs proposed on three phase systems, including detailed information on the wiring configuration at the PCC and an exact representation of existing utility service. One-line diagrams shall be acceptable for single phase installations
11	Project Schedule
12	Professional Engineer (electrical) Stamped Three Line Diagram for projects connected as primary metering (interconnection > 1000V)
13	Three Line Protection Relay Diagram
14	Generator Elementary Control Diagram
15	Generator, Exciter & Governor Information Sheets
16	Equipment Nameplate Data and Electrical Ratings for:
a.	Prime Mover(s)
b.	* Interface/step-up transformer(s)
c.	* Interrupting Devices (Breakers, Contactors, etc.)
d.	* Current Transformers
e.	* Voltage Transformers
f.	* Line/Disconnect switches
g.	Capacitor banks
h.	Battery and charger or source of power supply to protective relays and interrupting devices
i.	* For ESS systems: Storage inverter AC rating (kW) for AC-coupled or stand-alone systems
j.	Surge arresters

k.	Other (as specifically requested)	
17	Proposed Relay Types and Settings for Fault and Isolation Protection Schemes	
18	Telemetry Information (When Applicable)	
19	Protective Relay Communications and Monitoring Systems Information	
20	Method of Excitation	
21	* Minimum Site Load Without Generator On-Line	
22	Generator Saturation Curve	
23	Exciter Saturation Curve	
24	System Block Diagrams	
25	Temporary Construction, Start-up & Station Service Power Information	
26	Facility Modeling Data (PSS/e v35 steady state and stability models)	
27	Additional Information as Required by the Utility for Completion of the Technical Reviews	

NOTE: Additional information will be requested from the Applicant when facilities are to be constructed by the Applicant and transferred to the Utility upon completion.

All proposed facilities shall meet or exceed industry standards as applicable including applicable IEEE 1547, 2800 and UL 1741 SB, and National Electrical Code, National Electric Safety Code and all building and construction local ordinances. Inverter-based resources connected to low voltage transmission <100kv including 11kV transmission in RGE must comply with IEEE 2800.

The Final Technical Review report will include the details of all applicable items and possibly other issues not mentioned above if the complexity of the proposed project warrants it.

### c. Engineering Review Process

Upon receipt of a request from an Applicant with the information detailed above and described in the Application Process and Requirements section, within ten (10) business days of receipt NYSEG/RGE shall review the information for completeness and, if necessary, provide the Applicant, in writing, with a list of missing information and a good faith cost estimate to complete a Preliminary Technical Review.

#### i. Preliminary Technical Review Process

Upon receipt of a complete application and design package and payment of the estimated cost of the Preliminary Technical Review, NYSEG/RGE shall commence the Preliminary Technical Review. The Preliminary Technical Review will take approximately four (4) months to complete depending on complexity. This duration will depend upon the size, location, type of generation, and interconnection scheme of the proposed generating facility.

The Preliminary Technical Review shall consist of a review of the Applicant's proposed system capacity, impact of the proposed generation on the Utility system, system characteristics, capacities, and general system regulation to determine if the interconnection is viable. The review shall include a short circuit analysis; a voltage analysis; a power flow analysis; voltage drop, and flicker studies and protection/coordination studies. It shall identify any necessary system reinforcements required for the safe and reliable interconnection of the proposed DER system or generation.

The scope and execution of the transmission system impact portion of the study will generally follow the same standards as NYISO study requirements OATT Attachment Z. The scope will be adjusted as appropriate for the local area, and the Applicant will have the opportunity to review the proposed scope. Generally, this scope includes steady state contingency analysis at multiple load levels. In some cases, stability analysis may be required. Sensitivity cases may also be required depending on the project queue in the local area. If significant transmission upgrades are identified, additional time may be required to develop cost estimates.

Once the Preliminary Technical Review is completed, NYSEG/RGE will provide the Applicant, in writing, the results of the review. Such results shall include (i) any problems or deficiencies in the proposed design or information provided, (ii) identification of required system modifications, and (iii) a high level (+/- 50% bandwidth) preliminary cost estimate for the required system modifications, and (iv) the estimate cost of the Final Technical Review. The Applicant will be responsible for all costs pursuant to Section 1.0 c. of this Bulletin.

Following receipt of the Preliminary Technical Review results, if the Applicant elects to proceed with the project, Applicant must provide to the Utility a deposit payment for the estimated cost of the Final Technical Review, a proposed project schedule noting dates for obtaining major permits for the project, purchasing, and receiving major equipment, starting, and completing construction of the Applicant's facilities, synchronizing with the Utility system and commencing operation. This project schedule may be subject to modifications as it must also reflect the schedule for any modifications or additions to the Utility's system.

## ii. Final Technical Review Process

Upon receipt of the deposit payment of the estimated cost of the Final Technical Review from the Applicant, as well as any additional requested information, NYSEG/RGE shall commence the Final Technical Review. The Final Technical Review will take approximately four (4) months to complete depending on complexity. This duration is dependent upon the size, location, and interconnection scheme of the proposed generating facility. If any portion

of the submitted design or data is not acceptable, the Utility will comment on those areas and notify the Applicant to make the appropriate revisions. The Applicant must submit the revisions to the Utility before the Final Technical Review continues. Any delay in the Applicant's response to the Utility's comments will directly delay completion of the Final Technical Review and acceptance of the proposed generation and protection design. If the Applicant has not supplied information requested by NYSEG/RGE within 30 business days after the request has been sent to the Applicant via email, the project will be canceled and removed from NYSEG/RGE's interconnection queue.

Upon completion of the Final Technical Review, the Utility will provide the Applicant, in writing, the results of the review. The review will state whether NYSEG/RGE accepts the Applicant's proposed generation and protection design, which must be in accordance with this Bulletin and other NYSEG/RGE standards and requirements, and whether the proposed project may move forward to the engineering and construction phase.

If the Applicant makes significant changes in the design or installation scheduling of the generation system, any previous information furnished by NYSEG/RGE to the Applicant is subject to review and possible change, which may cause a delay in service.

#### 4.0 Property and Environmental

All new Utility facilities required for interconnection shall be road or surfaced driveway accessible and outside of any NY or FEMA designated flood plain.

##### a. Wind Turbines

All wind turbine installations must be set back from the edge of a transmission line (>100kV) right of way a distance of at least 1.5 times the Blade Tip height at its highest position, or more as required by the local building and zoning ordinances. All wind turbine installations must be set back from all distribution line conductors and structures as required by the state of New York and local building and zoning ordinances. No construction of wind turbine towers will be allowed until these setback requirements are met, this may include any relocation of utility lines and structures or the burying of utility lines.

All wind turbines installed in the vicinity of gas pipelines shall design their ground grids to be in full conformance with IEEE 80 standards. Applicants shall test the ground grids for all turbines within 600 feet of a metal gas pipeline on a yearly basis and provide the results of the testing in a report to the Utility.

## 5.0 Standards

Standard technical requirements for interconnection are contained in the New York Independent System Operator (NYISO) Open Access Transmission Tariff (OATT), NYISO Planning Procedures and Operating Procedures, the Northeast Power Coordinating Council (NPCC) Criteria documents, the North American Electric Reliability Corporation (NERC) reliability standards, and FERC 715 Part 4, Transmission Planning Criteria, and National Electrical Safety Codes.

All designs will be subject to Company review and approval on a case-by-case basis. All facilities to be transferred to the Utility must meet or exceed company standards. Interconnecting facilities retained by the Applicant shall meet or exceed NESC, the National Electrical Construction & Equipment Sizing Codes as well as NPCC, NERC, IEEE and ANSI, and NEC applicable standards, including but not limited to IEEE 1547, 2800, and UL 1741 SB.

## 6.0 Protection & Control

The protection requirements described in this document are those necessary to protect the Utility system from the Applicant's facility and minimize its impact on the system.

Other devices necessary solely for the protection of the Applicant's equipment and to ensure its safe operation shall be the Applicant's responsibility. It is not the Utility's intent to assess such protection in its Engineering Review Process.

## 7.0 PE Engineer

The Applicant is required to obtain the services of a qualified, New York State licensed Electrical Professional Engineer (P.E.) to design the protection system to meet the Utility's requirements, as well as the Applicant's own requirements. The physical layout, configuration, and structural design of the system must meet or exceed state and local building codes and be reviewed and approved by appropriate Civil Professional Engineers. The responsible P.E.'s seal shall be affixed on all the Applicant's design documentation that is required to be submitted to the Utility for review and acceptance.

## 8.0 Consultant(s)

To help minimize the potential for delays in the Engineering Review Process, it is highly recommended that the Applicant's consultant(s) have extensive background in power system protection and relay calibration and testing. It is the sole responsibility of the Applicant to ensure the qualification of the Applicant's consultant(s).

## 9.0 Protection Schemes

A design requirement of a generation interconnection is that the generator cannot energize a de-energized NYSEG/RGE distribution or transmission circuit. This is due to public and personnel safety and potential equipment damage issues associated with backfeeding power into the de-energized circuit. The protection system shall be designed with interlocks and proper protective and synchronizing functions to ensure that there is proper voltage, frequency, and phase angle conditions between the utility grid and the generation before the generation is permitted to operate in parallel. Automatic reclosing of the generation intertie equipment is not permitted.

The Utility requires that Applicants with a generating source(s) operating in parallel with the Utility system design, purchase, and install protection schemes at their location that are designed to detect the following:

- System abnormalities and disturbances on the Utility system to which the Applicant's generation is interconnected (Utility fault protection scheme).
- Faults within the Applicant's plant, to separate the plant from the Utility system, avoiding outages to other Utility customers supplied on the same circuit to which the generation is interconnected (plant fault protection scheme).
- Back feeding, by the Applicant's generation, to the Utility system when the Utility supply is separated from the Utility system to which the Applicant's generation is interconnected (isolation protection scheme).

### a. Line Protection for Interconnections to Utility Transmission Circuits

For facilities proposed for interconnection to Utility transmission circuits, the infeed that is introduced into the circuit from the proposed facility has an adverse impact on the Utility protective relays at the line terminals. The infeed causes the Utility protective relays to be less sensitive for short circuits that occur on the protected line beyond the proposed interconnection point. In addition, settings for the Utility line terminal protective relays may not be able to be calculated to protect the line for all operating conditions (e.g. all generators online, no generators online, etc.).

Because of this impact on the Utility line protection schemes, a Applicant shall not be allowed to interconnect to a Utility transmission line as a third line terminal. The Applicant will be required to install facilities at the proposed POI to split the line into two separate lines.

The Applicant shall install line protection equipment at each new line terminal that can interface with the protective relays at each of the Utility line terminals.

#### b. Fault Protection Schemes

The Applicant's fault protection scheme must isolate the Applicant's facility from the Utility system for, but not necessarily limited to, the following abnormalities and disturbances:

- Faults within the Applicant's equipment.
- Multiphase and ground faults on the Utility system between the Applicant's facility and a Utility-designated "system location"; and
- Single phasing of a three-phase facility (open conductor).
- Loss of power supply to the protective relays within the plant
- Protective relay failure (relay trouble alarm)
- Loss of Control Power

#### c. Isolation Protection Scheme

The Applicant's isolation protection scheme must automatically isolate the Applicant's facility from the Utility system for loss of the Utility supply. The Applicant's facility must not supply other Utility customers in the event of a loss of the Utility source. The isolation protective equipment would typically be designed to sense a "step change" in the facilities output voltage, current, or frequency upon loss of the Utility source.

NOTE: The "step change" resulting from the loss of the Utility supply may or may not be locally detectable at the Applicant's location. If not, additional remote communications protection may be required.

Figures 1, 2 and 3 illustrate examples of the minimum protection requirements available to the Applicant for various typical systems. The specific design of the protection schemes will depend on the facility type and kVA size, the Applicant's own site load, the type of Utility supply feeder and its associated loads, as well as the method of grounding selected. The circuit breaker used to disconnect the facility from the Utility system shall be tripped either directly from the protective relay or through one interposing relay.

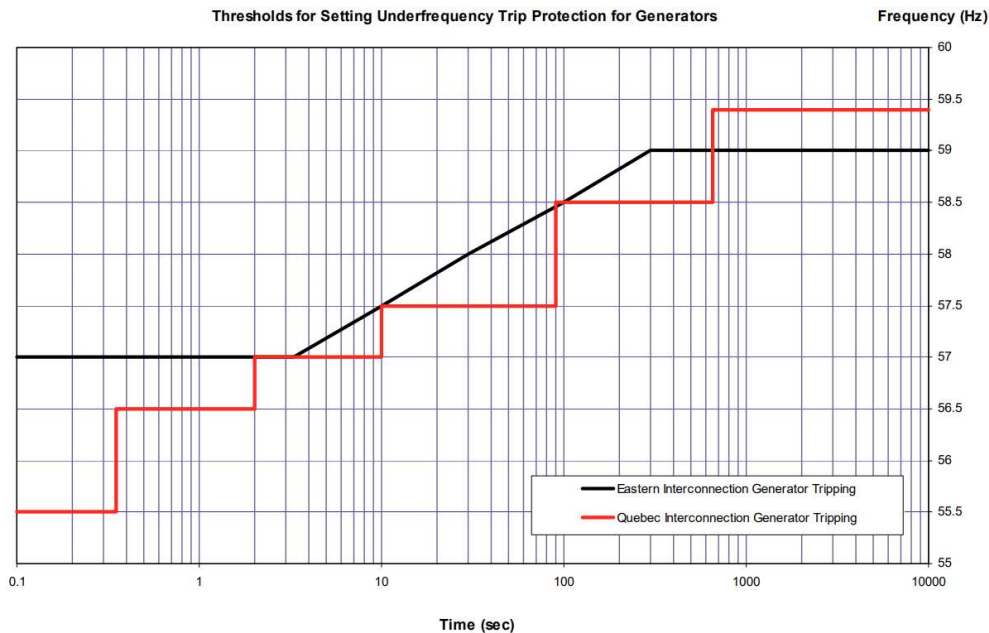
The windings of the VTs for the undervoltage and overvoltage elements shall be connected so that the secondary voltage in which they monitor accurately emulates the voltages of the

Utility circuit to which the facility is interconnected. For example, if the VTs are installed on the secondary of a delta-wye power transformer, they must be connected “wye-delta” to properly emulate the phase-to-neutral voltages of the Utility circuit.

For isolation protection relays, the Utility requires the following minimum settings:

### **Underfrequency (81U)**

Coordinate with the NPCC Underfrequency Load Shedding Curve shown below, consult the NPCC standard for any potential changes to the curve. T(the setting must be on or below the curve shown.



### **Over-frequency (81O)**

Pick-up at no more than 60.5 Hz and operate in no greater than 0.5 seconds.

### **Undervoltage (27)**

Pick-up at no less than 90% of nominal supply voltage and operate in no greater than 1.0 seconds.

### **Overvoltage (59)**

For facilities interconnected to Utility circuits that are ungrounded, or not effectively grounded, pick-up at no more than 110% of nominal supply voltage and operate instantaneously.

For facilities interconnected to Utility circuits that are effectively grounded, pick-up at no more than 110% of nominal supply voltage and operate in no greater than 1.0 seconds.

#### d. Fault Protection Relays

For fault protection relays, it is the Applicant's responsibility to perform the necessary calculations and determine the proper settings. The Utility will provide the Applicant with pertinent Utility system data and the appropriate fault protection criteria. Once the Applicant has completed the calculations and finalized these settings, the calculations and settings must be provided to the Utility for review and acceptance. For microprocessor relays, this includes all associated logic and input/output programming.

The protective relays used by the Applicant to meet the Utility's fault and isolation protection requirements must be Utility-approved Utility Grade Relays . The following suppliers are currently approved by the Utility for the fault and isolation protection relays shown in Figures 1, 2, and 3 of this Bulletin.

- ABB (former Westinghouse, ASEA, and BBC types only)
- Basler (BE1 class relays only)
- Beckwith
- General Electric and GE/Multilin
- Schweitzer Engineering Laboratories (SEL)
- Siemens

#### e. Current Transformers (CTs) Used for Fault Protection Relays

Relay accuracy CTs (CTs whose accuracy class begin with a “C” or a “T” followed by a voltage class (e.g. C400, T200, etc.) must be used for all protective relays installed within the plant that are used for fault protection. Metering accuracy CTs can saturate when exposed to fault currents and are thus unacceptable.

#### f. Voltage Transformers (VTs) Used for Fault and Isolation Protection

Winding connections for VTs used to provide voltage quantities to fault and isolation protection relays shall be reviewed on a case-by-case basis. This will be done to ensure that the phase voltages of the interconnecting utility system are correctly emulated to the relays so that they will operate properly for the appropriate conditions. The VT winding connection

depends on the configuration of the utility system, the GSU transformer connection and other factors. VTs used for fault and isolation protection shall not be connected as open delta-open delta, because the phase voltages of the interconnecting utility system cannot be correctly emulated to the fault and isolation protection relays regardless of the winding connection of the GSU power transformer to the utility.

#### g. High Speed Protection vs. Time-Delayed Protection

The Applicant may be required to use high speed protection if time-delayed protection would result in degradation in the existing sensitivity or speed of the protection system on Utility lines.

#### h. Local Breaker Failure Protection

The Applicant may be required to provide local breaker failure protection, which may include Direct Transfer Tripping to the Utility line terminal(s), to detect and clear faults within the generating source that cannot be detected by Utility backup protection or that could result in undesirable interruption to Utility customers.

#### i. Relay Test Switches

Relay test switches (ABB FT-19R or equivalent) shall be installed for each microprocessor-based relay that provides isolation protection and/or detection of short circuits or other abnormalities on the Utility system. At least one test switch is required for each relay. This requirement is primarily to assure that any relay output is not rewired incorrectly following the required initial and periodic relay testing. Installation of relay test switches also aids to facilitate and expedite relay testing.

### 10.0 Grounding

The Utility transmission and distribution facilities are all designed and built to maintain a specific level or type of grounding. The interconnection of the Applicant's facility to Utility facilities may adversely affect that grounding. To maintain the existing level or type of grounding on the circuit, the interconnecting facility must comply with the following criteria:

Applicants interconnecting to wye-grounded distribution circuits must provide a ground source to maintain effective grounding on the circuit. The ground source must ensure that under all conditions where the Applicant's facility becomes isolated with the Utility's distribution load, the distribution circuit remains effectively grounded. (A ground source

provides effective grounding if, during a phase-to-ground fault, the voltages on the un-faulted phases with respect to ground do not exceed 1.35 per unit.)

During a phase-to-ground fault on the Utility's distribution circuit, the Applicant's facility may be isolated with the phase-to-ground fault if the Utility source opens before the Applicant's protection detects the fault condition and isolates the facility from the Utility system. If the Applicant's facility does not provide effective grounding during the period that the facility is isolated with the phase-to-ground fault, the system neutral can shift, creating an overvoltage on the two remaining un-faulted phases. All phase-to-ground connected loads isolated with the facility will be subjected to this overvoltage, which can reach 173% of nominal voltage. This high voltage could quickly damage Utility equipment and/or other customer's equipment.

The qualified New York State licensed P.E. responsible for the design of the Applicant's system shall be aware that the ground source at the Applicant's location will provide a path for a portion of the zero-sequence fault current for all phase-to-ground faults on the circuit. Should this additional fault current path adversely affect the operation of existing Utility ground relaying and/or fusing on the circuit, additional zero sequence impedance may have to be added to the Applicant's ground source (while still maintaining effective grounding), or the ground source may have to be tripped off simultaneously when the facility is tripped for faults.

The following are examples of methods that the Applicant may use to provide the required ground source at the location. Figures 4.1, 4.2 and 4.3 of this Bulletin illustrate each of these methods, respectively:

- A wye-grounded/wye-grounded step-up transformer with a wye-grounded generator.
- A grounding transformer at the POI. A wye-grounded/delta or zig-zag transformer may be used.
- A wye-grounded/delta step-up transformer. The Applicant's interconnecting to delta-connected distribution circuits typically will not be required, nor allowed, to provide a ground source for the Utility system. However, the Applicant must provide the appropriate protective relaying at the POI to detect ground faults on the Utility electrical system and disconnect the facility from the Utility system.

The Applicant's interconnecting to Utility transmission facilities, either delta- or wye-connected, will be reviewed individually to determine if there is a need for the Applicant to provide a ground source for the Utility system.

## 11.0 Synchronizing and Reclosing

Installations with synchronous generators or self-commutated inverters are required to use Utility Grade synchronizing equipment to parallel their generation with the energized Utility system. In general, installations with induction generators or line-commutated inverters are not required to have synchronizing equipment. The connection of any type of facility to a de-energized portion of the Utility system is prohibited.

When the Applicant's fault interrupting device is tripped via fault or isolation protective relay equipment, reclosing of that device must be delayed until the Utility system has been restored for a minimum of five (5) minutes.

NOTE: The facility should be aware that Utility auto reclosing may cause transient shaft torque on the Applicant's machine(s) and transient line overvoltage, if it (machines) is (are) still connected to the Utility system when reclosing occurs. For fault-initiated operations on transmission and distribution circuits, the Utility substation and line fault interrupting devices (excluding fuses) typically reclose automatically without hot-line supervision or synchronizing. Dead time on the Utility circuit before the first reclosing occurs typically ranges from 2 to 15 seconds. As noted previously, if the Applicant's facility remains on-line when reclosing occurs, the Applicant's equipment may be damaged by a possible out-of-sync reclose. The Utility may require the installation of hot-line supervision or synchronization to existing fault interrupting devices on transmission, and distribution circuits when Applicant owned facilities are connected to them. The utility reserves the right to add hot-line supervision to block automatic reclosing at the Applicants expense so that other customers are not impacted by a voltage transient caused by an out of step close. An Applicant may be asked to provide an initial synchronizing plan.

## 12.0 Disconnect Switch

### a. General

The Applicant's facilities shall be capable of being isolated from the Utility system by means of an external, manual, visible, gang-operated, load break Disconnect Switch accessible by NYSEG/RGE at all times. The Disconnect Switch shall be installed, owned and maintained by the owner of the facility, and located at the POI between the Applicant's equipment and the Utility system.

The Disconnect Switch shall be clearly marked, "Disconnect Switch," with a permanent weatherproof placard with 3/8-inch letters or larger.

The Disconnect Switch shall be located within 10 feet of the Utilities' external electric service meter, or the location and nature of the dispersed Disconnect Switches shall be indicated in the immediate proximity of the electric service entrance.

The Disconnect Switch shall be readily accessible for operation and always locking by Utility personnel. Operation of this switch by the Utility is at the discretion of the Utility without prior notice to the power producer.

The Disconnect Switch must be lockable in the open position with a standard Utility padlock.

### b. Standards and Ratings

The Disconnect Switch must be rated for the voltage and current requirements of the installation. The basic insulation level (BIL) of the Disconnect Switch shall be such that it will coordinate with that of the Utility's equipment. "Disconnect" devices shall meet applicable UL, ANSI and IEEE standards, and shall be installed to meet all applicable local, state and federal codes.

### c. Disconnection without Notification

The Disconnect Switch may be opened by the Utility for any of the following reasons without notice:

- To eliminate conditions that constitute a potential hazard to Utility personnel or the public.
- Pre-emergency or emergency conditions on the Utility system.
- A hazardous condition is revealed by a Utility inspection.
- Protective device tampering
- Utility Disconnect Operation

### d. Disconnection with Notification

The Disconnect Switch may be opened by the Utility for the following reasons, with notice to the power producer after a reasonable time to correct the existing issue:

- Power-producer has failed to properly maintain the protective devices.
- Power producer's system interferes with Utility equipment or equipment belonging to other Utility customers.

- Power producer's system is found to affect quality of service of other Utility customers.
- Failure to make Verification Test records available to the Utility upon request.

The Applicant shall be allowed to disconnect from the Utility without prior notice to self-generate.

### 13.0 Power Factor Correction

If the Applicant installs an induction machine or uses an inverter, power factor correction equipment may be required. If the Utility determines in its sole judgment that the use of power factor correction equipment is necessary for VAR support, the Applicant shall:

Install such power factor correction equipment on its systems, as specified and accepted by the Utility; and/or

Be responsible for all Utility-incurred costs associated with the addition of such power factor correction equipment installed by the Utility on the Utility system.

### 14.0 Harmonics

Per current IEEE standards regarding harmonic distortion limits that apply to all electric customers, including DER systems:

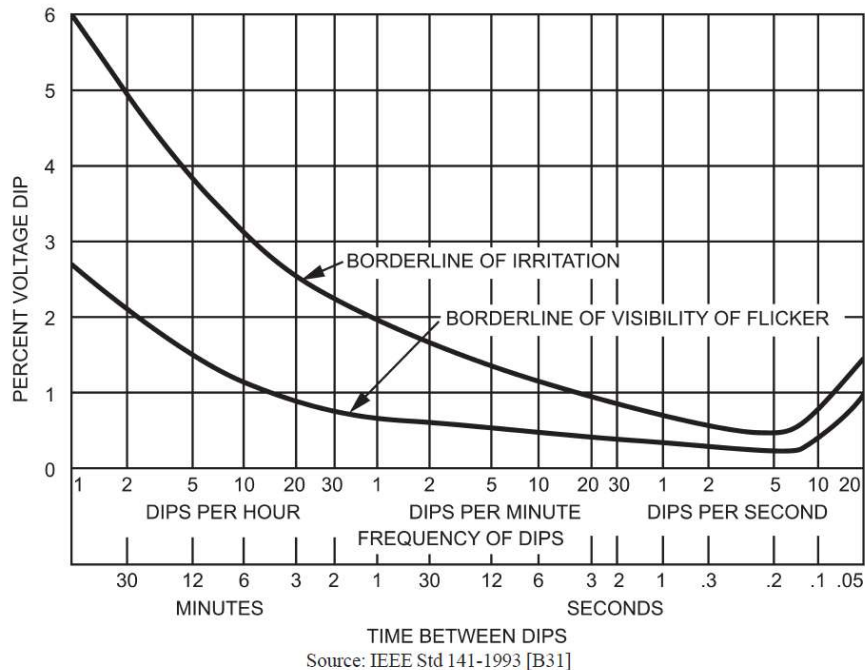
“Harmonic distortion due to an Applicant's facility shall be limited such that the harmonic voltage distortion as measured at any point on the Utility system will not exceed 3% for any single frequency or 5% total harmonic distortion ("THD"), or otherwise, be determined by the Utility to cause problems with the Utility or other customers. THD is defined as the square root of the sum of the squares of the harmonic voltages divided by the magnitude of the fundamental (60 hertz) voltage.” If the percent of THD is above the limit, the Applicant may need to install a filter to meet the requirement. If a harmonic-related problem with other Utility customers can be traced to an Applicant's facility, the Applicant must cease operation of the facility and remedy the problem.

### 15.0 Flicker

The Applicant's facility shall not create unacceptable voltage fluctuation or flicker conditions on the Utility system, as determined by the Utility. Refer to IEEE 1453-2022 for flicker limitations or most recent approved version. The Applicant shall limit voltage

fluctuations in accordance with the 3% curve for transmission system interconnections, or the 4% curve for distribution system interconnections.

IEEE Std 1453-2022  
IEEE Standard for Measurement and Limits of Voltage Fluctuations and Associated Light Flicker on AC Power Systems



## 16.0 Ferroresonance

### Description

Studies have shown that ferroresonant overvoltage can occur on Utility electric systems. These are produced by the discharging and charging of the system capacitance through the highly non-linear magnetizing reactance of the system transformers as they pass into and out of a saturated condition. The result is high overvoltage and distorted waveforms, which not only contain the ferroresonance but also all the natural resonant frequencies of the distribution circuits excited by the ferroresonant pulses.

Four conditions must be present for ferroresonant overvoltage to occur:

- The facility must be separated from the Utility source (Islanding condition).
- The kilowatt load in the Island must be less than three times the facility's rating.

- The system capacitance must be greater than 25% of the facility's rating.
- There must be at least one transformer connected to the island.

#### a. Ferroresonant Overvoltage Impact on Customer Equipment

Ferroresonant overvoltage can result in customer equipment and wiring being subjected to up to three times rated voltage. This can result in damage to both customer-owned appliances and equipment as well as Utility-owned equipment and may even result in a fire.

#### b. Equipment Requirements

If, during the Preliminary Technical Review, it is determined that a ferroresonant overvoltage condition is possible, the Utility protection engineer will investigate if it is feasible to remove capacitor banks from the branch or circuit to which the facility will be connected. If this is determined not to be feasible, then unidirectional Direct Transfer Trip (DTT) equipment will be required to be installed at the Utility substation or line recloser and the generation facility. Through this equipment, the Utility's relays or recloser, upon detection of a short circuit on the feeder or branch, will key a DTT signal to the generation facility via communication channel (POTS or fiber lines) to Disconnect the generation from the faulted circuit prior to opening of the Utility breaker or recloser.

### 17.0 Metering

The metering scheme(s) required to measure the power delivered to the Utility, or any service power required by the Applicant and supplied by the Utility (i.e., temporary, back-up, maintenance, or permanent service), will be dictated by the Agreement terms negotiated between the Utility and the Applicant. The metering scheme(s) will be designed by the Utility.

#### a. Metering Point at Point of Interconnection

When the metering point is located at the POI, the Applicant shall provide space and mounting structures for the metering equipment in the Applicant's interconnection facilities. A suitable Disconnect Switch(es) (group-operated, with a visible open) operable and lockable by the Utility, shall be provided by the Applicant to isolate the metering instrument transformers (VTs and CTs), for maintenance and testing. The metering CTs shall be located on the Utility side of the metering VTs. The Applicant shall also provide the conduit(s) required between the instrument transformer secondary junction box(es) and the metering enclosure(s) and for any telephone and SCADA RTU's connections.

The Utility will normally purchase, install, test and maintain the metering instrument transformers (VTs and CTs), meters, enclosure(s), and ancillary equipment required for metering of the Applicant's facility. The Utility will provide instrument transformer outline drawings and meter enclosure physical information to the Applicant to incorporate into the design of the Applicant's interconnection facilities. The Applicant shall coordinate the location of the metering equipment with the Utility. The Applicant shall provide drawings showing the location and mounting structure details for the metering instrument transformers and meter enclosure, for the Utility's review and acceptance.

The Utility will install all connections between the instrument-transformer secondaries, and the meter test switches, along with meter interconnections and connections to ancillary equipment.

When required, the Applicant shall supply additional source(s) of 120-volt ac, single phase station power to the meter ancillary equipment. The supply circuit(s) shall be dedicated for the Utility's use only. The Utility will make all connections to the ancillary equipment from a specified demarcation point. The Utility will provide the Applicant with power requirements. This supply circuit shall not be interrupted during routine switching and maintenance outages.

In some instances, to facilitate construction and installation, the Utility may authorize the Applicant to include the purchase and/or installation of meters, metering instrument transformers and meter test switch(es) in the Applicant's interconnection facilities. The Utility will provide equipment specifications and accuracy requirements for meters and instrument transformers to be purchased by the Applicant. The Applicant shall provide equipment drawings and certified test data for the Utility's review and acceptance. The following requirements are applicable in this instance.

1)The Applicant shall furnish a dedicated standard "voice-grade POTS" (plain old telephone system) telephone channel and jack to a designated demarcation point for remote meter interrogation (usually at the meter). Also, any wiring between revenue meters and SCADA RTU's is the Applicant's responsibility. Connections between meters and RTU's are normally made through a fiber optic transceiver unit.

2) The Utility shall have access to all metering equipment located within the Applicant's interconnection facilities to perform initial and routine in-service maintenance and testing. The Utility will notify the Applicant prior to entering the Applicant's facilities.

#### b. Meter Point at Location Other than the Interconnection Point

Where interconnection requirements dictate the building of a substation that the Utility will own, operate and maintain, the Applicant is required to purchase and install the revenue meter(s), associated revenue grade metering CTs and VTs and meter test switch(es). The metering point is to be located where the change of ownership occurs. The typical ownership line of demarcation is noted on the POI Guide Relay One Line Diagram (CR-8031) as a dashed line. It is important that any additional metering requirements beyond the POI for back-up and/or supplemental service or for black start capabilities be defined at the outset. Generally, metering equipment for conventional services not involving the POI, will be supplied by the Utility.

For metering at the POI, the Utility will specify the exact meter type(s) and model(s). The Applicant will purchase and install the meter(s), CT's/VT's, and complete the wiring between CT/VT secondary windings and meter test switches and between the meter test switches and meter case(s). Revenue meters must be powered from a reliable 120 VAC auxiliary source. This source must be uninterruptable.

Revenue meters typically supply MW, MWh, MVAR, Volts, Amps, and Frequency signals to an on-site Supervisory Control and Data Acquisition (SCADA) Remote Terminal Unit (RTU) through an RS-485 connection using DNP 3.0 protocol. The Applicant is required to complete all connections between meters and SCADA RTU's and between meters and the station telephone demarcation point. Revenue meters require a dedicated 2-wire, half duplex POTS line or dedicated port off a telephone switch. Connections between meters and RTU's are normally made through a fiber optic transceiver unit. The Utility will test and commission the revenue metering equipment. New York State requires all devices used in revenue metering applications to be PSC approved.

During the early design phase of the project, the Applicant is required to provide the Utility with maximum generator output in units of kVA or MVA and on-site minimum load without generation. The Applicant should make note of plans to expand the facility that will result in increased generation capacity. Because of the range between maximum output and minimum on site load when the facility is not generating, the Utility may require the use of high accuracy (0.15%), extended range CTs. Using expected maximum and minimum load information supplied by the Applicant, the Utility will determine the size of the CT's and, at the Applicant's request, provide final review of all revenue-grade metering devices before any PO's are issued.

For revenue metering applications, only wound type VTs are acceptable, capacitive type voltage transformers cannot be used. Metering VT/CT secondary windings must be dedicated and used for the sole purpose of supplying current and metering potential to the measuring elements of revenue meters. No other devices such as relays, panel meters, transducers, potential sensing devices, etc. are to be connected off the secondary windings of metering VTs and CTs. VTs with dual secondary windings are acceptable under the condition that one of the secondary windings is reserved and dedicated for revenue metering purposes and the connected burden on the remaining windings is kept to a minimum. The minimum conductor size for all secondary connections must be #10 AWG solid or stranded copper wire. Single point grounding of VT/CT secondary windings is required. The location of this ground must be at the meter test switch.

Secondary fusing of metering VTs is not permitted. The Utility requires certified factory test data for all revenue metering CTs and VTs. This test data must be specific to each device (i.e. representative or typical test data is not acceptable).

The Applicant is required to provide the Utility with the following information on all metering CTs and VTs:

**METER REVENUE GRADE VOLTAGE TRANSFORMERS (VT's):**

	Phase A	Phase B	Phase C
Acquisition Date:			
Manufacturer:			
Model:			
Serial Number:			
Dual Winding Flag (Y/N)			
Dual Ratio Flag (Y/N)			
In Service Ratio Vpr Vsec			
Rated % Accuracy (ANSI Class)			
Burden Rating			
Thermal Rating (VA)			
BIL Rating			
RCF @ Rated Bdn			
PACF @ Rated Bdn.			
RCF @ Zero VA			
PACF @ Zero			
VA:			

METER REVENUE GRADE CURRENT TRANSFORMERS (CT's):

	Phase A	Phase B	Phase C
Acquisition Date:			
Manufacturer:			
Model:			
Serial Number:			
Voltage Class			
Dual Ratio Flag (Y/N)			
In Service Ratio (XXXX:5)			
Rated % Accuracy (ANSI Class)			
Burden Rating			
BIL Rating			
TRF			
RCF @ FL			
PACF @ FL			
RCF @ LL			
PACF @ LL			

The above information, including factory certified test reports, must be sent to the Utility for review and acceptance. Note that instrument transformers are long lead-time items and should be ordered as early as possible. The instrument transformers can be shipped directly to the construction site.

Revenue meters on the other hand must be shipped directly from the manufacturer to the Utility Meter Labs so they can be programmed and tested before installation. Depending on the size of the generation and the existing circuit load, the Utility may require installation of hourly interval metering at the Utility source substation or other upstream device, at the Applicant's expense, so the Utility can accurately track circuit loading against generation output.

**c. Dedicated Phone Line**

The Applicant will be responsible for providing 2-wire, dial-up, dedicated telephone line(s) at the demarcation point adjacent to the Utility's metering location(s). The telephone line(s) shall provide the Utility with remote meter reading capability. The Applicant shall be responsible for all costs related to obtaining, installing, testing, commissioning and maintaining the telephone line(s) as those costs may be charged by the telephone company.

#### d. Instrument Transformers

Instrument transformers utilized for metering the Applicant's generation delivered to the Utility, or any service power required by the Applicant and supplied by the Utility will not be used for other functions (i.e., protective relaying, telemetering, etc.).

#### e. Cost Responsibility

The Applicant will be responsible for all costs associated with the installation, testing and maintenance of the metering equipment. The Utility will retain ownership of all metering equipment.

#### f. Data Telemetering

For Applicant's generating facilities with an installed capacity of greater than 2 MW net Kilowatt, Kilovar, Kilowatt-hour output, and bus voltage shall be required to be continuously (every two seconds) sent to the Utility's Energy Control Center. At the Utility's option, circuit breaker status, control and critical alarms may also be required. For Applicant's generating facilities 2 MW or less, data telemetering may be required at the Utility's option, depending on the interconnection system requirements.

#### g. Data Transmittal

This data may be transmitted, at the Utility's option, to a local Utility facility that has a Remote Terminal Unit (RTU) on the Utility's SCADA system for retransmission to the Utility's Energy Control Center. Alternatively, a Utility SCADA RTU may be installed directly at the Applicant's facility.

#### h. Dedicated Leased Phone Channel

If the Utility requires the Applicant to install an RTU at their facility, the Applicant must provide RTU communications to the Utility's Energy Control Center via a dedicated leased telephone channel. The Applicant shall obtain a leased telephone channel to a Utility connection point (located at an AT&T POP facility for all inter-LATA circuits).

For intra-LATA circuits, the Applicant shall connect to the Utility's Energy Control Center via a dedicated channel. The Applicant will be invoiced by the Utility for the connection between the AT&T POP facility and the Utility's Energy Control Center. The Applicant shall be responsible for ordering and paying for the telephone channel from the Applicant's generating facilities to the dedicated connection point.

#### i. Telemetry Information Requirements

A 485 communications interface will be connected to the billing meter to carry the analog measurements, via DNP 3.0 protocol, to the RTU communications port. Any IED's for the analog measurement of volts, watts, and reactive volt-amperes shall conform to ANSI standards C39.1, C39.5, and C37.90A. Instrument transformers shall conform to ANSI standard C57.13.

The Utility will inform the Applicant of full-scale values for volts, watts and vars. This information will determine the calibration range of the transducer and define scaling resistor requirements.

The Applicant shall provide pertinent telemetering information, as noted in Section 4.13, for the Utility's review and acceptance. The Applicant will be required to bring the analog value communications from the billing meter, the digital alarms and the breaker position, and the breaker control wiring to a demarcation block for the RTU. The Applicant will also prepare a point list diagram that describes the order of the signals brought to the terminal block. The Utility technicians will deliver the RTU, mount it next to the terminal block, wire from the terminal block into the RTU, and program the RTU.

#### j. Equipment and Cost Responsibility

The Applicant shall be responsible for all telemetering equipment and be required to pay for all the costs associated with its purchase, installation, operation, test and maintenance of this equipment.

#### k. Testing

After initial testing and acceptance, the Applicant is required to provide the Utility with certified transducer test results once every two years to coincide with the required protection system periodic test schedule.

### 18.0 Protection & Settings

A design requirement of a generation interconnection is that the generator cannot energize a deenergized NYSEG/RGE distribution or transmission circuit due to safety and potential equipment damage issues associated with backfeeding power into the de-energized circuit. The protection system shall be designed with interlocks and proper protective and synchronizing functions to ensure that there is proper voltage, frequency, and phase angle

conditions between the utility grid and the generation before the generation is permitted to operate in parallel. Automatic reclosing of the generation intertie equipment is not permitted.

#### a. Common Protection & Control

The owner shall provide appropriate protection and control equipment, including a protective device that utilizes an automatic disconnect device that will disconnect the generation from the utility system if the portion of the utility system that serves the generator is de-energized for any reason or for a fault in the Applicant's system.

The Applicant's protection and control equipment shall be capable of automatically disconnecting the generation upon detection of an islanding condition and upon detection of a utility system fault. The Applicant's protection and control scheme shall be designed to ensure that the generation remains in operation when the frequency and voltage of the utility system is within the limits specified by the required operating ranges. Upon request from the utility, the Applicant shall provide documentation detailing compliance with the requirements set forth in this document.

The specific design of the protection, control and grounding schemes will depend on the size and characteristics of the Applicant's generation, as well the generator owner's load level, in addition to the characteristics of the portion of the utility's system where the Applicant is interconnecting.

The Applicant shall have, as a minimum, an automatic disconnect device(s) sized to meet all applicable local, state, and federal codes and operated by over and under voltage and over and under frequency protection (see section 12.0 of this Bulletin). For three-phase installations, the over and under voltage function should be included for each phase and the over and under frequency protection on at least one phase. All phases of a generator or inverter interface shall disconnect for voltage or frequency trip conditions sensed by the protective devices.

Voltage protection shall be wired phase to ground for single phase installations and for applications using wye grounded-wye grounded service transformers. The settings below are listed for single-phase and three-phase applications using wye grounded-wye grounded service transformers or wye grounded-wye grounded isolation transformers. For applications using other transformer connections, a site-specific review will be conducted by the utility and the revised settings identified.

The requirements set forth in this document are intended to be consistent with those contained in IEEE Std 1547, Standard for Interconnecting Distributed Resources with

Electric Power Systems. The requirements in IEEE Std 1547 above and beyond those contained in this document shall be followed.

Refer to the NYSEG/RGE Distributed Generation webpage for the latest Smart Inverter standard settings.

The protection requirements described in this section are those necessary to protect the Utility system from the Applicant's facility and to minimize any adverse consequences to the Utility system. Illustrated in Figures 1,2, 3 and 4.1-3 are typical protection, control and grounding schemes that could be employed by the Applicant to meet those requirements. It should be noted, however, that the specific design of the protection, control and grounding schemes will depend on the size and characteristics of the Applicant's facility as well as the characteristics of the portion of the Utility system to which the Applicant is connecting the facility. The Applicant's relay calculations and settings associated with the interconnection protection must be submitted to the Utility for review and acceptance and should be done early enough in the project such that any changes identified during the Utility review do not adversely affect schedules.

Facilities connected to the Utility transmission system shall be capable of coordinating their underfrequency protective relaying with the NPCC Underfrequency Load Shedding Curve. The Applicant's facilities shall be capable of remaining connected (not trip or be damaged) through major system disturbances until both stages of the Utility underfrequency load shedding scheme have had a chance to operate and reduce system load. The Applicant shall take whatever steps are necessary during the design of their facility to ensure that they can withstand sustained underfrequency operation. During system conditions where local area load exceeds generation, NPCC Emergency Operation Criteria requires a program of phased automatic underfrequency load shedding of up to 30% of area load to assist in arresting frequency decay and to minimize the possibility of a widespread system collapse. In conformance with the Emergency Operating Criteria, the facility shall be required to remain connected to the system during the frequency decline to allow the objectives of the NPCC automatic load shedding program to be achieved.

For facilities proposed for interconnection to circuits that are equipped with underfrequency load shedding relays, these relays will be required to be relocated from the circuit of origin to another circuit on the Utility system at the Applicant's expense.

## 19.0 Inspection, Certification, Testing, and Maintenance Requirements

The Applicant's electrical equipment and interconnection wiring shall be in accordance with applicable portions of the NEC, NESC, and all other applicable codes, as required. The Applicant shall obtain a written statement from the qualified New York State Licensed P.E. utilized to design the Applicant's protection system, certifying that the Applicant's facility, as designed and constructed, is in complete accordance with all applicable codes. This statement shall have the P.E.'s seal affixed on it. A copy of the statement shall be furnished to the Utility.

The Utility also requires the Applicant to obtain certification that the Applicant's electrical equipment and interconnection wiring is in accordance with all applicable codes, from an authorized electrical inspection organization acceptable to the Utility. Names of such organizations will be provided upon request. Once the Applicant has selected one of the Utility-approved inspection organizations and the inspection process has been initiated, the selected inspection organization must be retained by the Applicant throughout the inspection process until certification is granted. The Utility must be presented with written evidence showing that all electrical equipment and interconnection wiring at the Applicant's facility has been inspected and certified by a qualified inspection organization prior to the beginning of initial inspection and testing.

### a. Test Requirements

The Applicant shall arrange for qualified personnel to perform calibration and functional tests on the fault and isolation protection systems, along with tests on CTs and VTs utilized in the protection systems, in accordance with typical Utility industry practices. The tests that shall be performed during the initial and periodic tests are detailed in the Section 19.0 "Tests to be Performed." The Applicant shall provide the name and qualifications of the individual(s) who will be performing the tests, for the Utility's acceptance.

### b. Initial Inspection and Tests

Prior to the initial parallel operation of the Applicant's equipment with the Utility system, or after modifications are made to plant already interconnected with the Utility system, Utility personnel must be present for the protective relay and associated equipment calibration and functional tests, as well as the inspection of the Applicant's equipment. The Applicant will be invoiced for the costs for Utility personnel to inspect and witness these tests. The Utility requires a minimum of two (2) weeks notice prior to witnessing the Applicant's

protection system calibration and testing. It is not the Utility's policy to lease test equipment or aid during testing.

The Applicant shall provide the Utility a copy of all certified test reports for the initial inspection and tests of the Applicant's equipment. Certified test reports must be submitted to the Utility prior to synchronization of the Applicant's generation with the Utility's system.

### c. Periodic Tests

Periodic calibration and functional tests of the Applicant's isolation protection and protection for detecting faults on the Utility system and within the plant are required on a four-year basis for microprocessor-based relays that include self-test algorithms, or on a biennial (once every two years) basis for all other relays. Copies of certified test reports for microprocessor-based relays that include self-test algorithms shall be submitted to the Utility every six years. Copies of certified test reports for all other relays shall be submitted to the Utility on a biennial basis. Also, a battery maintenance log (if applicable) shall be submitted to the Utility on a biennial basis. For relays installed in accordance with the "NPCC/NERC Criteria for the Protection of the Bulk Power System," maintenance intervals shall be in accordance stated criteria. For the Applicant's testing and inspection to be considered certified and accepted by the Utility, it must be performed under the direction of a qualified New York State licensed P.E. Additionally, test results and Applicant's equipment data must be stamped by the qualified P.E. witnessing or performing the checkout and testing. The Applicant is responsible for ensuring that the P.E. witnessing or performing equipment calibration and start-up testing on the Applicant's behalf has an extensive background in this field. Periodic tests may be witnessed by the Utility at the Utility's option in lieu of P.E. certified tests. The Utility also reserves the right to inspect any of the Applicant's equipment upon prior notice.

## 20.0 Tests to be Performed

The following tests shall be performed for the initial and periodic tests:

### a. Current Transformer Test (initial tests only)

Field-verify that the CT ratio and polarity are correct (Most easily accomplished during assembly). Verify the integrity of the CT insulation and secondary circuit using a 500-volt megger, and check for proper secondary ground connection.

#### b. Voltage Transformer Test (initial tests only)

Field-verify that the VT ratio is correct. Verify that correct voltages are present at the switchboard locations. Verify the integrity of the VT insulation and secondary circuit using a 500 volt megger and check for proper ground connection.

#### c. Calibration Test

The purpose of relay testing is to verify that a relay will respond to the appropriate inputs in the required manner as determined by the setting. The actual input quantities must be applied to the relay in accordance with the manufacturer's instruction book. The input quantities shall be determined by the relay settings. The settings must be consistent with those submitted by the Applicant and accepted by the Utility. When testing electromechanical relays with time dials, sufficient test points must be taken to define the relay curve. The calibration data shall be documented in a legible format and contain all pertinent relay data. (Utility test forms may be used and are available upon request.)

#### d. Functional Test

A protective relay cannot function by itself. It is reliant upon other equipment such as instrument transformers, auxiliary relays, circuit breakers, interconnecting cables and control power to perform its protective function. The purpose of functional testing is to verify that the overall operation of the relay and its associated equipment is in accordance with its intended design. Therefore, it is beneficial for the Applicant to develop specific test procedures with well-defined parameters for use during testing.

The functional tests must, at a minimum:

- a. Verify that end devices from each protective scheme operate from every possible source of trip potential (including, if applicable, confirmation that the communications system operates the transfer trip end devices).
- b. Verify that the end device contacts complete the trip circuit to the breaker, actually trip the breaker, and operate all associated auxiliary relays in the close and trip circuit.
- c. Check for correct operation of synchronism check relay, block of close, and block of reclose.
- d. AC Control Circuit - Verify circuit breaker trips upon loss of ac control power.

e. DC Control Circuit - Verify correct operation of dc control devices in the absence of ac supply. Battery systems shall be checked for proper recovery time after a circuit breaker has been operated.

## 21.0 Battery Maintenance

Battery systems must be serviced and maintained on a regular basis by the Applicant. Each battery should be visually inspected for corrosion, damage and level of electrolyte. Voltage and specific gravity readings shall be taken for each cell in accordance with manufacturer's instructions and properly documented in a battery maintenance log.

## 22.0 Acceptance for Interconnection

### **Requirements for Interconnection**

The Utility will notify the Applicant in writing that the Applicant's facility is accepted for interconnection to the Utility's system only after ALL the following items have been completed:

- **Protection Design**

Formal acceptance of the Applicant's proposed protection design by the Utility.

- **PE Certification**

Applicant has obtained a written statement from a qualified New York State licensed P.E. certifying that the facility, as constructed, is in complete accordance with all applicable codes, with a copy of the certification provided to the Utility.

- **Certificate of Inspection**

Applicant's facility has been inspected and certified by a Utility-approved inspection organization, with a copy of the certification provided to the Utility.

- **Utility Inspection**

The Utility has inspected and accepted the Applicant's protection and interconnection equipment.

- **Testing Completion**

Applicant has satisfactorily completed all calibration and functional tests on the protection system(s), witnessed by the Utility.

- **Safety and Operating Procedures**

The Applicant is familiar with the Utility's safety and operating procedures, switching and tagging procedures, etc. Copies of these procedures will be provided by the Utility, and the Applicant will be required to attend a scheduled training seminar conducted by the Utility.

- **Other**

All other terms of the Agreement are satisfied (i.e., insurance, etc.)

**Interconnection/Synchronization of Applicant's Facility**

Upon receipt of the Utility's written acceptance of the Applicant's facility for interconnection to the Utility system, the Applicant shall provide a minimum of two (2) weeks prior written notice of the date that the facility will synchronize to the Utility system. Just prior to interconnection with the Utility's system, the Applicant shall verify that the rotational phase sequence of the Applicant's voltage matches that of the Utility system. Immediately after interconnection, a load test shall be performed to verify:

- The correct polarity and phasing of inputs to the directional relays under load conditions.
- The correct current and voltage magnitudes in the CT and VT secondary circuits, under load conditions.

**Maintenance Requirements**

The Applicant's Facility Disconnect Switch, protection and control equipment, interrupting device and synchronizing and phasing equipment shall be maintained on a regular basis by qualified personnel in accordance with industry and/or manufacturer's practices. The Utility reserves the right to inspect such equipment after interconnection of the Applicant's system. A maintenance schedule and log shall be maintained and made available for inspection by the Utility upon request.

**Applicant's System Modifications**

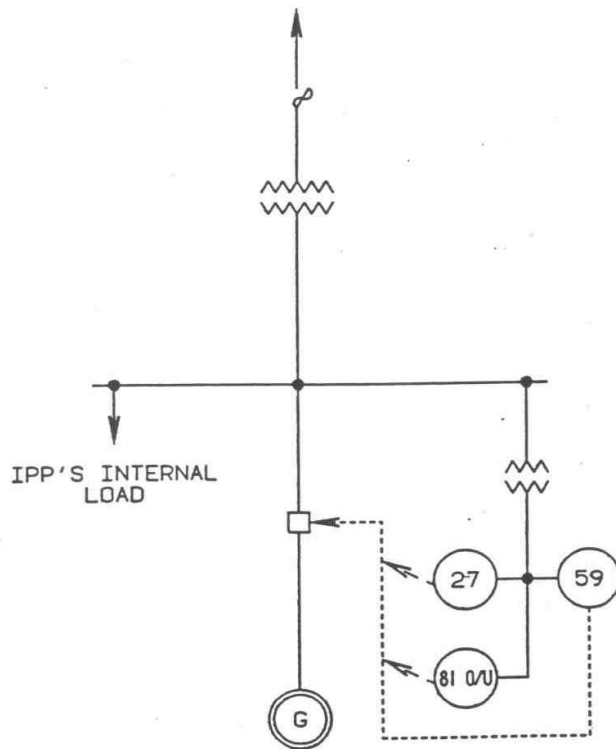
After the Utility's Formal Acceptance and Acceptance for Interconnection for parallel operation of the Applicant's facility, the Applicant shall not make any modifications or additions to its system without review and Formal Acceptance by the Utility. The Applicant shall furnish the Utility with all documentation clearly indicating the modifications or additions being proposed. The Utility must review and Formally Accept these proposed modifications or additions prior to their implementation.



The Applicant shall implement any fault and/or isolation protection system modifications identified by vendor defect reports, which would upgrade the interconnection protection to published vendor specifications. Upgrades involving devices that are installed solely for the protection of the Applicant's equipment may be implemented at the discretion of the Applicant.

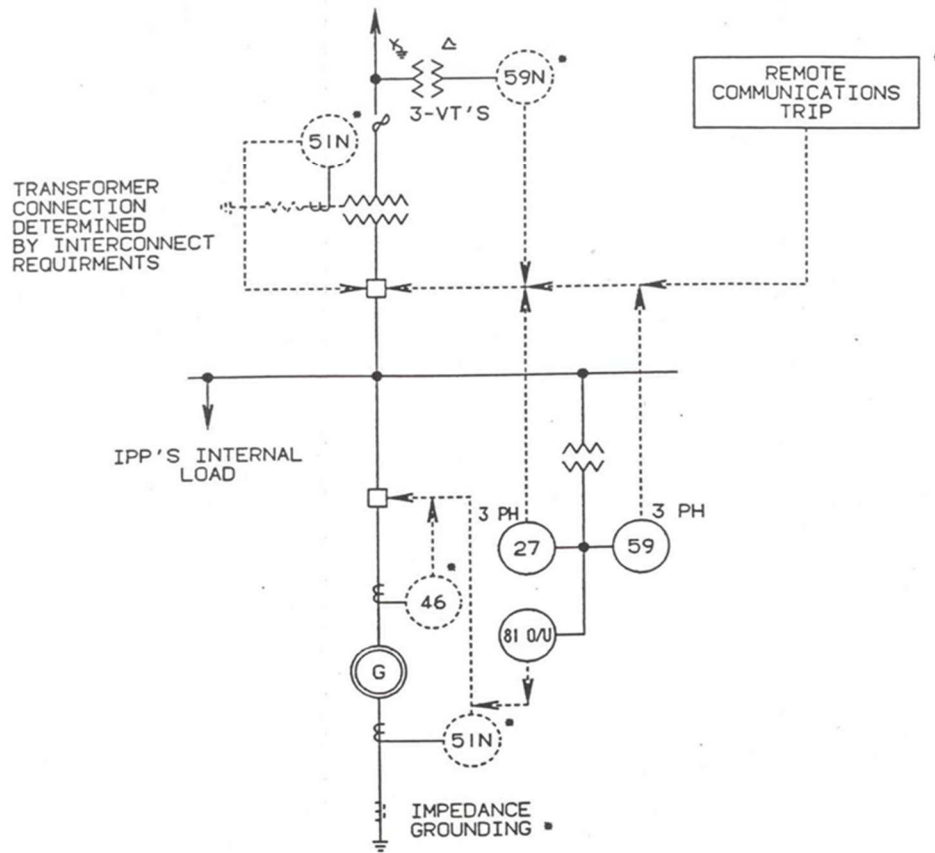
## 23.0 Interconnection Diagrams

FIGURE I  
SINGLE - PHASE INDUCTION GENERATOR



<u>DEVICE</u>	<u>FUNCTION</u>	<u>PROTECTION</u>
81 O/U	OVER/UNDER FREQUENCY	ISOLATION
27	UNDERVOLTAGE	FAULT AND ISOLATION
59	OVERVOLTAGE	ISOLATION

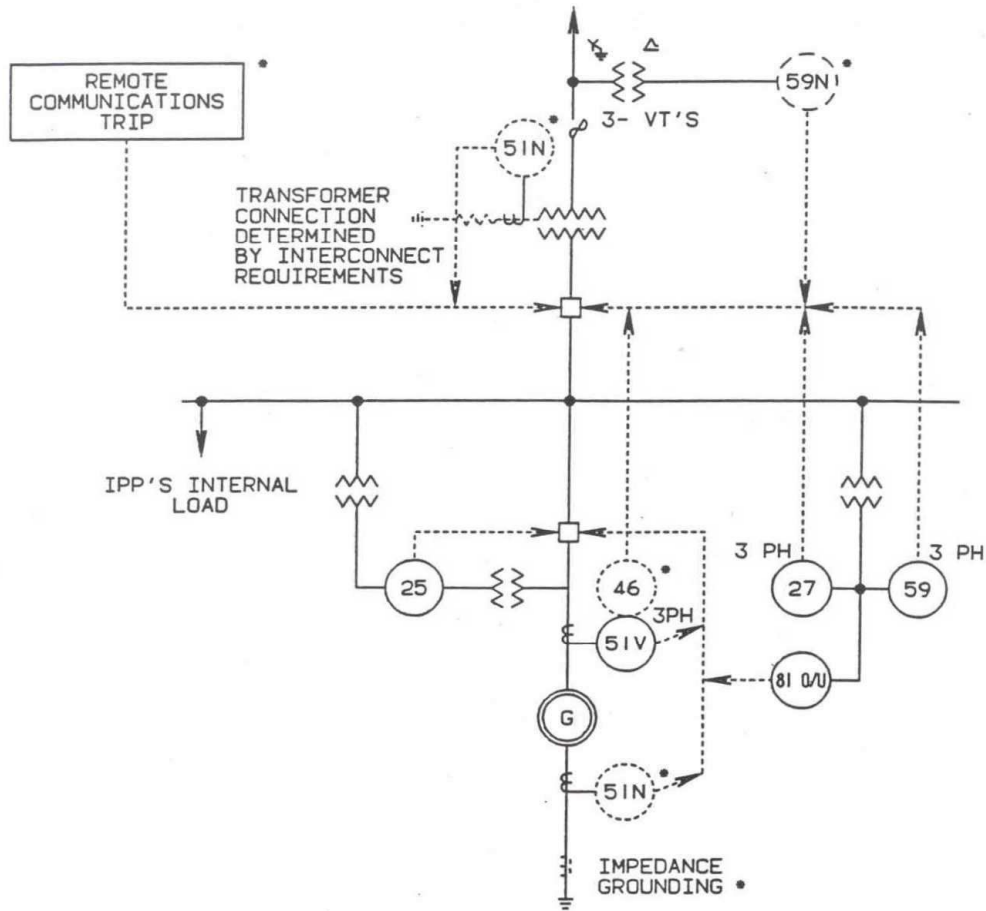
FIGURE 2  
THREE - PHASE INDUCTION GENERATOR



<u>DEVICE</u>	<u>FUNCTION</u>	<u>PROTECTION</u>
81 O/U	OVER/UNDER FREQUENCY	ISOLATION
27	UNDervOLTAGE (3-PHASE)	ISOLATION AND FAULT
51N•	GROUND TIME-OVERCURRENT	PHASE-TO-GROUND FAULT AND OPEN CONDUCTOR
59	OVERVOLTAGE (3-PHASE)	ISOLATION
59N•	ZERO-SEQUENCE VOLTAGE	PHASE-TO-GROUND FAULT AND OPEN CONDUCTOR
46•	NEGATIVE SEQUENCE	OPEN CONDUCTOR

•NOTE: ADDITIONAL PROTECTION/EQUIPMENT THAT MAY BE REQUIRED, DEPENDING ON SPECIFICS OF INTERCONNECTION.

FIGURE 3  
SYNCHRONOUS GENERATOR

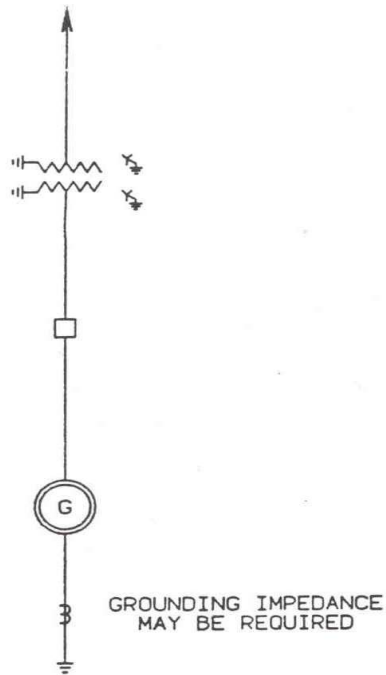


DEVICE	FUNCTION	PROTECTION
81 O/U	OVER/UNDER FREQUENCY	ISOLATION
27	UNDERVOLTAGE (3-PHASE)	ISOLATION
51V	PHASE TIME-OVERCURRENT W/VOLTAGE RESTAINT	3-PHASE AND PHASE-TO- PHASE FAULT
51N	GROUND TIME-OVERCURRENT	GROUND FAULT AND OPEN CONDUCTOR
25	SYNCHRONIZING	OUT-OF-SYNC CLOSE
59	OVERVOLTAGE (3-PHASE)	ISOLATION
59N	ZERO-SEQUENCE VOLTAGE	GROUND FAULT AND OPEN CONDUCTOR
46	NEGATIVE SEQUENCE	OPEN CONDUCTOR

•NOTE: ADDITIONAL PROTECTION/EQUIPMENT THAT MAY BE REQUIRED, DEPENDING ON SPECIFICS OF INTERCONNECTION.

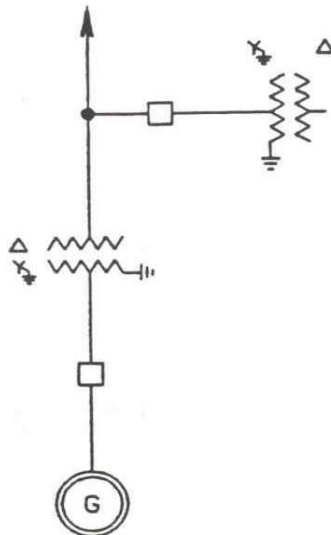
24.0 Methods Of Providing Ground Sources

FIGURE 4.1  
METHODS OF PROVIDING GROUND SOURCES



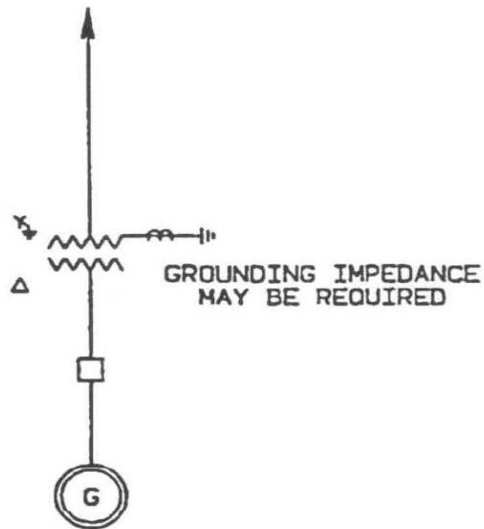
WYE-GROUNDED, WYE-GROUNDED STEP-UP TRANSFORMER  
 GENERATOR CONNECTED WYE-GROUNDED  
 (PREFERRED)

FIGURE 4.2  
METHODS OF PROVIDING GROUND SOURCES



GROUNDING TRANSFORMER  
WYE-GROUNDED/DELTA (SHOWN), OR ZIG-ZAG

FIGURE 4.3  
METHODS OF PROVIDING GROUND SOURCES.



WYE-GROUNDED, DELTA STEP-UP TRANSFORMER

## 25.0 GLOSSARY OF DEFINITIONS AND DESCRIPTIONS

Whenever used in this Bulletin with initial capitalization, the following terms shall have the meanings specified in this section. Terms used in this Bulletin with initial capitalization that are not defined in this section shall have meanings specified in the current New York State Standardized Interconnection Requirements and Application Process (SIR) or applicable interconnection procedures of the NYISO OATT.

### **Applicant**

An individual, company, corporation, limited partnership, etc., developing a DER project to be interconnected to the Utility's system, with the legal authority to enter into agreements regarding the interconnection of DER facilities.

### **Blade Tip Height**

The distance from the ground to the highest operating point of a wind turbine's rotor and blade assembly.

### **Bulletin or Bulletin 86-01**

This document, Bulletin 86-01, "Requirements for the Interconnection of Distributed Energy Resources."

### **Business Day**

Monday through Friday, excluding federal holidays.

### **Certified Test Report**

A report generated by a recognized commercial testing company and signed by a licensed electrician or professional engineer.

### **Confidential Information**

Any information that is defined as confidential by the applicable interconnection procedures.

### **Coordinated Electric System Interconnection Review (CESIR)**

Any studies performed by NYSEG/RGE to ensure that the safety and reliability of the electric grid with respect to the interconnection of DER as discussed in this document.

### **Direct Transfer Trip (DTT)**

Remote operation of a circuit breaker by means of a communication channel.

**Distributed Energy Resource (DER)**

Non-utility owned distributed generation facilities or energy storage systems or a combination thereof seeking to operate in parallel with the NYSEG/RGE electric system.

**Distributed Generation (DG)**

Generation facilities supplementing on-site load or noncentralized electric power production facilities interconnected at the distribution side of an electric power system.

**Energy Control Center (ECC)**

A Utility control center whose purpose is to monitor and operate the electric transmission or distribution center.

**Energy Storage System (ESS)**

A commercially available mechanical, electrical, or electrochemical means to store and release electrical energy, using battery chemistries for grid-scale applications, and its associated electrical inversion device and control functions that may stand alone or be paired with a distributed generator at a PCC.

**Engineering Review Process**

The application review process for Applicants under the Utility Non-SIR Process.

**FERC**

Federal Energy Regulatory Commission.

**Final Technical Review**

Part of the Engineering Review Process for Utility Non-SIR Applicants, it is a detailed review of the Applicant's internal AC and DC elementary and control design, protection system and proposed device settings.

**Final Acceptance Letter**

Written acceptance by the Utility; contingent upon the Utility's satisfaction with the inspection of the Applicant's facilities, testing of the Applicant's protection equipment, and the fulfillment of all contractual obligations required prior to the interconnection of the Applicant's facility.

**Floodplain**

In New York State, a floodplain is land susceptible to being inundated by water from any source, as defined by the New York State Department of Environmental Conservation ([dec.ny.gov](http://dec.ny.gov)). In most cases it is an area adjacent to a stream, river, lake, or ocean that experiences flooding during periods of high water. Flood plains are often delineated on flood maps on the FEMA website ([www.fema.gov](http://www.fema.gov)).

### **Generating Facility Capacity**

The net seasonal capacity of a generating facility and the aggregate net seasonal capacity of a generating facility where it includes multiple energy production devices.

### **Loss**

Any and all losses relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the Indemnified Party's performance or non-performance of its obligations under the Interconnection Agreement (>20MW) on behalf of the indemnifying Party, except in cases of gross negligence or intentional wrongdoing by the Indemnified Party.

### **Material Modification**

A Modification to a facility that may have adverse impacts on subsequently queued applications in the interconnection queue and as further defined in the NYS SIR.

### **Metering Equipment**

All metering equipment installed or to be installed at the Generating Facility pursuant to the applicable interconnection agreement at the metering points, including but not limited to instrument transformers, MWh-meters, data acquisition equipment, transducers, remote terminal unit, communications equipment, phone lines, and fiber optics.

### **Modification**

A change to the ownership, equipment, equipment ratings, equipment configuration, or operating characteristics of the Applicant's facility, or to schedules associated with the facility as described in the application.

### **NERC**

North American Electric Reliability Corporation or its successor.

### **Net Metering**

The term ‘net metering service’ means service to an electric consumer under which electric energy generated by that electric consumer from an eligible on-site generating facility and delivered to the local distribution facilities may be used to offset electric energy provided by the electric utility to the electric consumer during the applicable billing period. Eligibility and requirements for Net Metering are defined in New York State Public Service Law §66-j and §66-l.

**NPCC**

Northeast Power Coordinating Council or its successor.

**NYISO**

New York Independent System Operator, Inc.

**NYSEG**

New York State Electric & Gas Corporation.

**NYS PSC**

New York State Public Service Commission, the governing body that regulates NYSEG/RGE’s rates and service.

**OATT**

The NYISO Open Access Transmission Tariff.

**Parallel Operation**

All electric power generation that is connected to a Utility substation, transmission and/or distribution facility that is part of the Utility electric system, whether exporting energy to the utility system or not. In accordance with IEEE 1547, generation intended to be interconnected to the Utility system for 0.1 seconds or longer will be considered to be in Parallel Operation.

**Party or Parties**

NYISO, Transmission Owner, or Applicant or any combination thereof.

**Point of Common Coupling (PCC)**

The point, as set forth in the applicable interconnection agreement, where the Applicant’s facilities connect to the NYSEG/RGE electric system.

**Point of Interconnection (POI)**

The point, as set forth in the applicable interconnection agreement, where the Attachment Facilities connect to the New York State Transmission System.

#### **Preliminary Technical Review**

Part of the Engineering Review Process for Utility Non-SIR Applicants, it is a review of the Applicant's proposed system capacity, impact of the proposed generation on the Utility system, system characteristics and general system regulation to determine if the interconnection is viable.

#### **Protection System Impact Study**

Part of the Engineering Review Process for Utility Non-SIR Applicants, it is a study of the impact of the proposed DER or generation project on the Utility's protection and control system.

#### **Reliability Standards**

The requirements and guidelines of the Applicable Reliability Councils (NERC, NPCC and NYSRC), and the Transmission District, to which the Applicant's facility is directly interconnected, as those requirements and guidelines are amended and modified and in effect from time to time; provided that no Party shall waive its right to challenge the applicability or validity of any requirement or guideline as applied to it in the context of the applicable Interconnection Procedures.

#### **Remote Terminal Unit (RTU)**

A device located in a substation or generating station used to monitor various electrical quantities and/or status of electrical equipment that is telecommunicated to an operator at a Utility Energy Control Center, and/or to provide control functions of remote equipment to the operator.

#### **RGE**

Rochester Gas and Electric Corporation.

#### **Site Control**

Documentation reasonably demonstrating: (1) ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing the Generating Facility; (2) an option to purchase or acquire a leasehold site for such purpose; or (3) an exclusivity or other

business relationship between Applicant and the entity having the right to sell, lease or grant Applicant the right to possess or occupy a site for such purpose.

### **Standardized Interconnection Requirements (SIR)**

The New York State Standardized Interconnection Requirements and Application Process for New Distributed Generators Rated 2 MW or Less Connected in Parallel with Utility Distribution Systems.

### **Supervisory Control and Data Acquisition (SCADA)**

The system used to telemeter analog and status points of data collected by RTUs to the Utility Energy Control Center.

### **System Protection Equipment**

The equipment, including necessary protection signal communications equipment, required to (1) protect the New York State Transmission System from faults or other electrical disturbances occurring at the Generating Facility or (2) protect the Generating Facility from faults or other electrical system disturbances occurring on the New York State Transmission System or on other delivery systems or other generating systems to which the New York State Transmission System is directly connected.

### **Utility**

Utility or utility shall mean NYSEG and/or RGE.

### **Utility Non-SIR Process**

The Utility process for reviewing and interconnecting DER or other generator interconnection projects larger than 5 MW up to 20MW that do not fall under the NYISO process.