 TRANSMISSION OPERATIONS MANUAL	Application of NYSRC Reliability Rule G-R3 (Formally I-R5)
	Manual 3 – Voltage Control
TOM – 3.004	Rev 002 Effective Date 06/06/2016

<b>Section 1</b>	<b>PURPOSE</b>
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This document is intended as a guideline for the PSEGLI Transmission System Operator (SO) to comply with the New York State Reliability Council (NYSRC) Reliability Rule G-R3, and the New York Independent System Operator (NYISO) Applications of Reliability Rules (ARR) ARR 70.


This rule was developed to prevent voltage collapse resulting from the loss of the largest gas contingency.

<b>Section 2</b>	<b>OVERVIEW</b>
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Local reliability rules have been adopted that apply to the New York City and Long Island zones. These local reliability rules are more stringent and more specific than other NYSRC Reliability Rules because of the need to protect the reliable delivery of electricity to these zones in light of their specific electric system characteristics and load density. These characteristics include unique circumstances and complexities related to the maintenance of reliable transmission service, and the consequences that would result from failure to provide uninterrupted service. Any constraints imposed by the more stringent or specific design and operation criteria in these local reliability rules shall be observed in daily operations.

Certain of these Reliability Rules have been instituted as the result of NYS Public Service Commission orders or directives. *The local reliability rules in this group apply to the New York City (G-R1, G-R2, and G-R4) and Long Island (G-R3) zones.*

NYSRC Rule G-R3. Loss of Gas Supply – Long Island states:

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“The *NYS Bulk Power System* shall be operated so that a loss of a single gas facility does not result in the *uncontrolled loss of electric load* within the Long Island zone.”

The following Requirements are applicable to G-R3:


- R1. LIPA shall have in place procedures for operating its system in accordance with G-R3 and *NYISO* requirements. These procedures must include notification to the *NYISO* when actions are taken in accordance with G-R3, and the reasons thereof.
- R2. The *NYISO* shall document, maintain, and publish requirements for LIPA to develop procedures for operating its system in accordance with G-R3, including notification of the *NYISO* when actions are taken in accordance with G-R3, and the reasons thereof. The *NYISO* shall review and approve LIPA procedures and required studies, including any updates to such procedures and studies.

The *NYISO* has developed a list of Applications of Reliability Rules called “ARR Rules” to comply with certain NYSRC rules. One of these ARR Rules that is applicable to Rule G-R3 is ARR 70.

The definition of the NYSRC’s ARR 70 states:

One or more Northport units may be required to utilize oil as the primary fuel such that the unit(s) will not trip on a loss of gas. Actual number of units burning oil will be dependent on the load level and voltage support devices in service.

<b>Section 3</b>	<b>PROCEDURE FOR OPERATING IN ACCORDANCE WITH G-R3</b>
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The following procedure has been established in order to prevent voltage collapse for the largest gas contingency in the LIPA system.


The term 25% gas refers to a unit utilizing oil as the primary fuel, and no more than four (4) gas guns, or one tier, in operation and the unit will not have a Master Fuel Trip (MFT) on loss of gas pressure.

Attachment 1 lists the guidelines for the number of Northport steam units that can be permitted to burn gas depending on how many units are online at any given load level, and the status of the 8KD DRSS (West Bus) and/or the 8DV Randall Rd (Wildwood) DRSS substations.

PSEG Energy Resources and Trade (ER&T) shall share their load forecast via daily email to help cross reference anticipated system load levels in preparation of the G-R3 day.

<b>Section 4</b>	<b>DAILY EVALUATION and NOTIFICATION BASED ON LOAD FORECAST</b>
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Prior to 1030 hours each day, the PSEG-LI System Operator (SO) will have an integrated hourly load forecast completed for the remainder of the day. The SO will apply the G-R3 rule based upon that load forecast and the status of the 8KD DRSS (West Bus) and the 8DV Randall Rd (Wildwood) DRSS, using the applicable table in Attachment 1.

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**Notification**


If a gas burn limitation is expected,

- The SO shall notify the Northport Power Station that a G-R3 day is expected, starting at XXXX hours.
- Northport Power Station shall notify their marketer, ER&T of the required fuel posture. ER&T will coordinate fuel switching instruction with the Northport Power Station.
- The SO will notify the NYISO Operations Desk that the LIPA system will be operated in accordance with NYSRC Rule G-R3.
- Northport Power Station will notify the SO prior to, and upon completion of, changing fuels to ensure system stability when making the changeover.

<b>Section 5</b>	<b>REAL TIME EVALUATION and NOTIFICATION BASED ON AVAILABILITY OF WEST BUS AND/OR WILDWOOD DRSS</b>
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At any time during the day, the System Operator may re-evaluate the need for the G-R3 rule based on real time load.

If the West Bus DRSS and/or Wildwood DRSS become unavailable, a posting on LIPA OASIS is required immediately. After confirming that either one of the DRSS or both of the DRSS are not in service, the System Operator shall post to the LIPA OASIS site as to which G-R3 table is in effect, per Attachment 1. Whenever there is a change in status to the table in use, the SO will post such to the LIPA OASIS site, as per Section 6 .

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If the unavailability of the West Bus DRSS and/or Wildwood DRSS has an immediate impact to the current real time condition, the SO shall declare a G-R3 day effective immediately and make the following notifications:

**Notification**


- The SO shall notify the Northport Power Station that a G-R3 day is effective immediately.
- Northport Power Station shall notify their marketer, ER&T of the required fuel posture. ER&T will coordinate fuel switching instruction with the Northport Power Station immediately.
- The SO will notify the NYISO Operations Desk that the LIPA system will be operated in accordance with NYSRC Rule G-R3 effective immediately.
- Northport Power Station will notify the SO prior to, and upon completion of, changing fuels to ensure system stability when making the changeover.

If the system load is greater than 5700 MW, the number of Northport Units on oil may change at the discretion of the Senior System Operator. The Senior System Operator may evaluate real time contingency analysis to assist with this decision.

<b>Section 6</b>	<b>LIPA OASIS POSTINGS</b>
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The Transmissions Operations’ Operating Engineers will be responsible for maintaining an up to date “Loss of Gas Supply – Long Island (G-R3) Guideline” and post it on the LIPA OASIS website.

The PSEGLI SO is responsible to create an updated posting, in the event that there is a change to the table in use due to a DRSS unit being removed from or returned to service.

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The following LIPA OASIS postings are recommended for each table when applicable.

**Table 1: BOTH West Bus DRSS and Wildwood DRSS – Out of Service**

The SO shall post on the LIPA OASIS site similar to the posting shown below:

**Element: Implementation Tables for G-R3:**

Estimated Start Time of **05/13/2014 16:00**

**Free:** Table 1 which assumes BOTH West Bus and Wildwood DRSS to be Out of Service is effective immediately.

Start time/date are to be included in the posting, the end time date is not necessary, but it will be necessary to create another posting when conditions change (i.e either DRSS returns to service).

**Table 2: West Bus DRSS In Service and Wildwood DRSS Out of Service**

The SO shall post on the LIPA OASIS site similar to the posting shown below:


**Element: Implementation Tables for G-R3:**

Estimated Start Time of **05/13/2014 16:00**

- **Free:** Table 2 which assumes West Bus DRSS In Service and Wildwood DRSS Out of Service is effective immediately..

Start time/date are to be included in the posting, the end time date is not necessary, but it will be necessary to create another posting when conditions change (i.e the DRSS out of service, is returned to service).

**Table 3: West Bus DRSS Out of Service and Wildwood DRSS In Service**

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The SO shall post on the LIPA OASIS site similar to the posting shown below:

**Element: Implementation Tables for G-R3:**

Estimated Start Time of 05/13/2014 16:00

- **Free:** Table 3 which assumes West Bus DRSS Out of Service and Wildwood DRSS In Service is effective immediately..

Start time/date are to be included in the posting, the end time date is not necessary, but it will be necessary to create another posting when conditions change (i.e the DRSS out of service, is returned to service).

**Table 4: BOTH West Bus DRSS and Wildwood DRSS – In Service**

The SO shall post on the LIPA OASIS site similar to the posting shown below:


**Element: Implementation Tables for G-R3:**

Estimated Start Time of 05/13/2014 16:00

- **Free:** Table 4 which assumes BOTH West Bus DRSS and Wildwood DRSS – In Service is effective immediately.

Start time/date are to be included in the posting, the end time date is not necessary, but it will be necessary to create another posting when conditions change (i.e either or both DRSS out of service).

<b>Section 7</b>	<b>REFERENCES</b>
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- NYSRC Reliability Rules & Compliance Manual - For Planning and Operating the New York State Power System; Version 34, January 1, 2015  
<http://www.nysrc.org/pdf/Reliability%20Rules%20Manuals/RRC%20Manual%2034%20final%202-18-15.pdf>
- List of the Applications of the Reliability Rules (ARR) on NYISO site.  
[http://www.nyiso.com/public/webdocs/markets\\_operations/market\\_data/reports\\_info/TO\\_Application\\_of\\_Reliability\\_Rules.pdf](http://www.nyiso.com/public/webdocs/markets_operations/market_data/reports_info/TO_Application_of_Reliability_Rules.pdf)

<b>Section 8</b>	<b>REVISION HISTORY</b>
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Revision	Effective Date	Reason	Author
000	01/01/2015	New Issue	Z. Rodriguez J. McNamara
001	07/08/2015	Revised procedure in accordance with the revised NYSRC Reliability Rules and the revised G-R3 Guideline. Replace I-R5 with G-R3.	Z. Rodriguez
002	06/06/2016	Update Attachment 1	Z. Rodriguez

<b>Section 9</b>	<b>POLICY</b>
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Training for implementation of this instruction is given on the job, as required by responsible supervisory personnel and by the responsible department. This instruction shall be reviewed and updated every year, or more frequently, if necessary.

The Lead Organization for this instruction is the Transmission Operations Department.



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<b>Section 10</b>	<b>APPROVALS</b>
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Doug Voos  
 Manager  
 Transmission Operations

Frank Bertrand  
 Chief System Operator  
 Transmission Operations

(Original signed by)


(Original signed by)

06/06/2016

06/06/2016

Date

Date

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**Attachment 1      LOSS of GAS SUPPLY – LONG ISLAND G-R3 GUIDELINE**

**Table 1: BOTH West Bus DRSS and Wildwood DRSS – Out of Service**

System Load Level	Total Number of Northport Units Online			
	One	Two	Three	Four
0 - 3700	0	0	0	0
3701 - 5700	0	0	1	1

**Table 2: West Bus DRSS In Service and Wildwood DRSS Out of Service**

System Load Level	Total Number of Northport Units Online			
	One	Two	Three	Four
0 - 4950	0	0	0	0
4951 - 5700	0	0	0	1


**Table 3: West Bus DRSS Out of Service and Wildwood DRSS In Service**

System Load Level	Total Number of Northport Units Online			
	One	Two	Three	Four
0 - 4200	0	0	0	0
4201 - 5700	0	0	0	1

**Table 4: BOTH West Bus DRSS and Wildwood DRSS – In Service**

System Load Level	Total Number of Northport Units Online			
	One	Two	Three	Four
0 – 5700 *	0	0	0	0

\* If the system load is forecasted to be greater than 5700 MW, PSEG Long Island will evaluate current system condition and make notification via LIPA OASIS posting.

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**NOTE:**

- 1) Load Level - Integrated Hourly Load.
- 2) This guideline provides guidance on the number of Northport steam units that must burn oil at a given system load ranges.
- 3) When a Northport steam unit burns a minimum of 75% oil or a maximum of 25% gas, the unit will not trip on a Loss of Gas Pressure.
- 4) These tables are illustrative and present the general range of effect of implementing the NYSRC Reliability Rule, G-R3. Actual implementation will vary based on available reactive resources and generation dispatch.
- 5) PSEG Long Island as a representative of LIPA shall retain the right to modify the minimum-oil requirement in order to meet NYSRC Reliability Rule G-R3, based on the actual system conditions that deviate from those assumed in this study.
- 6) Dynamic Reactive Support System (DRSS) is a reactive power compensator (i.e. FACTS type system) that is capable of injecting or absorbing reactive power from the LIPA transmission system at the point of interconnection. They are located at the West Bus DRSS and Wildwood DRSS substations.
- 7) PSEG Long Island – Transmission Operations shall make a notification via LIPA OASIS posting as to which “Table” is in effect.