

NYISO's Independent Review  
ConEdison's Appeal to the NYISO Board of Directors  
On Approval of the NYRI SRIS  
*Preliminary July 29, 2008- Internal NYISO Use Only*

**Executive Summary**

ConEdison raised five points in their appeal to the NYISO Board of Directors to overturn the Management Committee's approval of the NYRI SRIS.

The five points were independently analyzed to quantify their effect on study results. The analysis confirms that the five points have little effect on the results of the SRIS and do not change the result that the UPNY-ConEd interface is more voltage constraining than thermally constraining.

**Summary of ConEdison Points**

**ConEdison Point 1**

*Bus voltages in New York City and the Mid Hudson Valley are artificially low.*

Several 345 kV bus voltages are below their pre-contingency low limit as follows:

Table 1.1 –Pre-Contingency Voltage Limits and Base Case Voltages  
With NYRI

<u>Substation</u>	<u>Pre-Contingency Low Limit (kV)</u>	<u>Pre-Contingency Voltage (kV)</u>
Buchanan South	346	346
Dunwoodie	348	343
Pleasant Valley	348	342
Sprain Brook	348	343

**ConEdison Point 2**

*The study failed to utilize the Gilboa 345 kV 135 MVAR capacitor bank.*

STATE OF NEW YORK  
DEPT. OF PUBLIC SERVICE  
DATE 06 29 2008  
CASE NO. 06-1-050  
279

The Gilboa 135 MVAR capacitor bank is off-line in the case to prevent violating the pre-contingency high voltage limit (the limit is 362 kV).

Table 2.1 – Gilboa Bus Voltages  
(With NYRI)

<u>Substation</u>	Bus Voltage (kV) Cap. Out-of- <u>Service</u>	Bus Voltage (kV) Cap. <u>In-Service</u>	<u>Limit (kV)</u>
Gilboa	359.5	362.6	362

**ConEdison Point 3**

*Orange and Rockland 345/138 kV transformer number 455 at Bowline substation is retired.*

The Bowline 345/138 kV transformer is not retired, per se, but it is not in the case.

**ConEdison Point 4**

*Central Hudson's 345 kV transformers were incorrectly modeled, resulting in circulating VARs.*

The NYISO did not notice any circulating VARs as ConEdison stated. The reactive power flow is greater on the "Eastern" half of Central Hudson's system than the "Western" half, due to the fact the transformers in the East (East Fishkill and Pleasant Valley) are modeled as regulating and maintain voltage, whereas the transformers on the West are modeled with fixed taps (non-regulating voltage).

The reactive power flow of Central Hudson's 345/115 kV transformers is shown below, before and after changing the tap settings at East Fishkill and Pleasant Valley:

Table 4.1 –Central Hudson 345/115 Transformer Reactive Flow  
(With NYRI)  
Before / After Adjusting the Eastern Tap Settings

Substation	Reactive Power Flow ( <u>MVAR</u> )	
	Before	After

Hurley Ave.	10	43
Rock Tavern #1	27	42
Rock Tavern #3	27	42
East Fishkill	66	58
Pleasant Valley	164	50

### ConEdison Point 5

*The Millwood 345 kV 240 MVar capacitor bank is not included in the study.*

By SRIS rules for inclusion of projects in the base case, the 240 MVar capacitor bank was excluded.

### Analysis

The NYISO adjusted the SRIS base case to address ConEdison's points. Specifically:

1. The Gilboa capacitor bank was placed in-service (CE point 2 );
2. The Bowline 345/138 kV transformer was placed in-service (CE point 3);
3. Central Hudson's 345/115 kV transformers taps were locked (CE point 4);
4. The Millwood capacitor bank was placed in-service (CE point 5).

Each of these adjustments collectively brought the voltages up above their pre-contingency limits (CE point 1).

Having addressed each of the five points, the NYISO re-ran the thermal and voltage analysis.

The results of the thermal transfer analysis confirm that the thermal limit is 500 MW lower with NYRI at full output, consistent with NYRI's conclusion in the SRIS. This is not unexpected, since ConEdison's 5 points of concern are not thermal issues.

Table 5.1 – Thermal Analysis  
(Before and After NYRI)

<u>Interface</u>	<u>Before NYRI</u>		<u>After NYRI</u>	
	<u>PowerGem SRIS</u>	<u>NYISO Analysis</u>	<u>PowerGem SRIS</u>	<u>NYISO Analysis</u>
UPNY-ConEd	4946	4927	4412	4437

The results of the voltage analysis also did not materially change the conclusions in the SRIS; that is, NYRI has little effect on the voltage limit of UPNY-ConEd, and UPNY-ConEd is more limited by voltage under the study conditions and assumptions.

Table 5.2 – Voltage Analysis  
(Before and After NYRI)

<u>Interface</u>	<u>Before NYRI</u>		<u>After NYRI</u>	
	<u>PowerGem SRIS</u>	<u>NYISO Analysis</u>	<u>PowerGem SRIS</u>	<u>NYISO Analysis</u>
UPNY-ConEd	4132	4363	4180	4378

The voltage is slightly higher in the NYISO analysis, mainly due to the addition of the 240 MVAR capacitor bank at the Millwood 345 kV substation; however, even with the capacitor bank in-service, the voltage limit is still below the thermal limit.

