

FERC Dismissal of the Grid Complaint: 90 Day Status Report RAITF - Draft Outline -- 3/13/06

I. What HAS been done to improve study procedures that will better address issues related to the National Grid Complaint ?

A. Adoption of the "Unified Method" and "IRM Anchoring Method"

In 2005, the NYSRC and the NYISO staff undertook a joint study to enhance technical study procedures for establishing NYCA IRM Requirements and Locational Capacity Requirements (LCR). The joint study produced two new methodologies which were subsequently adopted by the New **York State** Reliability Council, L.L.C., (**NYSRC**) Executive Committee **for** Year 2006 IRM Requirement Studies.^{1 2} These methodologies are the Unified Method and the Anchoring Method.

The ***Unified Method*** is utilized by both the NYSRC and NYISO for the analysis of IRM Requirements (a NYSRC responsibility), and Locational Capacity Requirements (LCR), (a NYISO responsibility). The ***IRM Anchoring Method*** determines a consistent *anchor point* on IRM/LCR curves produced by the Unified Method, identifies both the NYCA IRM Requirement and corresponding Locational Capacity Requirements. Following the NYSRC IRM Requirement study the NYISO, in its role of setting the appropriate LCR, beginning this year, considered the LCR determined by the NYSRC IRM Requirement study. These new methodologies are described in detail below:

The Unified Method

Since the NYCA has had excess capacity in the past, previous NYSRC IRM Requirement study methodologies had included a procedure whereas load was added in all NYCA zones until the loss of load expectation met criteria. LCR, however, has been separately determined by the NYISO around the peak load forecast for the localities being studied. This difference in the NYSRC and NYISO methodologies led the NYSRC ICS and the NYISO Staff to jointly pursue a more coordinated, "unified" approach to developing the

¹ The technical study report entitled "NYSRC – NYCA Installed Capacity Requirement for the Period May 2006 through April 2007" was approved by the NYSRC Executive Committee on January 31, 2006.

² When the NYSRC voted for Option 2a ("Tangent 45") for for Year 2006 IRM Requirement Studies, it agreed to reconsider the free flow IRM (Option 3 – "Free Flowing Equivalent") for the 2007-08 study.

relationship between the LCRs and IRM. This “Unified Method” establishes a graphical relationship between NYCA IRM and the LCRs.

Briefly, capacity is removed from zones west of the Central-East interface that have excess capacity when compared to their forecast peaks until a study point IRM is reached. At this point, capacity is shifted from Zones J and K into same zones as above until the 0.1 LOLE criterion is violated. Doing this at various IRM points yields a curve such as depicted in Figure 1, whereby all points on the curve meet the NYSRC 0.1 days/year LOLE criterion. Furthermore, all LCR “point pairs” for NYC and LI curves along the IRM axis represent a 0.1 LOLE solution for NYCA.

The IRM Anchoring Method

This method establishes NYCA IRM Requirements and related MLCR from IRM/LCR curves established by the Unified Method. The *anchor point* on the curve in Figure 1 is selected by applying a tangent of 45 degrees (“Tan 45”) analysis at the bend (or “knee”) of the curve. Points on the curve on either side of the “Tan 45” point may create disproportionate changes in LCR and ICR, since small changes in LCR can introduce larger changes in IRM Requirements and vice versa.

B. Results of Adoption of the “Unified Method” and “IRM Anchoring Method”

The adoption of the “Unified Method” and “IRM Anchoring Method” for determining the IRM resulted in a reserve requirement of 18% . This is substantially below the IRM increasing to 19.6% (non-UDR³)⁴ or over 20% with UDR. Had the previous study methodology used for the 2005 Study was also used for this 2006 Study -- along with the 2006 Base Case assumptions and the 2005 LCR of 80% and 99% for NYC and LI, respectively -- the NYCA 2006-07 IRM requirements – the IRM requirement would have determined to be over 19.6%.

Importantly the new unified / Tangent 45 methodology resulted in In-City LCR’s increasing by 5% from last years study. First time In-City LCRs have increased in seven years. LI LCR increased to 106%. ...

³ UDRs are capacity rights that allow the holder/owner to extract the Locational Capacity Benefit derived by the NYCA from the addition of a new incremental controllable transmission project that provides a transmission interface to a NYCA locality or zone. Non-locational capacity when coupled with a UDR can be used to satisfy locational capacity requirements. The Cross Sound Cable, with a transfer capability of 330 MW, is the only existing project that is currently eligible for these awards. LIPA has recently announced it has chosen the option of utilizing all of the CSC UDRs it is awarded by the NYISO.

⁴ See technical study report entitled “NYSRC – NYCA Installed Capacity Requirement for the Period May 2006 through April 2007” was approved by the NYSRC Executive Committee on January 31, 2006.

C. NYCA Market Participant Support for Unified and Anchoring Methodologies for 2006 -07 IRM and LCR studies

IRM Study

This was the first year the “unified methodology” was “test driven” in the context of annual resource adequacy investigation. This, in conjunction with Tangent 45, resulted in basecase non-UDR IRM results of 17.5% and UDR basecase results of 18%. This report based on the unified / Tangent 45 methodology was approved by 11 of 13 Executive Committee representatives. NG fully participated in 2006-07 IRM ICS study and final IRM discussion and vote by the EC on 1/31/06.

LCR Study

The New unified / Tangent 45 methodology resulted in In-City LCR's increasing by 5% from last years study. First time In-City LCRs have increased in seven years. LI LCR increased to 106%. St Operating Committee meeting Nation Grid motions (86.02a) that the NYISO Operating Committee (1) establish Zone J and k Locationa Installed Capacity Requirements (LCRs) that satisfy all applicable reliability criteria and are consistent with the LCRs associated with the Free Flowing Equivalent IRM and (2) establish a NYCA Installed Capacity Requirement for the 2006-07 Capability Year that corresponds to the Free Flowing Equivalent IRM. This motion was defeated.

LCR Vote – Motion (86.02) to approve Locationa ICAP Requirements for the 2006-07 Cability Year approved by Governance of NYISO.

II. What is under consideration that would further address issues related to the National Grid Complaint ?

A. Upstate – Downstate Study

The NYSRC Installed Capacity Subcommittee (ICS) will be evaluating the reliability parameters and inter-zonal assistance between two NYCA “superzones” identified as **Upstate** (Zones A through I) and **Downstate** (Zones J and K). The Scope was approved by NYSRC in December 2005 (attached in Appendix A). The objective of this study will be to quantify the reliability benefits that Upstate and Downstate provide each other. This study is expected to provide several benefits to enhance our understanding of NYCA system reliability, including:

1. Verification that the capacity requirements of the Upstate Superzone could be met by the unconstrained case results.
2. Inform market participants of where and when **future capacity resources** are needed and whether it would come from generation, transmission or demand resources — or some combination thereof.
3. Inform as to the degree and magnitude of installed **capacity “assistance”** (for reliability purposes) that the Upstate Superzone provides for the Downstate Superzone during peak demand — and conversely, such assistance that Downstate provides to the Upstate Superzone.
4. **Risk assessment**, particularly as applied to the inter-zonal transmission constraints between the Upstate and Downstate Superzones. How much does each superzone contribute to the 0.1 days per year LOLE of the entire NYCA? For example, the Upstate Superzone may contribute 0.03 days per year while Downstate assumes 0.07 of the LOLE risk. This assessment should be performed with and without internal transmission constraints, and with / without NYCA isolated from the neighboring control areas.
5. Evaluation of the Downstate Superzone may help to strengthen the understanding of distribution of capacity requirements in the Downstate Superzone as well as an overall evaluation and determination of **Locational Capacity Requirements (LCRs)** for Zones J and K.
6. Evaluation of the Upstate Superzone may help to strengthen the understanding of contribution of capacity in the Upstate Superzone to both Downstate and overall NYCA reliability.
7. The Superzonal approach will examine **transfer limits** between Upstate-Downstate including interface ties between (and within) the superzones and ties

from Outside World contributors (PJM, ISO-NE, Ontario Hydro, Hydro Quebec, et al.).

This study has been kicked off and it is anticipated draft results should be available by Summer 2006.

B. Formation of Resource Adequacy Issues Task Force (RAITF)

The Chairs of the NYSRC installed capacity subcommittee (ICS) and the NYISO installed capacity working group (ICAPWG), with support from market participants, have established a joint task force to address the issues raised in the NG complaint and the FERC order (the RAITF). The RAITF is intended to conduct the work and evaluation contemplated in the scope of work and work plan that will be included in the report.

Workplan still under development.

C. 2006-07 IRM Study “Lessons Learned” Review

The NYSRC Executive Committee requested that among the ICS Lessons Learned review items it discusses include items which may address National Grids Concerns:

1. Reconsideration of Tangent 45 Anchoring for IRM determination -- The EC in August 2005, when it voted for Option 2a for one year, it agreed to re-consider the free flow equivalent IRM (Option 3) for the 2007-08 study. Many of the initiatives completed to date serve as supporting information for the above EC re-consideration of Option 3 (Free Flowing Equivalent). Other anchoring options (e.g., downstate free flowing equivalent between NYC / LI and rest of State instead of all of NYCA unconstrained in the Free Flowing Equivalent) may be considered as well. The democratic governance system would come out of the EC discussion and vote of the 2007-08 IRM method. Review performance Tangent 45 degree anchor methodology. Discuss possible improvements such as more mathematically based methodology. Discuss appropriateness of Tangent 45 degrees for future IRM studies.

2. Having a process whereby the NYSRC and the NYISO use the same MARS model and data. In particular, the use of an updated NYCA load forecast within the Unified/Tan 45 approach has resulted in the NYISO determining LCRs based on a different curve than the one considered by the NYSRC in setting the IRM.

3. Policy 5.0 and Reliability Rule AR-3 Update. ICS will also be review resource adequacy criteria and developing formal written rules/procedures for unified methodology and anchoring approach

D. Deliverability Study??

III. What FURTHER could be done to address National Grids Complaint

Further tighten IRM/LCR studies -- Having a process whereby the NYSRC and the NYISO use the same MARS model and data. In particular, the use of an updated NYCA load forecast within the Unified/Tan 45 approach has resulted in the NYISO determining LCRs based on a different curve than the one considered by the NYSRC in setting the IRM.

Appendix A

NYSRC-ICS Proposal **Upstate-Downstate “Superzone” Study** Upstate (Zones A-I) and Downstate (Zones J-K)

~ SCOPE OF WORK ~
Approved 12/9/09

I. **BACKGROUND**

Achieving system reliability in the New York Control Area State (NYCA) is a balancing act between installed capacity (including demand resources) against load requirements with consideration of transmission capability. Transmission constraints exist between the Upstate Zones A through I (Rest of State) and the Downstate Zones J (New York City) and K (Long Island). Zones J and K are considered “load pockets” that have limited physical capability of importing capacity.

The Locational Capacity Requirements (LCRs) for Zones J and K establish the minimum amount of capacity that must be electrically located “in-city” and “on-island”, respectively, to meet peak demand. As determined by the NYISO (and approved by the NYISO Operating Committee) the LCR inputs used in the 2005 IRM Study were 80% for New York City and 99% for Long Island.

The NYCA 2005 Installed Reserve Margin (IRM) was established by the NYSRC Executive Committee at 18%. Therefore, each Load-Serving Entity (LSE) within NYCA is required to procure capacity of at least 118% of its load coincident with the NYCA peak. Because of the unbalance of resource capacity and load in Upstate and Downstate NY, the Downstate LSEs are dependent on resources located in Upstate and out-of state for meeting their 18% reserve obligations.⁵

The 2005 IRM Study found that the IRM Requirement would be about 2% less than the statewide 18% IRM Requirement if there were no transmission constraints within NYCA.

In addition, the NYISO Reliability Needs Assessment (RNA) shows that load growth in SENY (Southeast NY) in Zones G through K may be placing additional stress on the transmission system all the way up to the UPNY (Upstate NY) / SENY interface.

II. **OBJECTIVE**

⁵ While Zones B and E in Upstate also depend on imports from neighboring zones, Zones B and E have the transmission capacity to allow each LSE in those zones to import the capacity needed to meet their capacity requirement of 118% of its load.

The NYSRC Installed Capacity Subcommittee (ICS) proposes to evaluate the reliability parameters and inter-zonal assistance between two NYCA “superzones” identified as **Upstate** (Zones A through I) and **Downstate** (Zones J and K).

All market participants are entitled to know the magnitude and rationale of higher IRM impacts caused by transmission constraints. Such knowledge is useful to the stakeholders and is vitally important to the Planning process. The objective of this study will be to quantify the reliability benefits that Upstate and Downstate provide each other currently and in the horizon year 2010. This study is expected to provide several benefits to enhance our understanding of NYCA system reliability, including:

8. Verification that the capacity requirements of the Upstate Superzone could be met by the unconstrained case results.
9. Inform market participants of where and when **future capacity resources** are needed and whether it would come from generation, transmission or demand resources — or some combination thereof.
10. Inform as to the degree and magnitude of installed **capacity “assistance”** (for reliability purposes) that the Upstate Superzone provides for the Downstate Superzone during peak demand — and conversely, such assistance that Downstate provides to the Upstate Superzone.
11. **Risk assessment**, particularly as applied to the inter-zonal transmission constraints between the Upstate and Downstate Superzones. How much does each superzone contribute to the 0.1 days per year LOLE of the entire NYCA? For example, the Upstate Superzone may contribute 0.03 days per year while Downstate assumes 0.07 of the LOLE risk. This assessment should be performed with and without internal transmission constraints, and with / without NYCA isolated from the neighboring control areas.
12. Evaluation of the Downstate Superzone may help to strengthen the understanding of distribution of capacity requirements in the Downstate Superzone as well as an overall evaluation and determination of **Locational Capacity Requirements (LCRs)** for Zones J and K.
13. Evaluation of the Upstate Superzone may help to strengthen the understanding of contribution of capacity in the Upstate Superzone to both Downstate and overall NYCA reliability.
14. The Superzonal approach will examine **transfer limits** between Upstate-Downstate including interface ties between (and within) the superzones and ties from Outside World contributors (PJM, ISO-NE, Ontario Hydro, Hydro Quebec, et al.).

III. **METHODOLOGY & ANALYSIS**

1. This study will evaluate the Upstate-Downstate Superzones for years 2006 and 2010. By also evaluating 2010, this study will assess the impact of load growth on the assistance between the Upstate and Downstate Superzones and the transmission interfaces, such as UPNY / SENY and Dunwoodie South. The Horizon Year 2010 Study will be consolidated with this study.
2. This analysis will examine application of existing and additional **“firm contracts”** to achieve system balance between the two superzones. In this case, firm capacity contracts guarantee transfer of capacity from one area to another up to the transfer limitation. At the point of system balance, the LOLEs of the two superzones should be equal. The LOLE index is a measure of whether a system has adequate generation to serve its load. Systems with greater load will need more capacity, but their likelihood of a shortage should still be the same.

Starting from the base case with NYCA at 0.1 days per year, firm contracts will be developed between the two superzones such that the reliability of the two superzones are equitable. For example, one superzone may have a reliability of 0.04 days per year and the other superzone may have a reliability of 0.08 days per year but the combined reliability for NYCA will still be 0.1 days per year. As stated above, this may also help to better determine (or confirm) an equitable split in the LCRs for zones J and K. By using firm contracts, system balance may be achievable — but because of transmission constraints, firm contracts may not be enough to achieve system equality.

3. Other analytical treatments that could be used to differentiate the installed capacity requirements for each superzone would be to create **“virtual equivalent generators”** or the **“virtual transfer of existing generation”** from one superzone to another. These analyses could help determine equitable risk where the LOLEs of each superzone would be proportional to their peak loads.
4. For this particular study, a superzonal **“Zonal Reserve Margin” (ZRM)** will be created as a parameter analogous to the NYCA statewide reserve margin (SRM). This analysis will examine the effect of varying the transfer limits of interfaces on the IRM, LCRs and ZRMs.

IV. PROCEDURES

Because of timing and staff resource limitations at the NYISO, General Electric Power Systems Energy Consulting (GE) has agreed to provide lead analytical work on this project. Since this type of study has not yet been done, the GE engineers will work in cooperation with the ICS to develop procedures for performing this analysis.

1. Study assumptions and modeling methods will be adapted from the 2006 IRM Study. As in that study, this special sensitivity analysis will use **General Electric Multi-Area Reliability Simulation (GE-MARS)** software to perform a probabilistic assessment of both the Upstate and Downstate Superzones with respect to surrounding Control Areas for the 2006-07 capability period. Output parameters will be similar to that provided by the IRM Study.
2. Assumptions will be based on the current IRM study assumptions and consistent with the NYISO Comprehensive Reliability Planning Process (CRPP) Reliability Needs Assessment (RNA).

3. **Reserve Sharing** between the two superzones should stay within NYISO on a pool-wide basis. For example, if Area G and K are deficient, the excess capacity from Zone A is shared according to existing procedures.
4. **Transfer limitations** of the transmission system are to be determined between individual areas — defined as between each Superzones and Areas (across the interfaces between the superzones and/or Areas) in both directions. The necessity to define additional interfaces such as simultaneous flows into PJM and NEPOOL will be considered.
5. **Interface ties** between and within the Upstate and Downstate Superzones will be considered. Interface flow groups will be analyzed to ensure that the sum of total flows is consistent with individual flows into or out of an Area. It may be necessary to define appropriate simultaneous limits. Currently identified interfaces include:
 - **UPNY / SENY** – This tie connects Zone F (Capital) and Zone G (Hudson Valley).
 - **UPNY / CE (Upstate NY / ConEd)** — This tie connects Zone G (Hudson Valley) to Zone H (Millwood) and where transmission lines cross Putnam, Orange, Westchester and Rockland Counties. Stations involved include: Pleasant Valley, Fishkill, Fishkill Plains, Sylvan Lake, Shenandoah,
 - **ConEd Wheel** — This tie connects Zone G to PJM — and wheels from PJM back through Zone J. PJM is accessed through Ramapo-Branchburg and South Mawa-Waldick in Zone G. From PJM, the tie re-enters New York through Hudson-Farragut and Linden-Geothals in Zone J.

V. SCHEDULE

This study will be conducted in a timely manner upon completion of the 2006 IRM Basecase Study.