COMMON OPERATING INSTRUCTIONS
FOR
Linden VFT

Includes the Following Facilities:

VFT Switching Station (PSE&G)
Linden VFT LLC
Linden Cogen 345 kV Ring Bus
Goethals Substation (Con Edison)

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**REVISIONS**

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<tr>
<td>3</td>
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<td>4</td>
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I. OVERVIEW – LINDEN VFT

A. Definitions

**East Coast Power:** owner of the Linden Cogeneration plant.

**GIS:** SF6 Gas Insulated Switchgear.

**GS:** grounding switch

**Linden Cogeneration Plant or Linden Cogen:** A combined cycle cogeneration facility located within the Bayway refinery in Linden, New Jersey. Linden 1-5 connects to NYISO, Linden 6 connects to PJM.

**Linden VFT or Linden VFT, LLC:** The owner of the Linden VFT facility and a Transmission Owner in PJM.

**MOD:** Motor operated disconnect switch

**RT or rotary transformer:** The electrical machine at the heart of the VFT facility which achieves the required phase angle displacement between rotor and stator voltages to control real power flow through the device.

**Station Light and Power or SL&P:** 277/480 or 120/208 V auxiliary power for protection and control systems, lighting, HVAC, etc. Also known as Station Service Power.

**Tosco:** Former owner of the Bayway refinery, currently owned by ConocoPhillips. Also, common name for the 230 kV switchyard used for connection of Bayway refinery load and Linden 6 generation to the PSE&G 230 kV system.

**VFT channel:** One complete 105 MW-rated transmission connection including 345-17 and 230-17 kV transformers, one rotary transformer, and associated drive motor, 17 kV capacitor banks, and related auxiliary equipment.

**VFT Coordinator:** The Linden VFT, LLC person acting as liaison between Linden Cogen, PJM, NYISO, PSE&G, and ConEdison, whose activities may include coordinating outages and maintenance or repair activities.

**VFT facility or Linden VFT Facility:** The three VFT channels, including rotary transformers, VSU transformers, 230 and 345 kV GIS bus, and protection and control systems located south of the Linden Cogen water tanks.

**VFT Operator:** The entities(s) or person(s) controlling the VFT facility.

**VFT Switching Station:** A three breaker air insulated 230 kV ring bus switchyard located north of the Linden Cogen water tanks that facilitates connection of the VFT facility to the PSE&G 230 kV transmission system.

**VFT or Variable Frequency Transformer:** Term used to describe the rotary transformer and drive motor system that positions its rotor along with its controls and ancillary equipment and switchgear.
B. Description

1. The Linden VFT facility is a continuously controllable Merchant Transmission Facility located in Linden, NJ which provides 315 MW of transmission transfer capability between PJM and NYISO control areas. The owner of the facility, Linden VFT, LLC, is a PJM Transmission Owner (TO) under the control of PJM, providing transmission service under the PJM Open Access Transmission Tariff. The facility is also designated as a Scheduled Line in NYISO.

2. A PJM-NYISO connection overview is shown in Appendix A.

3. The Linden VFT is comprised of three 105 MW Variable Frequency Transformers operated in parallel which serve to incrementally increase power flows between PJM and NYISO via the existing 345kV circuit (G23) between the Linden Cogen ring bus and Con Edison’s Goethals Substation. The interconnection concept is shown in Appendix B.

C. The Linden VFT Power System

1. PSE&G 230 kV Interconnection
   a. The Linden VFT is connected via a ~380’ solid dielectric cable designated as the D-2256 line to the VFT Switching Station, a three breaker 230 kV ring bus constructed near the 230kV right-of-way between Warinanco and Tosco Substations. The VFT Switching Station is connected via 230kV overhead transmission lines to Warinanco and Tosco. The VFT Switching Station is owned, operated, and maintained by PSE&G.
   b. The single line diagram of the VFT Switching Station is shown in Appendix C.

2. Linden VFT
   a. A one-line diagram of the Linden VFT facility is shown in Appendix D. The major components of the Linden VFT facility include: (i) three VFT power blocks, each including a Rotary Transformer (RT) and accompanying drive and drive motor, stator breaker, rotor breaker, drive breaker and shunt capacitor bank and breaker, 345kV VFT Step Up transformer and 230kV VFT Step Up transformer (VSU); (ii) 230kV GIS equipment; (iii) 345kV GIS equipment; and (iv) ancillary station service, control, protection, metering and communications equipment.
   b. The Variable Frequency Transformer rotary units operate at a nominal voltage of 17kV. Three 105 MW units operate in parallel. The units behave similarly to Phase Angle Regulating transformers but provide a continuously controllable phase shift for any angle. The drive system of the rotary units adjusts the angle and speed of the rotary transformer to regulate power flow through the VFT.
3. Con Edison 345 kV Interconnection
   a. The VFT is connected to a breaker position in the 345kV gas insulated substation (GIS) ring bus at Linden Cogen via a ~1,000’ solid dielectric 345kV cable designated V-3022. The GIS ring bus is connected via Linden Cogen’s existing two circuit 8,500-foot underground 345 kV fluid-filled pipe type cable system to Con Edison's Goethals Substation, located in Staten Island.
   b. The Linden Cogen-Goethals cable system is comprised of two separate cables, G23L and G23M, terminated at two separate positions on the Goethals Substation ring bus.
   c. The incremental Total Transmission Capability (TTC) of the combined G23L and G23M circuits’ cable systems is 1286 MW at 0.85 power factor with cooling and fast circulation of the dielectric fluid in the pipes.
   d. Each of the G23L or G23M circuits are separately rated at 643mW at 0.85 power factor.

D. PSE&G equipment

1. The new 230kV VFT Switching Station includes:
   a. A three breaker 230 kV ring bus with overhead line terminations from Tosco and Warinanco Substations (circuits U-2273 and S-2271, respectively).
   b. Three 230kV SF₆ circuit breakers, each with two manually operated breaker disconnect switches.
   c. Two motor operated line disconnects with grounding switches (one on each incoming line U-2273 and S-2271).
   d. Two motor operated disconnects on the Linden VFT bus, on either side of a revenue metering installation and to isolate the 230 kV cable connecting to the Linden VFT facility (line D-2256).
   e. Revenue metering (CT/VT) at the Linden VFT Point of Interconnection.
   f. CTs, CCVTs, surge arrestors, SCADA equipment, etc., for protection, control and metering functions.

2. Additional facilities installed on the PSE&G transmission system:
   a. Relaying and communications system upgrades at Warinanco and Tosco Substations to integrate the Linden VFT Switching Station into the transmission system.
3. The Linden VFT Point of Interconnection with the PSE&G system is the air terminal connection on the 230 kV terminations of the D-2256 cable located within the VFT Switching Station. This is also the line of demarcation for switching authority.

E. Linden Cogen Equipment

1. The Linden Cogen 345 kV ring bus is an indoor gas insulated switchgear (GIS) substation located adjacent to the Linden Cogen plant administration building. This ring bus includes the following equipment:

   a. Seven (7) 345 kV SF6 GIS breakers

   b. Two (2) Incoming pipe-type cable connections for the two (2) parallel G23L and G23M cables

   c. Solid dielectric cable to GIS connection for the incoming V-3022 cable from the Linden VFT facility

   d. Four (4) GIS bus connections to four (4) GSU transformers for Linden Cogen generating units 1-5.

2. Protective relays for the Linden Cogen ring bus are in the Linden Cogen control room located on the 2nd floor of the Linden Cogen administration building and on a mezzanine in the Cogen GIS building.

3. The Linden VFT connection point to Linden Cogen equipment is at the bus side of removable links located on the solid dielectric cable terminations for the V-3022 cable. This is also the physical point that defines the boundary between the PJM and NYISO systems.

F. Con Edison equipment

1. The Goethals Substation is a 345kV outdoor ring bus utilizing SF6 breakers.

2. The Goethals ring bus consists of:

   a. Eight (8) 345kV SF6 circuit breakers. Each with two motor operated disconnect switches.

   b. Motor operated line switches for FDR 25, FDR 26, FDR21, FDR 22, A-2256 as well as the G23L and G23M circuits

   c. Revenue metering on each the Linden Cogen interconnections (cables G23L and G23M)

   d. CTs, CCVTs, surge arrestors, SCADA equipment, etc., for protection, control and metering functions.
G. Operator Control and Communications

1. The Linden VFT facility is normally controlled remotely by PJM. It can also be controlled locally by Linden VFT.
   
a. Local monitoring and control of the VFT facility is from the VFT control room located on the ground floor of the Linden Cogen administration building. It is anticipated that VFT facility operation from this location would only take place under abnormal or emergency circumstances.
   
b. A full control and monitoring station is also located within the VFT facility itself and can be used during abnormal operations, testing, and maintenance as required.
   
c. When remotely operated by PJM, the VFT facility will receive a power level set point from PJM, updated approximately every 2 seconds, which will cause the VFT facility to automatically follow a schedule set by PJM, including ramping between power levels as schedules change. Internal VFT control algorithms will distribute power among the three VFT power blocks as appropriate. Additional detail on remote operation can be found in the document Remote Operations Procedures for Remote Dispatch of Linden VFT Facility by PJM.

2. The Linden VFT control room is located on the ground floor of the Linden Cogen administration building.
   
a. Authorized operators will provide for regular visual and operational inspections and monitoring of the VFT facility, including receiving alarm information and providing emergency response as required.
   
b. Linden Cogen operators do not have any responsibilities or access to advance VFT scheduling information except as may be required for the safe operation of the facilities.
   
c. Access to the VFT operations office is restricted through a controlled access door and limited to authorized operators and their supervisors.

3. The Linden VFT is connected via dedicated communication channels to PJM, NYISO and Con Edison.
   
a. Ethernet connection from VFT “Plant Data Highway” to PJM router and modem (data and voice) in VFT facility interfaced to Verizon via Fiber Optic Converter. (PSE&G accesses data via its ICCP links to PJM.)
   
b. Ethernet interface from VFT “Plant Data Highway” to redundant Con Edison routers in VFT facility interfaced to Verizon via Fiber Optic Converter (NYISO access data via ICCP links to ConEdison).
   
c. Analog channel from VFT 345kV Bus meter to NYISO “Phase 1” RFL equipment in VFT facility interfaced to Verizon via Fiber Optic Converter.
d. A schematic diagram of the Operational Telemetry and Revenue Metering is presented in Appendix F. Appendix G is a diagram of the overall interconnection showing metering locations and functions.

II. OWNERSHIP, MAINTENANCE, AND OPERATION

A. Linden VFT

1. Linden VFT, LLC owns, maintains, and operates the Linden VFT facility, the 345kV cable connection to the Linden Cogen 345kV GIS ring bus and the 230kV cable connection to the VFT Switching Station.

2. Linden VFT, LLC owns and maintains the fiber optic channels and associated equipment between the Linden VFT facility and the Linden Cogen 345kV GIS ring bus and the Fiber Optic channels and associated equipment between the VFT facility and the VFT Switching Station. The demarcation point between the public telephone network and Linden VFT facilities is located in the communications room on the first floor of the Linden Cogen administration building.

B. Linden Cogen

1. The Linden Cogen 345kV GIS ring bus is owned, operated, and maintained by Linden Cogen. The existing 345 kV pipe-type cable system that runs from Linden Cogen to Con Edison's Goethals Substation is maintained and operated by Linden Cogen. (Linden Cogen owns the New Jersey portion of the cable; Con Edison owns the New York portion of the cable.)

2. Linden Cogen also owns, operates and maintains equipment for circulating and cooling dielectric fluid surrounding the cables of the existing G23 345 kV cable system to Goethals.

3. Linden Cogen owns, maintains, and operates the fiber-optic communication cable between the Linden Cogen 345kV GIS ring bus and Goethals Substation.

C. Con Edison

1. Con Edison owns, maintains and operates Goethals Substation.

D. PSE&G

1. PSE&G owns, maintains and operates the VFT Switching Station.

E. Ownership and Maintenance Matrix

1. The following table indicates the ownership and maintenance responsibilities of the Linden VFT, Con Edison and PSE&G for the individual components of the Linden VFT. Also refer to Appendix G, Jurisdictional Boundaries and Metering.
<table>
<thead>
<tr>
<th>Location/Facility</th>
<th>PSE&amp;G O&amp;M</th>
<th>Linden VFT O&amp;M</th>
<th>Linden Cogen O&amp;M</th>
<th>Con Edison O&amp;M</th>
<th>Comments</th>
</tr>
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<tr>
<td>230 kV Taps to VFT Switching Station</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>Located on transmission line easement from refinery</td>
</tr>
<tr>
<td>VFT Switching Station</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>Switching station located on easement from refinery</td>
</tr>
<tr>
<td>VFT Switching Station SL&amp;P Supply</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>PSE&amp;G owns 480V-120/208 V transformers in station; VFT owns 480 V feeds from VFT MCCs to transformers</td>
</tr>
<tr>
<td>D-2256 230 kV Cable</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VFT Facility</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>Con Edison is metering authority for interchange meter used in settlement located in VFT facility</td>
</tr>
<tr>
<td>V-3022 345 kV Cable</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linden Cogen Ring Bus</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>Indoor; located adjacent to Cogen admin building</td>
</tr>
<tr>
<td>G23 Cables and Cooling System</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>Cable ownership boundary w/Con Edison is at NY/NJ state line</td>
</tr>
</tbody>
</table>
2. Any changes to the O&M responsibilities requires the written approval of all parties

III. DISPATCHING JURISDICTION

A. General

1. The VFT facility is under dispatch control of PJM.

2. Use of available transmission transfer capacity of the VFT facility will be scheduled by PJM.

3. PJM will provide dispatch orders for the aggregate of schedules submitted to PJM by third-party customers using the VFT facility, similar to how PJM dispatches generation. Under normal operations PJM will provide a power level set point directly to the VFT facility control system, enabling dispatch of the VFT facility with no operator intervention. Linden VFT, LLC has no role in the scheduling process.

4. Transmission scheduling rights for the Linden VFT facility were allocated to customers (the “Primary Rights Holders”) pursuant to an “open season” auction process. If not used by the Primary Rights Holders, the allocation of Linden VFT capacity will be released for use by third parties pursuant to a secondary market operated by PJM utilizing PJM’s Open Access Same-time Information System (“OASIS”).

5. The point of connection or interchange point between PJM and NYISO is the VFT facility’s connection to the 345kV Linden Cogen ring bus, as monitored by revenue metering at the 345kV VFT bus (also see Appendix G).

B. Linden VFT

1. The Linden VFT is normally under remote operational control of PJM. Operating status of the key major electrical devices and electrical data is made available to PSE&G, PJM, Con Edison, NYISO and Linden Cogen as discussed in Section VI, ‘SCADA’.

2. The Linden VFT facility, with PJM as the Transmission Operator, has control authority of all equipment within the VFT facility, including all 17kV, 230kV and 345kV breakers, disconnects, grounding switches and ancillary equipment.
3. During normal operations, dispatching of a VFT channel is accomplished by operation of its 17kV breakers and manipulation of its rotor angle by its drive motor, so there is no need to operate the 230kV or 345kV devices. Indeed, since Station Service power for the facility is normally fed via aux transformers tapped off of the 17kV busses of unit 1 and 3 (upstream of their 17kV breakers) on the PSE&G side of the VFT, it is preferred to leave the 230kV bus energized when the VFT is in a standby or offline condition. On the 345kV side, normal practice is for breaker 5.1S to be closed (and the entire 345kV bus energized) when in standby or offline so the VFT has an established bus to synchronize to when called upon to start.

4. For maintenance or extended outage situations the VFT facility may need to be isolated from the 230kV or 345kV busses, or both. Since there is no load-breaking switching device on the 230kV bus, careful coordination between the Linden VFT Coordinator and the PSE&G Electric System Operator is required. This is discussed in Section VII, “Removing Equipment from Service”.

C. PSE&G

1. The PSE&G Electric System Operator, with PJM as Transmission Operator, is the switching and tagging authority for the PSE&G Transmission System and has jurisdiction of the VFT Switching Station. This includes associated DC control, AC supply, switches, relays, and metering. (See Appendix F – PSE&G Switching and Tagging Jurisdiction.)

2. Operating status of the key major electrical devices and electrical data is made available to Linden VFT, PJM, Con Edison and NYISO as discussed in Section VI, ‘SCADA’.

3. Any communication concerning the operation of PSE&G equipment will be made with the PSE&G Electric System Operator using the contact list in Section VIII - Communications.

D. Con Edison

1. Goethals Substation is under operational control of Con Edison with NYISO as the Transmission Operator.

2. Operating status of the key major electrical devices and electrical data is made available to Linden VFT, PJM, PSE&G, Con Edison and NYISO as discussed in Section VI, ‘SCADA’.

3. Any communication concerning the operation of Con Edison equipment will be made with the System Operator of Con Edison using the contact list in Section VIII - Communications.

4. Under certain emergency conditions Con Edison may issue dispatch orders to the Linden VFT Operator directly. These conditions are discussed further in section V, Abnormal Operation.
IV. NORMAL OPERATION

The Linden VFT facility is a 315 MW merchant transmission facility that is connected to the VFT Switching Station located near the Linden Cogen facility in Linden, New Jersey. The Linden VFT injects/withdraws power into/from the New York control area via interconnection into the existing Linden Cogen 345kV ring bus connected to Con Edison’s Goethals Substation. It will be operated in conformance with published procedures established by PJM, NYISO, Con Edison and PSE&G. The following indicates the status of VFT facility equipment when in-service. Section VII.D describes the sequence of switching for energization and routine operations.

A. Normal Connections

1. PSE&G 230kV VFT Switching Station
   a. The U-2273 from Warinanco and S-2271 from Tosco 230 kV ground disconnects will be open.
   b. The U-2273 and S-2271 230 kV line disconnect switches will be closed.
   c. The 230 kV bus section (BS) 1-2, 1-3, and 2-3 breakers and disconnects will be closed.
   d. The D-2256 230 kV Section 1 motor operated ground disconnect will be open and the D-2256 230 kV motor operated line disconnect will be closed.
   e. The D-2256 230 kV Section 2 motor operated ground disconnect will be open and the D-2256 230 kV Section 1-2 motor operated disconnect will be closed.
   f. The D-2256 230kV cable to the Linden VFT will be energized.

2. Linden VFT
   a. The 230kV GIS line motor-operated disconnect (6.8R-Line) will be closed and the 6.8R-Line-G and FAGS2 grounding switches open.
   b. Each of the three 230kV VFT motor-operated GIS disconnects (6.7R-1, 6.7R-2, 6.7R-3) will be closed and their grounding switches open.
   c. Each of the three 345kV VFT motor-operated GIS disconnects (6.7S-1, 6.7S-2, 6.7S-3) will be closed and their grounding switches open.
   d. The 345kV GIS breaker (5.1S) will be closed, its GIS motor-operated disconnects closed and its grounding switches open.
   e. The 345kV cable to the Linden Cogen ring bus will be energized.

3. 345kV Linden Cogen GIS Ring Bus
   a. The VFT motor-operated line switch (DS-17) will be closed.
b. The motor-operated disconnect switches between breakers 1 and 6 (DS10 and DS18) will be closed and their grounding switches open.

c. All seven ring breakers (1, 2, 3, 4, 5, 6 and 8) will be closed, their motor-operated disconnects will be closed and their grounding switches open.

d. The 345kV cables G23L and G23M will be energized with their respective cable fluid circulation and cooling systems in service.

4. 345kV Goethals Substation

a. The G23L and G23M motor-operated lines disconnect switches will be closed and their ground switches open.

b. Ring Bus Breakers 6, 8, 7 and 9 will be closed and their respective disconnect switches will be closed. All ground switches will be open.

c. All five (5) incoming / outgoing lines, FDR 21, 22, 25, 26 and A-2253 will be energized.

B. Changes in Connections Affecting the Linden VFT

1. Linden VFT or VFT Operator will keep the PSE&G Electric System Operator and the System Operator of Con Edison informed of any changes from normal connections in the Linden VFT facility.

2. Linden Cogen Operations will keep the System Operator of Con Edison informed of any changes from normal connections on the Linden Cogen ring bus and G23L and G23M cable system.

3. The PSE&G Electric System Operator will keep the Linden VFT or VFT Operator informed of any changes from normal connections affecting the Linden VFT.

4. The System Operator of Con Edison will keep the Linden VFT or VFT Operator informed of any changes from normal connections affecting the Linden VFT.
C. Station Service

The Linden VFT facility has three independent feeds for maintaining station service.

1. VFT Unit 1 Aux Transformer
   a. Feed from 480V winding of Unit 1 Aux Transformer, tapped off the 17kV bus of the Unit 1 230/17kV transformer.
   b. Provides “Main A” service to double-ended 480V motor control center “LV-1”.

2. VFT Unit 3 Aux Transformer
   a. Feed from 480V winding of Unit 3 Aux Transformer, tapped off the 17kV bus of the Unit 3 230/17kV transformer.
   b. Provides “Main B” service to double-ended 480V motor control center “LV-1”.

3. Linden Cogen
   a. 350 kVA emergency power feed from Linden Cogen 480V switchgear “4C Main Bus”.
   b. Provides “Alt. Main” service to “A” bus of double-ended 480V motor control center “LV-1”.
   c. “Alt. Main” 480V circuit breaker is electrically interlocked with “Main A” breaker and LV-1 tie breaker to avoid paralleling VFT and Linden Cogen sources.
   d. This emergency feed does not have the capability to power the Rotary Transformer (RT) forced air cooling systems. RTs should be de-energized when the facility is operating solely on this emergency feed.

4. VFT Switching Station
   a. Station service (a.k.a. Station Light and Power or SL&P) for the VFT Switching Station is fed via two (2) 480 V connections to VFT facility 480 V switchgear.
   b. One feed is derived from the “Main A” side of 480 V MCC “LV-1”.
   c. A second feed is derived from the “Main B” side of 480 V MCC “LV-1”.
   d. Should the 230 kV side of the VFT facility be out of service, the “Main A” side feed from MCC “LV-1” is automatically energized via the “Alt. Main” 480 V feed sourced from Linden Cogen.
D. Voltage and Reactive Power Control

1. Linden VFT

   a. Linden VFT is responsible for controlling the voltage or reactive power at the facility per dispatch instructions. Since the Rotary Transformers are not capable of regulating VARs or voltage directly, the only means of actively controlling the facility VAR/voltage profile is switching on or off each unit’s 25 Mvar shunt capacitor bank (75 Mvar total).

   b. The VFT units may be operated in one of three Reactive Power Control (RPC) modes: power schedule mode, bus voltage mode, or manual mode. Linden VFT will determine the appropriate RPC mode in consideration of the prevailing operating conditions.

   c. The normal operating mode is to maintain the VFT facility at close to unity power factor, and within applicable power factor limits, as measured at its connection to the Linden Cogen ring bus and the PSE&G connection at the Linden VFT Switching Station.

   d. Switching of capacitor bank elements will not interfere with the control and continuity of power transfer or disrupt normal control of power transfer of the facility.

   e. Linden VFT will keep the System Operator of Con Edison and PSE&G Electric System Operator informed if unable to maintain the desired voltage or Mvar level.

2. PSE&G Responsibility

   a. The PSE&G Electric System Operator is responsible for maintaining nominal voltage on the 230kV bus at the VFT Switching Station. Expected system operating conditions are as follows:

<table>
<thead>
<tr>
<th>VOLTAGE REGULATION</th>
<th>Heavy Load Period</th>
<th>Light Load Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal</td>
<td>226kV</td>
<td>242kV</td>
</tr>
<tr>
<td>Emergency</td>
<td>219kV</td>
<td>N/A</td>
</tr>
<tr>
<td>Load Dump</td>
<td>207kV</td>
<td>N/A</td>
</tr>
</tbody>
</table>

   b. The PSE&G Electric System Operator will monitor the voltage via SCADA. In the event SCADA has failed the PSE&G Electric System Operator will request the Linden VFT to monitor the 230kV bus voltage at the Linden VFT and notify the PSE&G Electric System Operator when the voltage approaches the above limits.
3. Con Edison Responsibility

a. The Senior System Operator of Con Edison is responsible for maintaining the voltage on the Goethals 345kV bus. Expected system operating conditions are as follows:

<table>
<thead>
<tr>
<th>VOLTAGE REGULATION</th>
<th>Heavy Load</th>
<th>Light Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal</td>
<td>362kV</td>
<td>362kV</td>
</tr>
<tr>
<td>Emergency (30-minute)</td>
<td>380 kV</td>
<td>380kV</td>
</tr>
<tr>
<td>Emergency (10-minute)</td>
<td>400 kV</td>
<td>400kV</td>
</tr>
</tbody>
</table>

b. For voltages above 380kV the Linden VFT will be tripped off-line with no intentional time delay in order to protect the facility.

E. Power Level and Control

1. Steady State

a. The Linden VFT facility has a nominal rating of 315 MW and is capable of continuously flowing 315 MW in either direction.

b. The Linden VFT facility is capable of flowing power from PJM to NYISO or NYISO to PJM between 0 and 315 MW during normal system conditions.

c. The Linden VFT facility is capable of flowing power from NYISO to PJM between 0 to 315 MW during emergency conditions as may be directed by PJM in consultation with NYISO, or directly by Con Edison as detailed in Section V.6.b.

d. The individual 105 MW VFT channels are capable of providing a default maximum ramp rate of 100 MW/minute in response to power order changes. Collectively the three channels together can provide a default maximum ramp rate of 300 MW/minute. Note that the VFT technology can physically ramp much faster, but internal controls have limited its maximum ramp to the limits given above.

e. The Linden VFT control system is designed to maintain stable power transfer when the PSE&G and Con Edison transmission voltage and frequency are within nominal ranges. The power transfer shall be regulated to the value ordered by PJM, within a tolerance, which is the lesser deviation of ± 3%.

2. Overload Capability

a. The Linden VFT facility does not have an overload transfer capability. The maximum facility output is designed for 315 MW in either direction and its control system limits its output accordingly.
V. ABNORMAL OPERATION

A. Equipment

1. PSE&G Transmission System

   a. In the event of a fault detected on the Warinanco line (U-2273), the Protective Relaying Schemes will trip and lockout circuit breakers BS 2-3 and BS 1-2 in the 230kV VFT Switching Station and initiate a Direct Transfer Trip (DTT) to Warinanco Substation.

   b. In the event of a fault detected on the Tosco line (S-2271), the Protective Relaying Schemes will trip and lockout circuit breakers BS 1-3 and BS 1-2 in the 230kV VFT Switching Station and initiate a Direct Transfer Trip (DTT) to Tosco Substation.

   c. The VFT Switching Station contains anti-islanding protection system logic to prevent islanding the VFT Switching Station, Tosco, substation, and PSE&G load at Warinanco with no connection to the PSE&G 230 kV system.

2. VFT-PSE&G Interface

   In the event of a fault detected between the 230kV VFT Switching Station and the 17kV side of the three 230/17kV VSUs of the VFT facility, the Protective Relaying Schemes will trip and lockout circuit breakers BS 1-3 and BS 2-3 in the VFT Switching Station and trip and lockout all 17kV breakers on the 17kV side of the three 230/17kV VSUs (breakers 4.1-1, 4.1-2, and 4.1-3).

3. VFT

   In the event of a fault detected within a VFT (including the 230/17 VSU, 17kV busses, the Rotary Transformer and 345/17 VSU) the Protective Relaying Schemes will trip and lockout all 17kV breakers for the affected VFT.

4. VFT – Linden Cogen 345kV Ring Bus

   a. In the event of a fault detected between the 17kV side of the 345/17 kV VSUs and the 345kV breaker 5.1s, Protective Relaying Schemes will trip and lockout 345 kV breaker 5.1s and all 17 kV breakers on all three rotary transformers and their associated DC drives (4.1-1, -2, -3, 4.2-1, -2, -3, and 5.2-1, -2, -3) in the VFT facility.

   b. In the event of a fault detected between 345 kV breaker 5.1s in the VFT facility and the Linden Cogen ring bus, Protective Relaying Schemes will trip and lockout 345 kV breaker 5.1s, Linden Cogen ring bus breakers 1 and 6, and all 17 kV breakers on all three rotary transformers and their associated DC drives (4.1-1, -2, -3, 4.2-1, -2, -3, and 5.2-1, -2, -3) in the VFT facility.
5. Linden Cogen Ring Bus – Goethals Substation
   a. In the event of a fault detected on the G23L or G23M circuits between the
      345kV Linden Cogen ring bus and the Goethals Substation, the protective
      relaying schemes will trip and lockout Cogen breakers 6 & 8 and
      Goethals breakers 7 & 9 for a G23L fault and Cogen breakers 3 & 4 and
      Goethals breakers 6 & 8 for a fault on the G23M circuit.
   b. In the event of a failure of one of the two cable circulation/cooling
      systems, its respective cable should be removed from service in a
      controlled manner.

6. Con Edison System
   a. In the event of a fault detected outside of Goethals or within Goethals, the
      Protective Relaying Schemes will trip and lockout the appropriate bus/line
      sections.
   b. Should scheduling and unit commitment analysis identify that certain Con
      Edison facilities will exceed their applicable ratings for a Double Circuit
      Tower Line (DCTL) outage of feeders 21 and 22, NYISO will notify PJM,
      PSE&G, and the Linden VFT Operator that this situation exists and an
      appropriate Alert State be established. Should an actual feeder 21 and
      22 DCTL outage occur while in this Alert State, the Con Edison System
      Operator will directly contact Linden VFT with instructions to reduce the
      VFT facility to zero power flow, or possibly export to PJM, in order to keep
      the transmission system within its operating capability. The specific
      procedure governing this scenario is contained in Appendix I.
   c. Other emergency situations will be handled in accordance with applicable
      protocols governing operations between NYISO and PJM.

B. No Black Start

   The Linden VFT facility does not have black start capability in either
   direction, i.e., if the VFT Switching Station is down, the VFT facility cannot
   energize it using Con Ed 345kV system, and, vice versa, if Goethals
   North Bus is down, the VFT facility cannot energize Goethals using
   PSE&G’s 230kV system.

C. Notifications
   1. Linden VFT will notify the PSE&G Electric System Operator and the System
      Operator of Con Edison of any abnormal operation in the Linden VFT facility.
   2. Linden Cogen Operations will notify the System Operator of Con Edison of
      any abnormal operation on the Linden Cogen ring bus and G23L/G23M cable
      system.
   3. The PSE&G Electric System Operator will notify the Linden VFT of any
      abnormal operation on the PSE&G system that would affect the Linden VFT.
4. The System Operator of Con Edison will notify Linden VFT of any abnormal operation on the Con Edison system that would affect the Linden VFT.

D. Power Runback System (not in use)

1. General Description

   a. The Linden VFT allows for pre-programmed power runback levels, which when activated by an external trigger during a contingency condition allows power transfers to be reduced substantially and rapidly.

   b. Runback levels can be any value between zero MW and the maximum rated MW level, or the runback level can be to zero power flow.

   c. Linden VFT is responsible for maintaining the power runback subsystem, including any necessary communication interface equipment.

   d. Any unavailability of components that render the runback system inoperable will be alarmed to the local and remote control locations.

VI. SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA)

A. General Description

   1. The VFT is directly controlled and monitored by Linden VFT.

   2. PJM has remote ability to set the VFT facility’s power flow level via setpoint signals sent via the communications connections described below.

   3. Only Linden VFT has control authority of the Linden VFT facility. Pertinent data is made available to PJM, PSE&G, Con Edison and NYISO.

   4. Remote indication of Linden VFT data is sourced from the “Plant Data Highway” RuggedCom 2100 Switch of the “Master VFT Control”, except for the facility output revenue meter.

   5. Remote monitoring of the VFT facility revenue meter at the NYISO/PJM interchange is directly interfaced to NYISO RFL RTU equipment for NYISO Phase 1 telemetry.

   6. The remote communication diagram is shown in Appendix D, “Operational Telemetry and Revenue Metering”. 

B. Linden VFT

1. Linden VFT provides the following device status and electrical data via SCADA:

<table>
<thead>
<tr>
<th>Data Point</th>
<th>Dev.</th>
<th>Units</th>
<th>Visibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>345 kV CB</td>
<td>5.1S</td>
<td>Open/Closed</td>
<td>Yes</td>
</tr>
<tr>
<td>Unit 1 Synch CB</td>
<td>4.1-1</td>
<td>Open/Closed</td>
<td>Yes</td>
</tr>
<tr>
<td>Unit 1 Iso CB</td>
<td>4.2-1</td>
<td>Open/Closed</td>
<td>Yes</td>
</tr>
<tr>
<td>Unit 1 Cap CB</td>
<td>5.4-R1-1</td>
<td>Open/Closed</td>
<td>Yes</td>
</tr>
<tr>
<td>Unit 2 Synch CB</td>
<td>4.1-2</td>
<td>Open/Closed</td>
<td>Yes</td>
</tr>
<tr>
<td>Unit 2 Iso CB</td>
<td>4.2-2</td>
<td>Open/Closed</td>
<td>Yes</td>
</tr>
<tr>
<td>Unit 2 Cap CB</td>
<td>5.4-R1-2</td>
<td>Open/Closed</td>
<td>Yes</td>
</tr>
<tr>
<td>Unit 3 Synch CB</td>
<td>4.1-3</td>
<td>Open/Closed</td>
<td>Yes</td>
</tr>
<tr>
<td>Unit 3 Iso CB</td>
<td>4.2-3</td>
<td>Open/Closed</td>
<td>Yes</td>
</tr>
<tr>
<td>Unit 3 Cap CB</td>
<td>5.4-R1-3</td>
<td>Open/Closed</td>
<td>Yes</td>
</tr>
<tr>
<td>VFT Total Flow</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VFT Total Flow</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VFT Total Flow</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Revenue Meter</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue Meter</td>
<td></td>
<td></td>
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<tr>
<td>Revenue Meter</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>VFT Unit 1</td>
<td></td>
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<tr>
<td>VFT Unit 1</td>
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<td></td>
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<tr>
<td>VFT Unit 1</td>
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</tr>
<tr>
<td>VFT Unit 2</td>
<td></td>
<td></td>
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<tr>
<td>VFT Unit 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VFT Unit 3</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>VFT Unit 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>345 kV Bus</td>
<td></td>
<td>Voltage</td>
<td></td>
</tr>
<tr>
<td>230 kV Bus</td>
<td></td>
<td>Voltage</td>
<td></td>
</tr>
</tbody>
</table>

C. PJM Control Center

1. PJM is the sole dispatching authority for the VFT facility MW output. PJM provides Day Ahead and Hour Ahead facility dispatch schedules to the Linden VFT.
2. PJM provides the desired facility total flow (MW) setpoint, typically updated on 2 second intervals. If PJM dispatches the facility at less than 315 MW, the Linden VFT control system will typically set each VFT power block to share power flow according to a predetermined algorithm.

3. For startup, shutdown and changes in facility dispatch setpoints, PJM will specify a desired ramp rate (MW/minute) and manipulate its setpoint signal accordingly.

4. During startup and shutdown Linden VFT may request loading/unloading each VFT sequentially in which case each VFT is ramped at the desired ramp rate but with a short delay while transitioning from one VFT control to another. Linden VFT and PJM dispatcher will discuss and agree on the plan for dispatch level changes prior to execution.

VII. REMOVING EQUIPMENT FROM SERVICE FOR WORK

A. General

1. Linden VFT will provide a rolling 36-month schedule of planned outages in accordance with Section 9.6.1.2 of the VFT-NYISO-Con Edison Interconnection Agreement.

2. Requests for taking equipment out-of-service under the PJM dispatching jurisdiction will be made to the PJM Outage Coordinator as described in PJM Operating Procedure 40. PJM will then notify others as appropriate.

B. Advance Arrangements

1. Work on the Linden VFT facility

   a. The Linden VFT Coordinator will forward an advance notification to the PJM Coordinator. The PJM Coordinator will notify PSE&G and NYISO as appropriate. The NYISO Coordinator will notify Con Edison.

2. Work on PSE&G Equipment Requiring a Linden VFT Equipment Outage

   a. The PSE&G Electric System Operations Planner will notify the Linden VFT Coordinator and PJM Coordinator. PJM will notify the NYISO Coordinator, and NYISO will notify Con Edison as appropriate.

3. Work on Con Edison Equipment Requiring a Linden VFT Equipment Outage

   a. Con Edison System Operator will forward an advance notification to the Linden VFT Coordinator and NYISO. NYISO will notify the PJM Coordinator. PJM will notify the PSE&G Electric System Operations Planner as appropriate.
C. Emergency Work

1. If Linden VFT needs to take transmission related equipment out-of-service under emergency conditions, the PSE&G Electric System Operator and the Senior System Operator of Con Edison will be notified of the problem and any actions taken as soon as possible. PJM and NYISO will also be notified as soon as possible of actions taken.

D. Sequence for Line Switching

In the event of an automatic trip or other failure that affects another company’s facilities, each party will share information in a timely fashion with the other party(ies) that were impacted to facilitate quick restoration and root cause analysis of the event and subsequent repair. This information can include, but not necessarily be limited to, oscillograph data, sequence of events recorder logs, and records of abnormal operation.

Advance notification of line switching will be made to all parties prior to line switching.

1. PSE&G-VFT Outage

To take the PSE&G-VFT 230kV D-2256 cable out-of-service, the following sequence is executed:

a. Under direction from PJM, Linden VFT ramps power to zero MW and takes all rotary transformers offline.

b. Linden VFT coordinates with Linden Cogen Operator to switch in 480V emergency power for Linden VFT facility. When 480V power infeed is energized and ready, Linden VFT notifies PSE&G Electric System Operator and Linden Cogen Operator.

c. PSE&G Electric System Operator issues switching order to open the 230 kV BS 1-3 and BS 2-3 breakers. PSE&G Electric System Operator issues switching order to open the D-2256 230 kV motor operated line disconnect. PSE&G Electric System Operator notifies Linden VFT of status.

d. Linden VFT issues switching order to open and lockout all 17kV breakers on the stator side of the VFT facility. Linden VFT issues switching order to open and lockout each of the three VFT 230kV MODs. Linden VFT issues switching order to open and lockout the “6.8R” 230kV MOD. Linden VFT notifies the PSE&G Electric System Operator of status.

e. PSE&G Electric System Operator issues switching order to close the D-2256 line and section 2 grounding switches. PSE&G Electric System Operator notifies Linden VFT of status. PSE&G Electric System Operator issues switching order to close the 230 kV BS 1-3 and BS 2-3 breakers to restore the ring bus in the VFT Switching Station (unless tagging requirements dictate otherwise).
2. PSE&G-VFT Outage Restoration

a. The following procedure assumes all three VFT channels will be restored on the 230 kV side along with the D-2256 line. Partial restoration will require that switching orders be adjusted accordingly. Restoration will commence only after completion of work and release of all tags.

b. The D-2256 line connection to the VFT is restored generally in reverse order of the procedure described in section 1 above.

c. PSE&G Electric System Operator first issues a switching order to open 230 kV breakers BS 1-3 and BS 2-3 in the VFT Switching Station.

d. Linden VFT issues order to check open VFT facility 17 kV breakers, and open and check open 230 kV motorized ground switches that were previously closed.

e. Linden VFT issues a switching order to close and check closed 230 kV disconnect switches on the D-2256 line and the three 230-17 kV transformers. This will place the VFT facility in a configuration ready for energization. Linden VFT then notifies PSE&G Electric System Operator of status.

f. PSE&G Electric System Operator issues switching order to open and check open the D-2256 line and section 2 grounding switches in the VFT Switching Station. PSE&G Electric System Operator issues switching order to close and check closed the D-2256 230 kV motor operated line disconnect. This places the VFT Switching Station in a configuration ready for energizing the D-2256 line.

g. To energize the D-2256 line, PSE&G Electric System Operator issues switching order to close and check closed one of the 230 kV breakers BS 1-3 or BS 2-3. PSE&G Electric System Operator verifies bus section 3 alive and holding. Linden VFT verifies 230 kV bus voltage and successful energization of 230-17 kV transformers 2.1R-1, 2.1R-2, and 2.1R-3.

h. PSE&G Electric System Operator issues switching order to close and check closed the remaining 230 kV breaker (BS 1-3 or BS 2-3) in the VFT Switching Station to close the ring bus.

i. PSE&G Electric System Operator notifies Linden VFT of status.

j. Linden VFT coordinates with Linden Cogen Operator to restore normal 480 V station light and power feed from VFT facility aux transformers. When 480V power infeed is restored to its normal configuration, Linden VFT notifies PSE&G Electric System Operator and Linden Cogen Operator.

Linden VFT Outage

To take the Linden VFT facility out-of-service, the following sequence is executed:
a. Under direction from PJM, ramp power to zero MW and take all rotary transformers offline.

b. Linden VFT coordinates with Linden Cogen to switch in 480V emergency power for Linden VFT facility. Note that this can only be done after rotary transformer cooling systems have shut down. When 480V power infeed is energized and ready, Linden VFT notifies PSE&G Electric System Operator and Linden Cogen Operator.

c. PSE&G Electric System Operator issues a switching order to open 230 kV breakers BS 1-3 and BS 2-3 in the VFT Switching Station to de-energize the 230 kV connection via the D-2256 line. Also, MOD D-2256 Line should be opened and locked open, after which the ring bus can be restored by closing breakers BS 1-3 and BS 2-3. PSE&G Electric System Operator then notifies Linden VFT of status upon completion.

d. Linden VFT issues switching order to open and lockout all 17kV breakers in the VFT facility. Linden VFT issues switching order to open and lockout each of the three VFT 230kV MODs (6.7R-1, 6.7R-2, and 6.7R-3) and close associated ground switches as needed. Linden VFT issues switching order to open and lockout the 6.8R-Line 230kV MOD and close ground switch 68R-Line-G.

e. Linden VFT issues switching order to open and lockout 345kV breaker 5.1S, deenergizing the VFT facility from the 345 kV side. Linden VFT issues switching order to open and lockout each of the three VFT 345kV MODs (6.7S-1, 6.7S-2, and 6.7S-3) and close associated ground switches as needed. Linden VFT notifies PSE&G Electric System Operator and Linden Cogen Operator of status.

3. Linden VFT Outage Restoration

a. Restoration of the Linden VFT facility should proceed generally in reverse order of the procedure given in Section 3 above. Restoration will commence only after completion of work and release of all tags.

b. All VFT facility 230 kV and 345 kV ground switches should be opened and checked open.

c. All VFT facility 17 kV breakers should be opened and checked open.

d. 345 kV MODs (6.7S-1, 6.7S-2, and 6.7S-3) and 230 kV MODs (6.7R-1, 6.7R-2, and 6.7R-3) should be closed and checked closed.

e. The 230 kV side of the VFT facility is energized from the VFT Switching Station by closing either breaker BS 1-3 or BS 2-3. Upon verification that the breaker is closed and holding by both PSE&G and Linden VFT, the remaining breaker can be closed and the 230 kV ring bus restored.

f. The 345 kV side of the VFT facility is energized by closing 345 kV breaker 5.1S.
NOTE: The 345 kV V-3022 cable and VFT facility 345-17 kV transformers should never be energized together using breakers 1 and/or 6 at the Linden Cogen ring bus. If the V-3022 cable is deenergized, it should be energized up to the 5.1S breaker first, then close the 5.1S breaker to energize the 345-17 kV transformers.

g. Linden VFT coordinates with Linden Cogen Operator to restore normal 480 V station light and power feed from VFT facility aux transformers. When 480V power infeed is restored to its normal configuration, Linden VFT notifies PSE&G Electric System Operator and Linden Cogen Operator.

4. VFT-Linden Cogen 345kV V-3022 Cable Outage

To take the VFT-Linden Cogen 345kV Cable V-3022 out-of-service, the following sequence is executed:

a. Under direction from PJM, Linden VFT ramps power to zero MW and takes all rotary transformers offline.

b. Station Service power continues to be fed to Linden VFT facility via PSE&G 230kV and Linden VFT Aux Transformers 1 and 3.

c. If not already open, Linden VFT issues switching order to open and lockout the three 17kV VFT stator-side breakers. Linden VFT issues switching order to open and lockout 345kV breaker 5.1S, deenergizing the 345-17 kV transformers. Linden VFT issues switching order to open and lockout each of the three VFT 345kV MODs. Linden VFT notifies Linden Cogen of status.

d. Linden Cogen issues a switching order to open Linden Cogen ring bus breakers 1 and 6 to deenergize the V-3022 cable. Once these breakers are open, Linden Cogen issues a switching order to open disconnect switch DS-17 and close ground switch GS-22. When disconnect DS-17 is open, breakers 1 and 6 can be closed to restore the ring bus. Linden Cogen notifies Linden VFT of status.

5. VFT-Linden Cogen 345kV V-3022 Cable Outage Restoration

  g. The 345 kV cable V-3022 is restored in reverse order of being taken out of service. Restoration will commence only after completion of work and release of all tags.

  h. Linden Cogen issues a switching order to open Linden Cogen ring bus breakers 1 and 6. Then, ground switch GS-22 can be opened and checked open, and disconnect switch DS-17 can be closed and checked closed.

  i. Linden VFT should verify that 345 kV breaker 5.1S is open to prevent inadvertent energization of the 345-17 kV transformers together with the V-3022 cable.
NOTE: The 345 kV V-3022 cable and VFT facility 345-17 kV transformers should never be energized together using breakers 1 and/or 6 at the Linden Cogen ring bus. If the V-3022 cable is deenergized, it should be energized up to the 5.1S breaker first, then close the 5.1S breaker to energize the 345-17 kV transformers.

j. Upon verification that 345 kV breaker 5.1S is open, Linden Cogen issues a switching order to close one of the Linden Cogen ring bus breakers 1 or 6. Upon verifying that the breaker is in and holding, Linden Cogen issues and order to close the other 345 kV ring bus breaker. Linden Cogen notifies Linden VFT that the V-3022 cable is energized.

k. Linden VFT verifies that 17 kV stator side breakers are open. Linden VFT issues an order to open previously-closed 345 kV ground switches and close 345 kV disconnect switches. Upon verifying disconnect switch positions, Linden VFT issues an order to close 345 kV breaker 5.1S to energize the 345-17 kV transformers and 17 kV stator-side bus.

6. Linden Cogen-Goethals 345kV Cable Outage

The sequence for line switching is addressed in existing operating procedures between Con Edison and Linden Cogen.

7. Linden Cogen-Goethals 345kV Cable Outage Restoration

The sequence for line switching is addressed in existing operating procedures between Con Edison and Linden Cogen.

VIII. COMMUNICATIONS

Communications Protocol for Linden VFT

Overview:

*Linden VFT (LVFT) is an unmanned merchant transmission facility* normally operated via remote setpoint control from the PJM Control Centers. PJM has the ability to control the LVFT power orders using either an automatic setpoint control or manually.

*Linden Cogen is a 24/7/365 manned merchant generation facility*. Linden Cogen has on normal shift, (3) Assistant Plant Operators (APO’s) that are also trained VFT operators. The Cogen APO’s can be assigned by PJM or by LVFT at the direction of PJM to the LVFT Control room if needed.

Linden VFT can be manned as needed when requested by PJM using the following procedure:

1- PJM calls the Linden Cogen Control Room at **908-474-0805**.
2- PJM must specifically request that Linden Cogen dispatch an operator to the Linden VFT Control Room. Please note that as GOP’s; the Linden Cogen Control Room Operators have no information or control of LVFT.

3- The Linden Cogen Control Room will dispatch an APO to the LVFT Control Room via radio.

4- Once at the Linden VFT Control Room, and using phone number 908-474-0412, the Linden Cogen APO will immediately call PJM at 610-878-7075 and notify them that they are now available for manually directing the operation of the Linden VFT Facility at PJM’s direction.

5- Until the Linden VFT Control Room is no longer required to be manned, all Linden VFT related telecommunications will be via the Linden VFT Control Room phone number 908-474-0412.

A. Linden VFT Contact List

<table>
<thead>
<tr>
<th>VFT Control Room</th>
<th>908-474-0412</th>
</tr>
</thead>
<tbody>
<tr>
<td>VFT / Linden Cogen (off hours)</td>
<td>908-474-0805</td>
</tr>
<tr>
<td>VFT - PJM All-Call and Ring down</td>
<td>908-474-0413</td>
</tr>
<tr>
<td>Linden VFT Coordinator (office)</td>
<td>908-523-4315</td>
</tr>
<tr>
<td>Linden VFT Coordinator (mobile)</td>
<td>732-710-2936</td>
</tr>
<tr>
<td>VFT Control Room Satellite Phone</td>
<td>011 881 622 462 081</td>
</tr>
</tbody>
</table>

B. PJM Contact List

| PJM Dispatcher                               | 610-878-7075 |

C. PSE&G Contact List

Electric System Operations Center (24/7)

<table>
<thead>
<tr>
<th>Electric System Operator:</th>
<th>973-430-5042 / 5044</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior System Operator:</td>
<td>973-430-5043</td>
</tr>
<tr>
<td>System Operations Supervisor:</td>
<td>973-430-5041</td>
</tr>
<tr>
<td>ESOC System Operators FAX:</td>
<td>973-430-5012</td>
</tr>
<tr>
<td>Electric System Operations Planning Staff:</td>
<td>973-430-5018 / 5016 / 5034</td>
</tr>
</tbody>
</table>
D. **Con Edison Contact List**

Energy Control Center (24/7)

- System Operator 212-580-6762
- Senior System Operator 212-580-6791
- Associate Chief System Operator 212-580-6870
- Chief System Operator 212-580-6772

E. **NYISO Contact List**

- Customer Relations Help Desk (24/7) 518-356-6060
- Real Time Curtailments 518-356-7540
- Unit Basepoints 518-356-6028

F. **Linden Cogen Contact List**

- Control Room, Linden 1-5 (NYISO units) 908-474-0805
- Control Room, Linden 6 (PJM Units) 908-523-4328
- Linden 6 - PJM All-Call and Ring Down 908-523-4355
- Control Room Fax (all units): 908-474-0804

Contact Lists are to be reviewed and updated on a periodic basis. Updated contact lists are to be distributed to the designated points-of-contact for each organization, each point-of-contact is responsible for distributing the updated list within his or her respective organization.
IX. APPENDICES

Appendix A: PJM-NYISO Connection Overview
Appendix B: Linden VFT Switching Station Single Line Diagram
Appendix C: Linden VFT Single Line Diagram
Appendix D: Operational Telemetry and Revenue Metering Diagram
Appendix E: PSE&G Switching and Tagging Jurisdiction

The PSE&G Electric System Operator is the Tagging Authority for the PSE&G Transmission System.

Operation of the VFT Switching Station will come under the jurisdiction of the PSE&G Electric System Operator. When required, a representative of the PSE&G Electric Distribution Department will operate the 230kV line and ground disconnect switches on the S-2271 and U-2273, as directed by the PSE&G Electric System Operator.

Both 230kV circuits, S-2271 and the U-2273 have automatic reclosing. The S-2271 will deadline at the VFT Switching Station 230kV 1-2 breaker and synchro-check at Tosco substation. The U-2273 deadline is the Warinanco 230kV 1-2 breaker and the synchro-check at the VFT Switching Station 230kV 1-2 breaker.

VFT personnel will only operate the D-2256 230kV line or ground disconnects at the VFT facility in coordination with the PSE&G Electric System Operator.

All work that necessitates the placing of PSE&G Safety Tags on any equipment at the VFT Switching Station is to be executed by a Representative of the PSE&G Electric Distribution Department as directed by the PSE&G Electric System Operator.

All work that necessitates the placing of Safety Tags on any equipment at the VFT facility is to be executed by a Representative of the Linden VFT as directed by Linden VFT.

Under no condition shall VFT personnel remove a PSE&G Safety tag from a piece of equipment to which it is attached or operate a piece of equipment to which a PSE&G Safety Tag is attached.

In turn, under no condition shall a member of PSE&G remove from and/or operate any equipment where a VFT Safety tag is attached, including equipment within the VFT Switching Station.

Under emergency conditions, the PSE&G Electric System Operator may open the VFT Switching Station 230kV breakers via remote supervisory control and will, when possible, advise VFT personnel.

Linden VFT personnel will advise the PSE&G Electric System Operator of normal / test operation of the VFT breakers prior to the operation.

Linden VFT personnel are to report to the PSE&G Electric System Operator all interruptions to service, abnormal voltage conditions, defective equipment, etc. as soon as possible.

For problems internal to the VFT facility that cause a trip-out of the entrance breakers, but not the lines or the tie bus, Linden VFT personnel will determine the cause and take corrective action. Linden VFT personnel will reset their relay targets and multi trips. When ready for service, Linden VFT personnel will advise the PSE&G Electric System Operator.
Appendix I: First Amended Joint Operating Protocol for the Linden VFT Facility
FIRST AMENDED
JOINT OPERATING PROTOCOL FOR THE LINDEN VFT FACILITY

THIS FIRST AMENDED JOINT OPERATING PROTOCOL ("Protocol") is entered into as of October 35, 2012, by and between the New York Independent System Operator, Inc. ("NYISO"), PJM Interconnection, LLC ("PJM"), Consolidated Edison Company of New York, Inc. ("Con Edison"), Linden VFT, LLC ("Linden VFT"), and Cogen Technologies Linden Venture, LP ("Linden Cogen"). The NYISO, PJM, Con Edison, Linden Cogen and Linden VFT are sometimes referred to in this Protocol individually as a "Party" and collectively as the "Parties."

RECITALS

WHEREAS, Linden VFT is developing and constructing a fully controllable AC merchant transmission line that will include approximately 350 feet of new 230 kV transmission line, approximately 1000 feet of new 345 kV transmission line, the addition of fluid cooling capability to an existing 8500 foot 345 kV cable, and the facilities necessary to conform power flows to schedules. The merchant transmission line will have a capacity of 315 MWs and will connect PJM and the NYISO (the "Linden VFT Facility");

WHEREAS, the NYISO Real Time Scheduling system secures transmission facilities that are under the NYISO's operational control, along with selected New York Transmission Owner ("NYTO") transmission facilities, to applicable ratings;

WHEREAS, the Linden VFT Facility is scheduled to go into service in December 2009, with initial test energy scheduled to flow on or about September 14, 2009;

WHEREAS, Schedule 16 and Schedule 16-A of the PJM Open Access Transmission Tariff provides the terms and conditions for transmission service over the Linden VFT Facility;

WHEREAS, curtailment of schedules on the Linden VFT Facility is governed by Section 4.5 of Schedule 16 and Schedule 16-A and shall be pursuant to the PJM Tariff, NERC Reliability Standards and this Protocol;

WHEREAS, Schedule 16 and Schedule 16-A contains a reference to this Protocol which will be posted on the PJM website; and

WHEREAS, in an order issued on June 12, 2009, in Docket No. ER09-996-000, 127 FERC ¶ 61,240 (2009), the Federal Energy Regulatory Commission (the "Commission") directed PJM to file this Protocol with the Commission and post it on the PJM website no later than 30 days before the in-service date of the Linden VFT Facility.