Bulk Electric System Facility and End User Interconnection Requirements to the LIPA Transmission System

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Table of Contents

1. Introduction 1
2. Reference Documents 2
3. Applicability 3
4. Definitions 4
5. Transmission Interconnection Technical Design Requirements ..5
   5.1. Load Interconnection Procedures 5
   5.2. Transmission Interconnection Procedures 6
6. Generating Criteria 6
   6.1. Responsibilities during Emergency Conditions 7
7. Maintenance of Facilities 7
8. Site Access 7
9. Safety 8
10. Point of Interconnection (POI) 8
11. Transmission Line Configurations 9
12. Structures 10
13. Grounding 10
14. Ferroresonance 11
15. Insulation Coordination 11
16. Ratings 12
17. Reliability and System Security 12
18. Protective Relaying 12
19. Transmission Reclosing 15
20. Metering 15
    20.1 Location 15
21. Supervisory Control and Data Acquisition (SCADA) 16
22. Operations 17

23. Reactive Power Control 18
24. Future Modifications 18
25. Delivery Point Power Factor 18
26. Delivery Point Power Quality 18
27. Delivery Point Metering 18
28. Delivery Point Auto-Restoration 19
29. Delivery Point Parallel Operation 19

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1. Introduction

This document has been prepared to identify the technical requirements for connecting new facilities to the LIPA Bulk Electric System. It applies to new connections or substantial modifications of existing generating units transmission interconnections on the bulk electric system (i.e., qualified changes to existing interconnections as defined by the Planning Coordinator) as well as existing and new end user delivery points on the bulk electric system. This document is written to comply with NERC Standard FAC-001 (most recent) Facility Interconnection Requirements, which requires Transmission Owners responsible for the reliability of the interconnected transmission systems to maintain and make available a Facility Interconnection Requirements document. The NERC standards require those entities seeking to add facilities or connect to the interconnected transmission system or seeking to make a qualified change to existing interconnections as defined by the Planning Coordinator, to comply with the Facility Interconnection Requirements document. The NERC Standards are posted on NERC's web site (http://www.nerc.com/standards).

Rather than give detailed technical specifications, this document provides a general overview of the functional objectives and requirements to be met in the design of facility connections. These requirements are written to establish a basis for maintaining reliability, power quality, and a safe environment for the general public, power consumers, maintenance personnel and the equipment through the planning horizon. This Facility Interconnection Requirements document is revised from time to time to reflect changes or clarifications in planning, operating, or interconnection policies. This document is not intended to be a design specification.

The LIPA planning process is designed to ensure that LIPA's transmission system will have sufficient capability for LIPA to meet the expected loads at distribution substations/delivery points, to ensure conformance with applicable NERC Standards and associated performance requirements and to fulfill LIPA’s contractual obligations with other entities to receive and deliver power. Final design of facility connections to the LIPA transmission system will be subject to LIPA review and approval on a case-by-case basis. Finally, any entity seeking to connect to the Bulk Electric System in New York should review the NYISO interconnect documents and tariff.

A utility/customer may elect to connect to LIPA through a "delivery point" connection or an "interconnection point" connection.

2. Reference Documents

Facility owners seeking to interconnect with Bulk Electric System elements in the LIPA territory should reference the following documents as well:

- **NYISO Transmission Expansion and Interconnection Manual** - Focuses primarily on the roles and interactions of the NYISO, the Transmission Owners, and Eligible Customers (as described in the NYISO (OATT); and interactions with other organizations, such as the New York State Reliability Council (NYSRC) and the Public Service Commission (PSC), are also shown. This document is available on the NYISO web site.
- **NYISO Attachment P – Transmission Interconnection Procedures** - applies to Transmission Projects proposing to interconnect to the New York State Transmission System.
- **PSEG Long Island Transmission Planning Criteria** - The criteria and guidelines which PSEG Long Island Planning Staff utilize in the Planning horizon.
- **Requirements for Generating Facility Interconnection to the LIPA Transmission System** - Provides additional requirements for Power Producing or Energy Storage Resources seeking to interconnect.
- **LIPA Revenue Metering Requirements for Generating Facilities Interconnecting to the LIPA Transmission System-** Provides metering installation requirements.
- **Performance Requirements for Transmission Connected Resources Using Non- Synchronous Generation -** Provides additional requirements for inverter-based resources seeking to interconnect
- **Long Island Power Authority ("LIPA") Substation Design Criteria –** Identifies applicable codes and practices for design, construction, modification and/or installation of LIPA Substations and associated facilities impacting LIPA Substations
- **LIPA Board Policy – Construction of Transmission and Distribution**

Projects (PDF page #s 27 – 34)

- **NYISO Reliability Analysis Data Manual –** Identifies data required to be submitted to the NYISO to carry out technical analysis in support of New York State bulk electric system reliability
- **Performance Requirements for Large Loads Connected to the LIPA System** – Performance requirements for energy consuming facilities defined as Large Loads within
- **PSEG Long Island Specifications and Requirements for Electric Installations: Red Book (Specifications and Requirements for Electric Installations)** - Answers many electric service questions frequently asked by customers, electricians, architects, engineers, builders, and inspectors

PSEG Long Island and LIPA documentation can be found on the PSEG Long Island website: https://www.psegliny.com/aboutpseglongisland/legalandregulatory . Additionally, the Red Book can be found on the following page: https://www.psegliny.com/buildingrenovationservices/codesandstandards/redbook .

The Interconnection process and the procedures for coordinated studies and procedures for notification regarding new interconnections or existing interconnections seeking to make a qualified change are provided by the NYISO as the Planning Authority within the New York Control Area.

Applicable sections of the NYISO OATT summarize the procedures for confirming that new Facilities or existing Facilities seeking to make a qualified change are within the NYISO's (i.e., Balancing Authority) Area.

3. Applicability

This document applies to only those elements designated as Bulk Electric System elements, where Bulk Electric System is defined by NERC.

Nothing in this document is intended to supersede the PSEG Long Island Transmission Planning Criteria. If there is a conflict, the NYISO Transmission Interconnection Procedures and any documents referenced in the Interconnection Agreement, as applicable, will control.

4. Definitions

4.1. **Delivery Point** shall mean a point of connection between LIPA's transmission system and another entity's system or facilities which ultimately delivers the power to individual customers' loads. Two characteristics may be generally used to distinguish delivery points from interconnection points: i) the protective schemes of the integrated transmission system are designed to either entirely or partially suspend service to a delivery point by disconnecting a transmission facility that serves such delivery point from the transmission system; ii) power normally flows only in one direction across the delivery point (i.e., from the transmission system to the delivery point), and thus the protective schemes at the delivery point may be designed taking into account this characteristic.

4.2. **Interconnection Point** shall mean a point of connection between two entities' respective transmission systems. Interconnection points are normally operated in parallel with the transmission systems such that it is possible for power to flow in either direction. Protection systems for interconnection points are designed to prevent and/or minimize the possibility of an event within one of the systems affecting or cascading into the other system.

4.3. **Transmission System** shall mean those elements that meet the definition of Bulk Electric System elements established by NERC.

4.4. **Point of Interconnection** shall mean the point where the Attachment Facilities connect to the New York State Transmission System or to the Distribution System, as set forth in Appendix A to the Standard Interconnection Agreement.

4.5. **Point of Change of Ownership** shall mean the point where the Interconnection Customer's Attachment Facilities connect to the Connecting Transmission Owner's Attachment Facilities, as set forth in Appendix A to the Standard Interconnection Agreement.

5. Transmission Interconnection Technical Design Requirements

5.1. Load Interconnection Procedures

All Load interconnections shall disclose details of their request including but not limited to MW, MVAR, Power factor and locations of facilities as a formal load letter request. Special consideration shall be made to the amount of load and the proposed Point of Interconnection as outlined in the PSEG Long Island Specifications and Requirements for Electric Installations: Red Book, Chapter 10.8. Proposed loads must adhere to the PSEG Long Island Transmission Planning Criteria and PSEG Long Island Performance Requirements for Large Loads Connected to the LIPA System as applicable. The applicability of NYISO load interconnection procedures and the processes to support a proposed load interconnection are outlined in the NYISO Transmission Expansion and Interconnection Manual, section 3.5.

5.1.1. *Load balance*

Proposed load interconnections to the LIPA transmission system shall be balanced (power factors and the phase current or line currents of each of the 3-phases are essentially equal).

5.1.2. *Motor load*

A facility that has greater than 10 MW of total motor load shall provide a listing of all motors larger than 10 HP with type of motor (induction or synchronous), motor locked-rotor current, and type of mechanical load (e.g., fan, compressor, pump, etc.).

5.1.3. *Large motors*

A facility owner that proposes to interconnect a large induction or synchronous motor (larger than 5,000 HP) in parallel with the LIPA transmission system shall provide to LIPA detailed motor data to support modeling of the proposed interconnection in power flow / voltage drop, short circuit and stability type studies.

5.1.4. *Feeders*

Proposed amount of terminations or feeders shall be provided by the interconnection customer. PSEG Long Island recommends more than one (1) load tie for increased redundancy and reliability.

5.2. Transmission Interconnection Procedures

5.2.1. The NYISO Attachment P - Transmission Interconnection Procedures document outlines the processing of Transmission Interconnection Applications pertaining to a Transmission Project proposing to interconnect to the New York State Transmission System.

6. Generating Criteria

It is the responsibility of the facility owner to provide all devices necessary to protect the customer's equipment from damage by abnormal conditions and operations that might occur on the interconnected power system. The facility owner shall protect its equipment from overvoltage, undervoltage, overload, short circuits (including ground fault conditions), open circuits, phase unbalance, phase reversal, surges from switching and lightning, over and under frequency conditions, and other injurious electrical conditions that may arise on the interconnected system. Responsibility for protection of the Producer's generating system against possible damage resulting from parallel operation lies with the Producer.

It is the responsibility of the facility owner to provide for the orderly re-energization and synchronization of their high voltage equipment to other parts of the electric system. Appropriate operating procedures and equipment designs are needed to guard against out-of-synch closure or uncontrolled energization. Each facility owner is responsible for knowing and following all applicable regulations, industry guidelines, safety requirements, and accepted practice for the design, operation and maintenance of the facility.

Unbalance currents and voltage are to be controlled by each party on their respective side of the interconnection. However, it should be realized that switching devices, such as breakers and switches, are three phase devices and can fail with only one or two poles closed. It is the responsibility of the facility owner to protect their own

equipment such as generators or transformers from damaging negative sequence currents or voltage.

6.1. Responsibilities during Emergency Conditions

All facilities within the LIPA region are responsible for maintaining voltage and frequencies within agreed upon limits. All operators of facilities interconnected to the transmission systems in the LIPA region are required to communicate and coordinate with the PSEG Long Island/LIPA System Operator. During emergency conditions, the facility operator shall adjust reactive power, switch facilities in or out, or reduce end user load as directed by the PSEG Long Island/LIPA System Operator.

7. Maintenance of Facilities

The maintenance of facilities is the responsibility of the owner of those facilities. Adjoining facilities on the interconnected power system are to be maintained in accordance with accepted industry practices and procedures. Each party is to have a documented maintenance program ensuring the proper operation of equipment. PSEG Long Island/LIPA will have the right to review maintenance reports and calibration records of equipment that could impact the LIPA system if not properly maintained. LIPA is to be notified as soon as practicable about any out-of-service equipment that might affect the protection, monitoring, or operation of interconnected facilities.

Maintenance of facilities interconnected to the LIPA transmission system shall be done in a manner that does not place the reliability and capability of the LIPA transmission system at risk. Planned maintenance must be coordinated and scheduled with the PSEG Long Island/LIPA System Operator. LIPA switching and safety procedures shall be strictly adhered to when maintenance is being performed on an interconnection.

8. Site Access

There are situations where some equipment that is owned by LIPA is located within the Customer's facility. This is often required for data acquisition or metering. In these cases, installed equipment owned by LIPA will be clearly identified as such on the appropriate station drawings, on the reference documents and at the site. Site access is to be provided to PSEG Long Island employees where LIPA equipment is located within the

Customer's facility. Substations must have full PSEG Long Island/LIPA-only access that is available 24 hours a day.

9. Safety

Safety is of utmost importance. Strict adherence to established switching, tagging and grounding procedures is required at all times for the safety of personnel. Any work carried out within a facility shall be performed in accordance with all applicable laws, rules, and regulations and in compliance with Occupational Safety and Health Administration (OSHA) and good utility practice. Operating Instructions between parties shall be established which will detail ownership and switching jurisdiction as well as the utility's governing process "General Rules for Safe Operation of the Electric Transmission System". Automatic and manual disconnect devices are to be provided as a means of removing all sources of current to any particular element of the power system. Only trained operators are to perform switching functions within a facility under the direction of the responsible dispatcher or designated person.

10. Point of Interconnection (POI)

An interconnection junction box may be required to connect control circuits and signals between the parties at a point of demarcation. Fiber optics is the preferred means of interconnection of control circuits. Metallic control cables will present problems if the distances are great, ground potential rise during faults can cause failures when these signals are needed the most. Long cable voltage drops can make control systems unreliable or produce inaccurate signal levels and therefore are to be avoided.

Facilities interconnecting to the LIPA transmission system that are not solely operated and controlled by the PSEG Long Island/LIPA System Operator must have an isolating device installed at the point of interconnection. This isolating device, typically a disconnect switch, must be capable of physically and visibly isolating the facilities from the LIPA transmission system. This isolating device must be lockable in the open position by LIPA and must be under the ultimate control of the PSEG Long Island/LIPA System Operator. PSEG Long Island, on behalf of LIPA, shall install, control, operate and maintain (at the Producer's expense) a visible manual load break or motor-operated disconnecting device, to be owned by LIPA, on LIPA's side of the point(s) of

interconnection.

Metering equipment should be provided as close to the interconnection point as practicable.

11. Transmission Line Configurations

A connection to a point on a transmission line shall require the installation of a substation at the point of connection and be located on land provided by Producer. A minimum three breaker substation, including a dedicated breaker for the producer, and a breaker for each side of the transmission line will be required. Three terminal lines, including those created by parallel individual producers, are not acceptable.

The crossing of overhead circuits will not be permitted for connecting to a new facility. Connections of overhead transmission circuits within the right of ways shall only be to the outside circuit closest to the facility. Introducing underground transmission segments to existing overhead circuits is strongly discouraged.

Some new connections to the LIPA transmission system may require one or more LIPA transmission circuits to be looped through the new facility. The design and ratings of the new facilities and the transmission loop into them shall not restrict the capability of the transmission circuits or impair LIPA's contractual transmission service obligations.

Long taps to feed connected load directly tied to a transmission line are to be avoided. This presents coverage problems to the protective relay system due to infeed.

Any proposal that requires the retirement or removal of LIPA equipment shall require LIPA approval. Any individual project installing cable shall be fully compensated unless otherwise approved by LIPA.

Any interconnection configuration should not restrain LIPA from taking a LIPA transmission line out of service for just cause. PSEG Long Island shall not be forced to open a transmission line for an adjacent interconnected generator or transmission line to obtain an outage. Manual switching or clearing electrical faults within the non-LIPA facility shall not curtail the ability of PSEG Long Island/LIPA to transmit power or serve its customers.

Reliable station and breaker arrangements will be used when there are new or substantial modifications to existing LIPA switching stations affecting transmission lines rated at or above 69kV. Please refer to the document “Requirements for Generating Facility Interconnection to the LIPA Transmission System” posted on the PSEG Long Island website.

12. Structures

Transmission line supporting structures and foundations (where applicable) for facilities connected to the LIPA transmission system shall be designed to meet the requirements set forth in the National Electric Safety Code (NESC, IEEE C2 Latest Revision), PSEG Long Island/LIPA Storm Hardening Standards, PSEG Long Island/LIPA Construction Standards, and other applicable codes and standards.

Substation structures and foundations for facilities connected to the LIPA transmission system shall be designed to meet the requirements of applicable ASCE, AISC, and ACI codes and standards as well as the New York State Building code, PSEG Long Island/LIPA Construction Standards, and other applicable codes and standards. Substation structures, foundations, and buildings are considered Risk Category IV with Exposure Category D under the requirements of ASCE 7 (latest revision) with a basic wind speed of 150 mph (3 second gust, as defined by ASCE 7).

Full geotechnical exploration and analysis of the proposed site will be required including, but not limited to, soil borings, cone penetration tests, soil contamination, pile requirements, ground resistivity, and other explorations as required by the New York State Building Code, ASCE standards, and additional codes and standards that may apply.

13. Grounding

Each interconnection substation must have a ground grid that solidly grounds all metallic structures and other non-energized metallic equipment. This grid and grounding system shall be designed to meet the requirements of ANSI/IEEE (most recent), IEEE Guide for Safety in AC Substation Grounding and ANSI/IEEE (most recent), National Electrical Safety Code. The transmission line overhead static wire shall be connected to the substation ground grid.

All transmission line structures must be adequately bonded and grounded to control step and touch potential in compliance with the NESC, and to provide adequate lightning performance. All transmission lines should have a continuous ground wire/counterpoise, not relying on earth as the primary conductor, to transfer fault current between structures and to substations and plant switchyards. Any exceptions to a continuous ground wire shall be verified with a system study. All ground wires and bond wires must be adequately sized to handle anticipated maximum fault currents and duty without damage.

Transmission interconnections may substantially increase fault current levels at nearby substations and transmission lines. Modifications to the ground grids of existing substations and static wires of existing lines may be necessary. The interconnection studies will determine if modifications are required and the scope and cost of the modifications.

The neighboring utility must have an effectively grounded transmission system.

14. Ferroresonance

Ferroresonance occurs on the power system under certain system configurations that may damage high voltage equipment. This phenomenon is usually caused when Potential Transformers (PT) are tied to a bus or line stub that may be energized through breakers having capacitors in parallel with the main contacts. Since interconnection facilities may contain shared equipment, such as metering PT's and high voltage breakers, care should be used to avoid configurations that could cause ferroresonance.

15. Insulation Coordination

Insulation coordination is the selection of insulation strength. Insulation coordination must be done properly to ensure electrical system reliability and personnel safety. Basic Surge Level (BSLs), surge arrester, conductor spacing and gap application, substation and transmission line insulation strength, protection, and shielding shall be documented and submitted for evaluation as part of the interconnection plan.

LIPA's standard is to shield substations and transmission lines from direct lightning strokes and to provide line entrance arresters at transmission line terminals. Surge arresters are also applied at major components and systems.

Interconnection facilities to be constructed in areas with salt spray contamination or other type of contamination shall be properly designed to meet or exceed the performance of facilities not in a contamination area with regard to contamination caused outages.

16. Ratings

The ratings of facilities are the responsibility of the owner of those facilities. Ratings of facilities must conform to the process required by NERC Facility Standards.

Conditions resulting in a de-rating of existing LIPA facilities is not permitted.

17. Reliability and System Security

PSEG Long Island designs and operates the LIPA transmission system to meet applicable NYSRC, NPCC and NERC Planning and Operating Standards. The planned transmission system is designed to meet the thermal, voltage, stability and short circuit performance requirements outlined in the "PSEG Long Island Transmission Planning Criteria", considering the specified contingency criteria. The analysis of extreme events examines post-contingency steady state conditions as well as stability, overload, cascading outages and voltage collapse. If the analysis concludes there is cascading caused by the occurrence of extreme events, an evaluation of possible actions designed to reduce the likelihood or mitigate the consequences and adverse impacts of the event(s) shall be conducted. The effect of extreme contingencies is evaluated when changes are planned in the transmission system. The design of new transmission connections should take into account and minimize, to the extent practical, the adverse consequences of extreme contingencies.

18. Protective Relaying

This section provides general protection requirements for all types of LIPA transmission system interconnections as described in the Introduction section of this document. For specific protection and control requirements applicable to conventional generators

and/or inverter-based resources interconnections, please refer to the document titled "Requirements for Generating Facility Interconnection to the LIPA Transmission System." If there are any conflicts between these two documents, the latter shall prevail for conventional generators and/or inverter-based resources interconnections.

Utility grade, transmission level protective relays and fault clearing systems are to be provided on the interconnected power system. All protective relays should meet or exceed ANSI/IEEE Standard C37.90. Adjoining power systems may share a common zone of protection between two parties. Compatible relaying equipment must be used on each side of the point of ownership within a given zone of protection. The design must provide for adequate sensitivity between coordinating devices, as well as optimized fault-clearing speed and sensitivity, in order to power system security and reliability.

The short circuit currents on the transmission system are available from LIPA on request.

Each facility which is to be operated in parallel with the LIPA system shall submit its protection and control designs to PSEG Long Island for review and acceptance. The specific design requirements of the protection system depend on the site-specific considerations.

LIPA Bulk Electric System transmission circuits are protected with two independent protective relay systems – system 1 and system 2. Each transmission protection system shall have dual high speed protective relaying that operates with no intentional time delay for 100% of the specified zone of coverage. On transmission circuits, this is accomplished through the use of a communication channel. Time delayed backup protection functions, which do not rely on communications, are also used in both systems. Dual breaker failure protection schemes must always be applied at the bulk transmission level.

Backup protective functions which include overreaching protection functions shall provide additional coverage for primary line and remote equipment. Time and sensitivity coordination shall be maintained to prevent mis-operations.

A power source for tripping and control must be provided at substations by two DC battery systems. The batteries are to be sized with enough capacity to operate all tripping devices after eight hours without a charger. An under voltage alarm must be provided for remote monitoring by the facilities owners who shall take immediate action to restore

power to the protective equipment.

Mechanical and electrical logic and interlocking mechanisms are required between interconnected facilities to ensure safe and reliable operation. These include, but are not limited to, breaker and switch auxiliary contacts, undervoltage and synch-check relays, and physical locking devices.

A direct transfer trip scheme is required for many installations. It is primarily used for breaker failure protection and anti-islanding schemes. Direct fiber is the preferred means of communication. A leased E-Line communication line is a suitable alternative if direct fiber is not feasible.

Depending upon the location of the transmission interconnection, it may be necessary to install special relaying or transfer trip equipment.

Connections to the LIPA transmission system which introduce the possibility of LIPA load being isolated with non-LIPA generation must be evaluated to assure safety and quality of service. When there is a potential for LIPA load to become islanded with non-LIPA generation, a special protective isolation scheme may be required.

At the completion of construction, functional tests of all protective equipment shall be performed by a qualified testing company acceptable to LIPA, and PSEG Long Island reserves the right to witness such tests. If these tests are successful, and the protective relay settings have been correctly applied, LIPA shall permit the interconnection to be energized.

All additions or changes required to protective relay and control equipment on the LIPA system shall be installed by LIPA at the Facility Owner's expense. All additions or changes to relay and control equipment required at the point of interconnection shall be paid for and installed by the Facility Owner.

Entities connecting to the LIPA transmission system shall investigate and keep a log of all protective relay operations and mis-operations as required by the latest revision of NERC Standards.

Entities connecting to the LIPA transmission system must have a maintenance program for their protection systems. Documentation of the protection maintenance program shall be supplied to LIPA. Test reports as outlined in the maintenance program are to be

made available for review by LIPA. At intervals described in the documented maintenance program and following any apparent malfunction of the protection equipment, the entity shall perform both calibration and functional trip tests of its protection equipment.

19. Transmission Reclosing

It is LIPA's practice to automatically and manually test its transmission lines following breaker operations for system faults. This is required to minimize customer outage time and maintain system stability. Manual reclosing and sectionalizing may also occur. Interconnected facilities must not interfere with LIPA's ability to quickly restore transmission lines following temporary or permanent system faults.

Any entity wishing to interconnect with LIPA must consider the implications of automatic reclosing in their design.

Automatic reclosing on interconnected transmission lines between utilities is handled on a case-by-case basis. Transmission interconnections between utilities may be restored from either direction depending upon a reclosing practice agreed to by the utilities involved.

20. Metering

20.1 Location

20.1.1 Metering shall be located in LIPA substation

20.1.2 Where metering cannot be accommodated in existing substations due to space constraints, Metering shall be permitted to be located on Producer's property in dedicated LIPA area with 24/7 Access and arrangement of double key provision which can be accessible by LIPA at all times.

20.1.3 Metering requirements are described in LIPA's Revenue Metering Requirements for Generating Facilities Interconnecting to the LIPA Transmission System.

20.1.4 For any additional information please refer to the "Revenue Metering Requirements for Customer Facilities Connecting to the PSEG Long Island

Transmission and Sub-Transmission System" document on the PSEG Long Island website.

21. Supervisory Control and Data Acquisition (SCADA)

Each installation needs to be evaluated separately for SCADA requirements because of the many possible contractual agreements and interconnection configurations. Specific designs will be developed to meet those requirements. Dual ported remote terminal units (RTUs) accessed by both parties may be used, provided the appropriate security levels are implemented. Supervisory control of breakers, switches and other devices via SCADA is to be provided to only one responsible party.

A SCADA system RTU shall be required at each site. The RTU shall provide LIPA with supervisory trip control of the interconnection breaker(s) and all other devices in series with these breakers. It shall also provide monitoring of key operating parameters of the Facility Owner's facility which shall include, but not be limited to:

21.1. Status indication of interconnection breaker(s), and all other devices that are in series with these breakers.
21.2. Status indication of various alarms such as loss of DC to interconnection breaker(s) or trip circuit monitoring for each trip circuit, relay failure alarm, loss of relaying communication channel for each relay system, DTT sent and received for each relay system, 87L cut-off switch alarm for each switch
21.3. Analog telemetry of current, voltage, watts, VARS, power factor, and frequency for all interconnection breakers.
21.4. Pulse accumulation of MWHR (in/out) and MVARHR (in/out) for the facility.

Additional status and analog control points shall be determined by LIPA dependent on the Producer's interconnecting resource technology, system configuration, market participation status, and other relevant characteristics.

The location of the RTU shall depend on the proximity of the Facility Owner's facility to the LIPA interconnecting substation. For non-synchronous generators, LIPA shall be provided with remote Emergency Stop capability. For additional SCADA requirements,

please refer to the document titled “Requirements for Generating Facility Interconnection to the LIPA Transmission System.”

22. Operations

Operational procedures are to be established in accordance with NYISO, NPCC and NERC requirements. Each party shall designate operating representatives to address:

22.1. Lines of communications.
22.2. Maintenance coordination.
22.3. Actions to be taken after de-energization of interconnected facilities.
22.4. Other required operating policies.

All parties are to be provided with current station operating diagrams. Common, agreed upon nomenclature is to be used for naming stations, lines and switches. Updated diagrams are to be provided when changes occur to interconnected facilities.

The operator of facilities interconnecting to the LIPA transmission system must not perform any switching that energizes or de-energizes portions of the LIPA transmission system or that may adversely affect the LIPA transmission system without prior approval of the PSEG Long Island/LIPA System Operator. Operators of facilities interconnecting to the LIPA transmission system must notify the PSEG Long Island/LIPA System Operator before performing any switching that would significantly affect voltages, power flows or reliability in the LIPA transmission system.

Interconnections between LIPA's transmission system and other transmission systems are normally operated in parallel unless otherwise agreed. However, if any operating condition or circumstance creates an undue burden on the LIPA Transmission System, LIPA shall have the right to open the interconnection(s) to relieve its system of the burden imposed upon it. Prior notice will be given to the extent practical. Each party shall maintain its system and facilities so as to avoid or minimize the likelihood of disturbances that might impair or interrupt service to the customers of the other party.

23. Reactive Power Control

Entities interconnecting their transmission system with LIPA's transmission system shall supply the reactive power required on their own system, except as otherwise mutually agreed. LIPA shall not be obligated to supply or absorb reactive power for the other party when it interconnects with the LIPA transmission system.

24. Future Modifications

Any changes that affect an interconnection must be reviewed in advance. These include but are not limited to modifications to the metering or protection scheme as well as associated settings after the interconnection project has been completed. Information about expected increased load flows or higher fault currents levels due to system changes must be provided in a timely manner.

25. Delivery Point Power Factor

Please refer to the document “Requirements for Generating Facility Interconnection to the LIPA Transmission System” posted on the PSEG Long Island website.

26. Delivery Point Power Quality

Generation of harmonics should be limited to values prescribed by IEEE Standard 519 when measured at the interconnection point of ownership. Additionally, the LIPA transmission system should not be subjected to harmonic currents in excess of 5% of a transformer's rated current as stated in ANSI/IEEE Standard C57.12.00.

27. Delivery Point Metering

LIPA is to own, operate and maintain the metering installation equipment, including the instrument transformers, secondary conductors, cables, meters and transducers. LIPA

is to own the meters and have access to them at any time, regardless of whether the meter location falls on the LIPA or Customer side. If the interconnection facilities are owned by the end user, and that party does not own the instrument transformers or meters, then a structure and a location for mounting metering transformers and recording devices are to be provided by the facility owner. End user devices are not to be connected directly to potential or current transformer secondary's used for revenue metering.

28. Delivery Point Auto-Restoration

End user facilities are energized in the direction from LIPA to the load. Owners of interconnected load facilities are to be aware of LIPA's automatic reclosing practices as stated in Section XVIII. Ride-through capability and heavy motor inrush currents should be assessed in the design stages of the facility.

29. Delivery Point Parallel Operation

The distribution and transmission facilities behind the designated delivery point with LIPA's transmission system shall be operated as a radial system only. Operation in a mode which would tie two or more delivery points together in a manner which would cause the system behind the delivery points to be operated as a parallel network to the LIPA transmission system is prohibited without the express written permission of LIPA. The installation of such protective equipment may be required by LIPA to ensure that parallel operation is automatically interrupted within the time frame allowed by LIPA's standard.