NEW YORK INDEPENDENT SYSTEM OPERATOR

10 Krey Boulevard ♦ Rensselaer, NY 12144

June 1, 2015

Hon. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: New York Independent System Operator, Inc., Informational Report, Docket No. AD14-6-00_

Dear Secretary Bose:

In accordance with Paragraph 23 and the ordering paragraph of the Commission's November 15, 2014 *Order on Technical Conference* ("November Order"),[1] the New York Independent System Operator, Inc. ("NYISO") respectfully submits this informational report ("Report"). The November Order directed the "NYISO to explore the issues and evaluate the proposals discussed at the conference, including the MMU's recommendations, through its stakeholder process and file an informational report."[2] This Report describes the various stakeholder meetings convened, and review process conducted, by the NYISO after the February 26, 2014 Technical Conference[3] ("Technical Conference"). The issues discussed in this Report include "whether or not to model Load Zone K as an export-constrained zone for a future ICAP Demand Curve reset proceeding.[4] It also discusses whether a proposal can be developed that could reduce the cost of procuring capacity while meeting the NYISO loss of load ("LOLE") objective, as well as other proposals made by the NYISO, the independent Market Monitoring Unit ("MMU"), and stakeholders at the Technical Conference.

Several related issues were raised by stakeholders at the Technical Conference and in their written comments. In addition to modeling Load Zone K[5] as an export constrained zone,

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[1] *New York Indep. Sys. Operator, Inc.,* 149 FERC ¶ 61,164 (2014) ("November Order").

[2] *Id.* at P 23.

[3] *See New York Indep. Sys. Operator, Inc.*, Notice of Technical Conference, Docket No. AD14-6-000 (Jan. 28, 2014), Supplemental Notice of Technical Conference (Feb. 14, 2014), (collectively, the "Technical Conference Notice").

[4] November Order at P 2, citing certain NYISO pleadings in Docket No. ER13-1380 and the August 13, 2013 order in that proceeding, *New York Indep. Sys. Operator, Inc* .,144 FERC ¶ 61,126 at P 20.

[5] Capitalized terms not defined herein have the meaning set forth in the NYISO's Market Administration and Control Area Services Tariff ("Services Tariff") and if not defined therein, then in the Open Access Transmission Tariff ("OATT").

stakeholders raised issues regarding the methodology to determine the Locational Minimum Installed Capacity Requirements ("LCRs"); rules to eliminate Localities or achieve price convergence; enhancements to the triggers for creating and "pre-defining" capacity zones (*i.e.*, Localities), and a capacity Deliverability right for transmission projects that increase the deliverability of a constrained interface.

I. DOCUMENTS SUBMITTED

In support of this filing, the NYISO respectfully submits the following documents that were provided to stakeholders in 2014 and to date in 2015 as part of the discussions with them:

1. *Capacity Zone (Locality) Elimination*, presented by the NYISO, at the October 30, 2014 joint meeting of the Market Issues Working Group and ICAP Working Group ("Attachment I") (also available at: <http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2014-10-30/Capacity_%20Zone_%20Elimination_Final_103014.pdf>).

2. *Capacity Zone (Locality) Pre-Define & Eliminate*, presented by the NYISO, at the November 17, 2014, ICAP Working Group meeting ("Attachment II") (also available at: <http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_icapwg/meeting_materials/2014-11-17/Predefine_Eliminate_Capacity%20Zone_Nov17_Final.pdf>).

3. *Treatment of Zone K Export Constraints into the G-J Locality: Market Design Concept*, presented by the NYISO, at the December 18, 2014 joint meeting of the Market Issues Working Group and ICAP Working Group ("Attachment III") (also available at: <http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2014-12-18/agenda%203%20NCZ%20_%20Export%20Constrained%20Zones.pdf>).

4. *Numeric Example* posted by the NYISO with stakeholder meeting materials on its website, on February 19, 2015 ("Attachment VII") (also available at: <http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2014-12-18/Numerical%20Example%20for%20the%2012-18-2014%20Presentaion%20regarding%20Treatment%20of%20Zone%20K%20Export%20Constraints2.pdf>).

5. *2013 State of the Market Report Recommendation to Enhance Locational Pricing in the Capacity Market*, presented by Pallas Lee Van Schaick of Potomac Economics at

the August 20, and November 14, ICAP Working Group Meeting ("Attachment V") (also available at: <http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_icapwg/meeting_materials/2014-11-14/Capacity_2013%20SOM__8172014.pdf>).

6. *Compliance with FERC Order on Technical Conference re: Treatment of Zone K Export Constraints into the G-J Locality*, presented by the NYISO, at the February 24, 2015 ICAP Working Group meeting ("Attachment VI") (also available at: <http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_icapwg/meeting_materials/2015-02-24/agenda%203%20Export%20Constrained%20Zones_ICAPWG%202-24-15_Final.pdf>).

7. *IRM/LCR Process and Dynamics*, presented by Mark Younger, Hudson Energy Economics, at the January 29, 2015 joint meeting of the Market Issues Working Group, ICAP Working Group, and the Price Responsive Load Working Group ("Attachment VII") (also available at: <http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2015-01-29/agenda%208%20IRM%20LCR%20Process%20Dynamics.pdf>).

8. *LCR Process Review*; *Setting of the IRM and LCRs: the Basic Process;* and *LCR Process Review: Next Steps*; presented by the NYISO at the March 5, 2015 meeting of the LCR Task Force (collectively, "Attachment VIII") also available at: <http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_icapwg_lcrtf/meeting_materials/2015-03-05/02_LCR%20Alternative%20for%20Kick-off%20meeting.pdf>, <http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_icapwg_lcrtf/meeting_materials/2015-03-05/03_Background%20Slides_IRM_LCR.pdf>; <http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_icapwg_lcrtf/meeting_materials/2015-03-05/04_LCR%20Process%20Next%20Steps.pdf>.

9. *Objective of LCR Methodology Review: Possible Alternatives,* presented by the NYISO at the April 8, 2015 meeting of the LCR Task Force ("Attachment IX") (also available at: <http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_icapwg_lcrtf/meeting_materials/2015-04-08/LCR%20Objective_Possible%20Alternatives.pdf>).

II. BACKGROUND

On April 30, 2013, the NYISO filed revisions to its Services Tariff and its Open Access Transmission Tariff ("OATT") to establish a new Locality that would encompass Load Zones G, H, I, and J but exclude Load Zone K ("the G-J Locality").[6] In that proceeding, certain parties argued that Load Zone K should have been included in the G-J Locality based on assertions that capacity located in Load Zone K could provide some level of support to Load Zones G, H, and I. Some parties also suggested that to the extent that Load Zone K warranted special consideration, it should be modeled as an "export-constrained" Load Zone.[7]

The Commission accepted the NYISO's proposal to establish the G-J Locality (without including Load Zone K.)[8] It also directed the Commission's staff to convene a technical conference, in a separate proceeding, "to discuss with interested parties whether or not to model Load Zone K as an export-constrained zone for a future ICAP Demand Curve reset proceeding."[9]

The Technical Conference was established to principally discuss whether and how to model Load Zone K as an export-constrained zone, including whether and how to determine the MW limit to be placed on capacity located in Load Zone K that can be relied upon to serve the needs of Load Zones G through J.[10] At the Technical Conference, various other issues were discussed that were related to, but that extended beyond the issues outlined in the Technical Conference Notice. These additional issues are described above. Multiple parties submitted post-conference comments that largely reiterated the discussion at the Technical Conference, many of which had been previously raised in the NYISO's stakeholder process. The NYISO's post-conference comments suggested that the Commission should permit it to continue exploring those issues and proposals through its stakeholder process.[11] The NYISO explained that a stakeholder process would:

> [A]llow the NYISO to consider the process for setting [Locational Minimum Installed Capacity Requirements ("LCRs")] and how it may be adapted to properly reflect export constrained aspects of Localities as well as the treatment of export constrained aspects of Localities in the auction clearing mechanism.

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[6] New York Indep. Sys. Operator, Inc., *Proposed Tariff Revisions to Establish and Recognize a New Capacity Zone and Request for Action on Pending Compliance Filing*, Docket No. ER13-1380-000 (April 30, 2013) ("April 2013 Filing").

[7] *See* November Order at P 2, describing the NYISO's position in, and other parties' positions on, the April 2013 Filing. *See also New York Indep. Sys. Operator, Inc.*, 144 FERC ¶ 61,126 (2013) ("August 2013 Order") at PP 32 - 51.

[8] August 2013 Order at PP 52 - 55.

[9] *Id*. at P 56.

[10] Technical Conference Notice.

[11] *Post-Technical Conference Comments of the New York Indep. Sys. Operator, Inc*., Docket No. AD14-6-000 (March 26, 2014).

> Further, it would give the NYISO time to continue to consider the potential development of alternative rules to pre-define and eliminate capacity zones. It would not risk displacing other priority projects, including those that are being undertaken in response to earlier Commission compliance mandates or high priority recommendations by the [MMU] for the NYISO. Providing the stakeholder process time to function would give the NYISO and its stakeholders experience with G-J Locality pricing before completing the evaluation and considering a decision on export constraint modeling. A stakeholder process would also permit the NYISO to consider changes to modeling rules in tandem with the triennial process for evaluating and potentially creating New Capacity Zones.[12]

The NYISO asked the Commission to delay further action until it had conducted stakeholder discussions and proposed to submit a report by June 1, 2015.[13]

The November Order accepted the NYISO's proposal. It concluded that:

> [I]t would be worthwhile for NYISO and its stakeholders to explore whether a proposal can be developed that could reduce the cost of procuring capacity while meeting the NYISO LOLE objective. Therefore, we accept NYISO's recommendation to conduct a stakeholder process and to file a report on this process by June 1, 2015. While we agree with NYISO that it is premature to require it to file tariff language by June 1, 2015, we believe that valuable market rule changes that could reduce costs should not be unduly delayed. Accordingly, the Commission orders NYISO to explore the issues and evaluate the proposals discussed at the conference, including the MMU's recommendations, through its stakeholder process and file an informational report with the Commission by June 1, 2015.[14]

III. THE EXPLORATION OF ISSUES AND EVALUATION OF PROPOSALS THROUGH THE STAKEHOLDER PROCESS

A summary of the steps that the NYISO has taken to consider, analyze, and address several of the issues raised during the Technical Conference, with the MMU and stakeholders follows below. The stakeholder discussions have illustrated that there are disparate stakeholder interests and concerns. Further consideration through the stakeholder process would allow the NYISO and stakeholders to better assess the benefits and detriments of changes, how those changes might affect other NYISO market initiatives.

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[12] *Id*. at 3-4.

[13] *Id*. at 5.

[14] Order on Technical Conference at P 23.

Prior to the issuance of the November Order, based on consideration and input from the MMU and its stakeholders, the NYISO had already made it a priority to conduct three discrete projects in 2014 in order to address issues raised at the Technical Conference. The NYISO committed to lead further stakeholder discussions regarding (i) market design concepts regarding whether and how to model export constraints in the ICAP Spot Market Auction, (ii) market design concepts regarding the elimination Localities, and (iii) market design concepts that would lead to pre-defined capacity zones.[15]

(i) Eliminating Localities

On October 30, 2014, the NYISO presented to and discussed with stakeholders at a joint meeting of its Market Issues Working Group and its ICAP Working Group, whether there is a need for, and potential issues associated with, the concept of eliminating Localities. The NYISO presented background information on why locational capacity is valued in some areas.[16] It also discussed some of the challenges and concerns that would arise and need to be addressed in association with designing a rule set to eliminate a Locality.

Stakeholders expressed disparate views on the concept. End user interests and some transmission owners recommended that the NYISO consider a change to the current NCZ Study; *i.e.*, the process, methodology, and parameters used to evaluate the need for a New Capacity Zone. Their suggestions included having the NYISO monitor the binding interface that gave rise to the creation of a Locality in order to identify when it was no longer binding. They also argued that because the NCZ Study, which examines Deliverability, would identify the need for an NCZ if one MW is constrained at an interface, there should be a rule that the Locality should be eliminated when the constraint at the interface is relieved by one MW or more. The NYISO evaluated that proposal and informed stakeholders that it would create the potential for turning the Locality "on" and "off" thereby creating significant market uncertainty. That uncertainty includes issues surrounding projects subject to a buyer-side mitigation Offer Floor, the effect on sales in the Capability Period Auction and Monthly Auction, and price signals to developers and investors of proposed, under-development, and existing capacity resources. Several stakeholders agreed with the NYISO's assessment. There was also discussion of a need to limit the frequency and add predictability to a design to eliminate Localities, and potential opportunity to ensure an accurate price signal.

Based on the stakeholder discussions and analysis, and potential opportunity to ensure an accurate price signal, to advance consideration of eliminating Localities, the NYISO proposed that a rule should provide that the Locality be eliminated if the binding interface is relieved with sufficient Deliverability Headroom such that it would not be expected to bind again (at least for some foreseeable length of time, which would need to be determined) once the Locality was

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[15] NYISO, *2014 Business Plan Highlights* pp , 8, and 9, *available at:* <http://www.nyiso.com/public/webdocs/company/strategic_plan/2014_nyiso_businessplanhighlights_final.pdf>

[16] *See* Attachment I.

eliminated. The NYISO also suggested that price convergence might be a preferable trigger for eliminating Localities.

In response, some stakeholders indicated a preference for pursuing eliminating Localities as opposed to defining under what circumstances price separation should cease. Stakeholders from the supply sectors indicated more effort should be focused on whether there was even a need to eliminate Localities and if doing so would jeopardize reliability. Other stakeholders rejected that suggestion and argued that because only a Deliverability criterion is used to identify the need for an NCZ, the same criterion should be applied to identifying when to eliminate Localities. Some representatives of capacity suppliers expressed their continued support for the concept of pre-defining capacity zones. It was clear from the responses that a large number of stakeholders that provided input thought that the current Deliverability construct for creating NCZs possibly should include an additional criterion, and should be re-evaluated as part of the discussion on rules to eliminate Localities.

(ii) Eliminating Localities and Pre-Defining Capacity Zones

After further analysis and consideration of stakeholder input, at a November 17, 2014 ICAP Working Group meeting the NYISO presented further information and led a discussion of potential market design concepts for pre-defining and eliminating Localities.[17] The NYISO presented some information regarding PJM Interconnection LLC ("PJM") rules for predefining and eliminating its capacity zones; and discussed possible options for the NYISO. The NYISO and stakeholders also reviewed and discussed potential bulk system or market triggers for eliminating Localities, and issues that would arise if they are eliminated, including how they might be compounded or lessened depending on the frequency of the elimination determinations. Many of the issues previously raised by stakeholders, at the Technical Conference and at the October 30 ICAP Working Group meeting were further discussed.

Load interests indicated that in the near-term, price convergence should not be considered as the criterion for eliminating a Locality because with the current market structure, it is unlikely to occur. They suggested that the existing market structure be retained and that the trigger for eliminating Localities be an appropriate amount of Highway interface Headroom with a buffer (to be defined.) They further suggested that such a criterion for elimination would need to be balanced with a similar creation rule, and that the rule would also need to consider and balance reliability and higher costs.

Some suppliers commented that satisfying the Deliverability constraints may not ensure reliability in a Locality that has load pockets, or where there is significant uncertainty of capacity remaining in service. They cautioned that the magnitude of headroom used as the criteria to eliminate a Locality be sufficiently large to ensure reliability. Similarly, they suggested that the NYISO should apply that same parameter when creating new Localities in order to avoid reliability problems caused by unexpected loss of capacity. Price convergence was again

[17] *See* Attachment II.

suggested as an alternative, including using price convergence as the criteria to trigger eliminating Localities. The NYISO was asked to consider a rule to achieve price convergence by shifting the zero crossing point on the ICAP Demand Curve. A representative of load interests expressed disagreement with that proposal.

It was apparent to the NYISO that there was no consensus on the concepts surrounding rules to eliminate and create Localities. This discussion was also part of the NYISO Budget Priorities Working Group, where stakeholders expressed disagreement between whether the project to discuss rules to eliminate capacity zones should be separate or combined with a project to discuss concepts surrounding pre-defining capacity zones. As discussed below, the Budget Priorities Working Group process did keep these two projects separated. Based on stakeholder input received through that process, the NYISO prioritized a project for 2015 reviewing concepts for eliminating Localities.

(iii) Load Zone K Export Constrained Capacity

At the joint meeting of the Market Issues Working Group and the ICAP Working Group on December 18, 2014 the NYISO led a discussion for a market design concept to model the excess capacity that cleared in the Load Zone K ICAP Spot Market Auction as part of the supply stack in the G-J Locality ICAP Spot Market Auction, up to the level of the export constraint.[18] The NYISO provided background on the existing ICAP auction pricing hierarchy rules and mechanics. The proposed market design concept was based on the concept the NYISO had introduced at the Technical Conference. Under the proposed concept, the NYISO would solve the ICAP Spot Market Auction as it does today, with one change. That is, the NYISO would (a) count the MW that clear above the Load Zone K LCR,[19] up to the Load Zone K export limit MW, toward the G-J LCR and (b) count the remaining MW in Load Zone K that clear above the Load Zone K LCR (*i.e.* those above the export limit) toward the NYCA Minimum Unforced Capacity Requirement ("NYCA Minimum Requirement"). This approach would recognize the reliability value to the G-J Locality of excess MW of capacity in Load Zone K above the LCR target, up to the Load Zone K export limit. It would also lower the total cost of capacity. This approach could reduce costs to loads in the G-J Locality without raising costs to loads in Load Zone K. Because of its relative simplicity compared to other concepts proposed at the Technical Conference, the NYISO suggested at this stakeholder meeting that it potentially could be implemented prior to the next ICAP Demand Curve reset.[20]

[18] *See* Attachment III.

[19] LCR in this context refers to the Locational Minimum Unforced Capacity Requirement. That amount is derived from the Locational Minimum Installed Capacity Requirement. For simplicity in this Report, the NYISO is referring to both as the "LCR."

[20] That timing would depend on the timing of when the proposal became an established rule in relation to when the ICAP Demand Curve reset independent consultant had an opportunity to consider fully the implications in its report. It also would depend on whether necessary software revisions could

Stakeholders expressed little support for this concept. Some stakeholders representing suppliers raised questions regarding the application of buyer-side capacity market mitigation rules, and were skeptical that the market design concept could be confined to modifying only the auction rules without modifying the NYISO's process for setting LCRs. They also commented that NYISO's proposal would not provide proper price signals for capacity to locate in Long Island. Representatives of load interests were interested in discussing issues further so they could better evaluate the proposal, and also whether excess capacity in Load Zone K should also be recognized in all Load Zones with which it has ties.

In response to requests from stakeholders, the NYISO posted on its website a detailed numerical example to further illustrate the Load Zone K export concept it had presented at the December 18 stakeholder meeting.[21] The example shows how the ICAP Spot Market Auction would clear under the proposal. The NYISO presented the proposal at the February 24, 2015 meeting of the ICAP Working Group. Stakeholders were afforded the opportunity to discuss the example in detail, and to raise any questions regarding it and the related market design concept proposal. No stakeholder expressed an interest in the NYISO doing either. Therefore, the NYISO did not pursue the discussion. Since the posting of the numerical examples, some load interests have indicated that they would like to see this discussion brought back to the stakeholder process for further review and evaluation. The NYISO will be considering with its stakeholders whether to prioritize that project in the NYISO's 2016 business plan.

(iv) The MMU's Locational Capacity Framework

The MMU's *2013 Annual State of the Market Report*[22] included in its list of recommendations for the NYISO certain capacity market enhancements. The MMU further recommended that the NYISO "create a dynamic and efficient framework for reflecting locational planning requirements, including three key aspects: a) Pre-define interfaces/zones that address potential resource adequacy needs and highway deliverability constraints to allow prices to accurately reflect the locational value of capacity; b) Grant internal capacity deliverability rights between zones when private investors upgrade transmission into a local area; c) Modify demand curve reset methodology to minimize the cost of satisfying planning requirements."[23] These recommendations built on the MMU's comments at the February Technical Conference.

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be deployed in time for the start of the Capability Year to which new ICAP Demand Curves would apply (May 1, 2017).

[21] *See* Attachment IV.

[22] Potomac Economics, Ltd., *2013 State of the Market Report for the New York ISO Markets* (May 2014) ("2013 State of the Market Report"), *available at*: <http://www.nyiso.com/public/webdocs/markets_operations/documents/Studies_and_Reports/Reports/Market_Monitoring_Unit_Reports/2013/2013%20State%20of%20the%20Market%20Report.pdf>.

[23] *See* Attachment V.

When the MMU initially discussed its *2013 State of the Market Report* recommendations, stakeholders requested that the MMU further discuss this capacity market framework at a separate ICAP Working Group meeting due to its complexity. At two separate ICAP Working Group meetings, on August 20, 2014 and November 14, 2014, the MMU led two lengthy discussions of these recommendations. The MMU discussed its recommendation to enhance locational pricing and described its view on elements of an enhanced framework that could dynamically recognize the reliability value of capacity in Load Zone K in the G-J Locality ICAP Demand Curve.

While the MMU's presentation was apparently met with interest by the meeting participants, several also indicated that the MMU proposal would likely require a complete reworking of the NYISO's capacity market and potentially impact the policies and rules administered by the New York State Reliability Council. Stakeholders asked that the MMU develop and present a cost-benefit analysis that would illustrate a savings to consumers. Other stakeholders noted that this proposal would not follow the current LCR setting process and could result in some Localities procuring capacity at levels below the minimum requirements. Some stakeholders expressed concern regarding how this market design concept would support and ensure reliability. While there certainly was some interest in the MMU's market concept, stakeholders participating in the meeting expressed that further evaluating it would be a significant long term undertaking that would be unlikely to be completed prior to the next ICAP Demand Curve reset.

The MMU's *2014 State of the Market Report* included recommendations that effectively repeated the recommendation to adopt a locational framework, but the recommendations in the 2014 report modified the recommendations in the *2013 State of the Market Report* based on feedback from stakeholders.[24] Specifically, the recommendation was modified to ensure Localities would not under-procure capacity. The *2014 State of the Market Report* provided additional information on potential benefits, but the MMU has indicated it will work with the NYISO's Planning Department to provide additional information.

The NYISO reviewed the proposal and has taken the position, which is similar to several comments stakeholders proffered, that the MMU's presented framework, in general, would require significant changes to the current capacity market, be complicated to define, and challenging to administer.

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[24] Potomac Economics, Ltd., *2014 State of the Market Report for the New York ISO Markets* (May 2015) ("2014 State of the Market Report") at pp. x - ix, 100 - 101, *available at*: <http://www.nyiso.com/public/webdocs/markets_operations/documents/Studies_and_Reports/Reports/Market_Monitoring_Unit_Reports/2014/NYISO2014SOMReport__5-13-2015_Final.pdf> at pp. xi, 64-65, 102.

(v) Further Consideration of Pre-Defining, Eliminating, and Export Constrained Concepts

The NYISO's discussion with it stakeholders of the topics of pre-defining and eliminating Localities, and export constrained capacity market design concepts also took place in its annual "project prioritization" process. This is the stakeholder process through which, among other things, the NYISO obtains stakeholder input as it establishes what proposals it will bring to the stakeholders as a market design concept proposal for discussion, or a market design approval project to be taken through the governance process for a stakeholder vote. The NYISO suggested that several issues raised by stakeholders at the Technical Conference and by post-conference comments, be evaluated in 2015. The potential list included the MMU's capacity market framework recommendation described above, modeling export constraints in the ICAP Spot Market Auction for nested capacity zones, and developing market rules to pre-define capacity zones combined with rules to eliminate them.

As part of the project prioritization process, based on input from stakeholders, consideration of rules to eliminate Localities was separated from consideration of developing market rules to pre-define capacity zones. Based on further stakeholder input, the NYISO committed to consider rules for the elimination of Localities or for the achievement of capacity price convergence. The NYISO is currently developing its follow up discussion on this market design concept, which will be based in part on its consideration of stakeholder input to date. It will be presenting and discussing this concept to stakeholders.

At the February 24, 2015 ICAP Working Group meeting, the NYISO highlighted for stakeholders key issues that had been raised during the Technical Conference and in post-conference filed comments.[25] The NYISO offered stakeholders an opportunity to make presentations at a future ICAP Working Group meeting on export constrained modeling concepts, with the objectives of defining the preferred approach and alternatives, presenting numerical examples, and describing the benefits and detriments.[26] No party requested an opportunity to make a presentation or lead a discussion, and no party provided materials.

(vi) Consideration of LCR Setting Methodology

In relation to discussions regarding the November Order, and based on discussions with the stakeholder Operating Committee, the NYISO initiated a process to identify and evaluate alternatives to the current LCR setting process. The NYISO conducts this process after the New York State Reliability Council sets the NYCA Installed Reserve Margin ("IRM"). Mark Younger of Hudson Energy Economics made a presentation to a joint meeting of Market Issues Working Group, ICAP Working Group, and Price Responsive Load Working Group, on the

[25] *See* Attachment VI.

[26] *See id.* at Slide 8.

"IRM/LCR Process & Dynamics."[27] Mr. Younger described factors that could affect the LCRs, and proposed an analysis of the current methodology, using certain sensitivities.

The NYISO notified stakeholders and the MMU that the LCR Task Force was being convened and asked them to participate. On March 5, 2015, the LCR Task Force met. In order to facilitate the NYISO's and its stakeholders' consideration of a potential alternative process to calculate LCRs, the NYISO presented background material so that all stakeholders had a common understanding of the current process by which the LCRs and the IRM were set. It also enumerated some concerns previously raised by stakeholders regarding the LCRs, and proposed next steps for the LCR Task Force to consider alternatives.[28] In the meeting, the NYISO, stakeholders, and the MMU discussed the process to calculate the LCRs and the process by which it will consider and analyze alternatives. The NYISO responded to numerous questions.

The LCR Task Force met again on April 8, 2015. At this meeting, the NYISO presented and described objectives of the current LCR setting methodology and possible alternatives.[29] It solicited stakeholder input to develop a consensus on an objective for the group to focus on when evaluating candidate alternative methodologies to determination the LCRs. The following objectives were discussed:

- Maintain the existing process
- Minimize the NYCA-wide capacity procurement costs
- Minimize the NYCA-wide MW requirement
- Lowest Possible G-J LCR: Retain J and K "as found" and determine the minimum G-J

No consensus on the objective was reached at the meeting. Rather, stakeholders suggested that the NYISO perform studies to demonstrate how the results will differ based on the objective. The NYISO indicated such an approach would require extensive use of resources and should only be undertaken until (and unless) clearer objectives were defined.

IV. THE NYISO'S CONCLUSION AND RECOMMENDED NEXT STEPS

Based on the NYISO's exploration of the issues and evaluation of the proposals discussed at the February Technical Conference, including the MMU's recommendations, through its stakeholder process, the NYISO has concluded that its existing rules are working and that incremental enhancements may well be beneficial. It has also concluded that its stakeholder process and project prioritization process is best suited to continue to explore enhancements to its

[27] *See* Attachment VII.

[28] *See* Attachment VIII.

[29] *See* Attachment IX.

existing market rules. Due to the complexity, a measured approach to identify and define the enhancements, and address implications is appropriate.

The Services Tariff process for identifying the need for an NCZ, obtaining stakeholder input throughout the process, filing with the Commission proposed rules to implement it, and then developing an ICAP Demand Curve for the NCZ along with the other ICAP Demand Curves, was utilized for the first time, in 2013. It resulted in the creation of the G-J Locality. In accordance with that Services Tariff process, by October 1, 2015 the NYISO will have initiated the NCZ Study process and have obtained stakeholder input for the NCZ Study to be issued by January 15, 2016.[30] As the NYISO stated at the Joint Technical Conference on New York Markets & Infrastructure in November 2014, "[t]he NYISO is mindful of the fact that the creation of the new zone has led to wholesale capacity price increases that have had retail price implications. But the NYISO believes that the creation of the new zone was necessary, fully consistent with tariff requirements, and will benefit all New York consumers over time. Needed investments in resources in the lower Hudson Valley are now being made that will bolster long-term reliability and lower capacity prices in the region as they enter service."[31] The Danskammer Generating Station announced its return to service and the Bowline Unit 2 has entered Class Year 2015 as a step towards returning it to its full capacity, and the 720 MW CPV Valley Energy Center is proceeding with development.[32] These projects will enhance reliability, which will benefit all consumers.

The process for identifying the need for an NCZ is very transparent; it gives stakeholders and all Market Participants and potential developers advanced notice of the changes in the market place, and then sends price signals that also have been carefully set in the Demand Curve process. The NYISO recognizes that some incremental adjustments could provide further benefits and have the potential for reducing costs. However, it also believes that care must be taken to develop those rules carefully so that the benefits of the tariff-established process to create new Localities are not compromised, and that uncertainty surrounding the rules does not chill potential economic investment.

The NYISO is beginning the project prioritization process with its stakeholders for 2016. As described below, the issues the NYISO is suggesting that stakeholder consider includes issues raised at the February Technical Conference:

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[30] *See* Services Tariff Sections 5.16.1.2 and 5.16.

[31] *Written Statement of Emilie Nelson, Vice President - Market Operations, on Behalf of the New York Independent System Operator, Inc*., Docket No. AD14-18-000 (Nov. 3, 2014) at 18.

[32] On May 28, 2015, CPV announced that it "expects to commence construction [on the project] in late 2015. *See Competitive Power Ventures Closes Investment Transaction with Global Infrastructure Partners* (May 28, 2015), *available at*: <http://www.cpv.com/press_releases.html#web>>. The Interconnection Agreement for the project is fully executed**.**

- Alternative methods for calculating the LCRs: This project would consider alternative methods for calculating the LCRs for each Locality. The project would include a continuation of the on-going work of the LCR Task Force.

- Modify the ICAP Demand Curve framework to minimize costs of satisfying LCRs: This project would create a dynamic and efficient framework for incenting the lowest cost solutions when setting and meeting locational planning requirements in the capacity market. The MMU has proposed this concept indicating it might enable the capacity market to better provide locational signals in the future and result in more efficient market outcomes.

- Locational Planning Requirements - Pre-define Localities: This project would consider rules for reflecting locational planning requirements in the capacity market to better enable the market to provide locational signals in the future by predefining a set of interfaces or zones that address potential resource adequacy needs and highway deliverability constraints.

- Develop rules for eliminating Localities or achieving price convergence: This effort would build on discussions to date and evaluate whether a mechanism to eliminate Localities is necessary. If it is deemed necessary, then further evaluate the market design concepts for developing the market rules to allow for the elimination of Localities or achieve price convergence when the deliverability constraint(s) that caused its creation is effectively removed such that the constraint can no longer be expected to bind.

- Model Zone K as export constrained: This effort would also build upon and enhance initial design concepts developed with stakeholders**.**

Over the coming months, the NYISO's stakeholders will be "scoring" the proposed projects, which will result in a ranking that the NYISO utilizes to prioritize which projects stakeholders believe warrant consideration above other projects. The NYISO believes that this

input is important to assessing where the greatest benefits to the market can reasonably be achieved.[33]

In any case, the NYISO will be continuing the LCR Task Force. As described above, however, that work must consider potential implications for the New York State Reliability Council rules that are utilized to set the IRM, and how the process for determining the LCRs can best complement those rules. It is also possible that the NYISO may have to engage the New York State Reliability Council to consider revisions to the processes or rules for setting the IRM as part of the approach for considering changes in methods for determining LCRs.

Timing of consideration is also important. The NYISO has already informed stakeholders that as part of the Demand Curve reset process it is now initiating, it plans on requesting proposals to consider a 4 or 5 year periodicity in addition to the current 3-year process, and approaches to enhance the projection of the likely Energy and Ancillary Services revenues of the proxy plant used for setting the curves. With the input from the independent Demand Curve reset consultant, the NYISO plans on evaluating with stakeholders potential rule changes that could enhance price signals. This evaluation and any proposal would also consider revisions to the NCZ Study and the process and timing for the creation of new Localities. The NYISO believes that there are benefits to the entire system that are appropriate to pursue at this time and could be achieved in time for the setting of the next ICAP Demand Curves.

The NYISO sought and considered, and continues to seek and consider, the input of the MMU as it evaluates and develops proposals and market design concepts that are described in this report and works with stakeholders to identify projects to consider in 2016. The MMU was given an opportunity to review and comment on this report.

Because the NYISO and its stakeholders have undertaken steps to consider important issues including rules that could enhance price signals, the stakeholder process should be allowed to continue to work. The analysis and prioritization in the stakeholder process is perhaps the best indicator of where value may be achieved for the market. Accordingly, the NYISO respectfully requests that the Commission not issue a further compliance obligation to pursue development of specific rules.

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[33] Also on the potential 2016 projects for stakeholders to consider is the MMU's proposal, which the MMU proposes for "scoping" in the 2014 State of the Market Report and during the February Technical Conference: internal capacity Deliverability rights for transmission upgrades into a local area. *See Post Technical Conference Comments of Potomac Economics, Ltd., New York ISO Market Monitoring Unit,* Docket No. AD14-6-000 (March 26, 2014) at 11; *see also*, *2014 State of the Market Report* at xi, 64-65, 102. The MMU has suggested considering creating a dynamic and efficient framework for reflecting locational planning requirements in the capacity market to better enable the market to provide locational signals in the future, by granting internal capacity deliverability rights for AC Transmission between zones when AC transmission is upgraded into a local area. The State of the Market report has not indicated this as a priority item. At this stage, the NYISO believes it would require further information in order to assess its potential.

V. SERVICE

This filing will be posted on the NYISO's website at www.nyiso.com. In addition, the NYISO will e-mail an electronic link to this filing to the official representative of each party to this proceeding, to each of its customers, to each participant on its stakeholder committees, to the New York Public Service Commission, and to the New Jersey Board of Public Utilities.

VI. CONCLUSION

Wherefore, for the foregoing reasons, the New York Independent System Operator, Inc. respectfully requests that the Commission accept this Informational Report.

Respectfully submitted,

/s/ Gloria Kavanah
Gloria Kavanah
Counsel for the
New York Independent System Operator, Inc.

cc: Michael Bardee
Gregory Berson
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Morris Margolis
David Morenoff
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Jamie Simler
Kevin Siqveland

ATTACHMENT 1

Capacity Zone (Locality) Elimination

Mariann Wilczek
Capacity Market Products
New York Independent System Operator

Joint MIWG/ICAP Working Group
October 30, 2014
NYISO, Rensselaer, NY

Problem Statement

- Discuss whether there should be a mechanism to eliminate a Locality, and if so, market design concepts to eliminate capacity zones
  - *The Services Tariff uses the term "Locality" to define established capacity zones*

- The purpose of this presentation is to solicit stakeholder feedback

Why do we have Capacity Markets ?

- **Benefits**
  - *Ensure resource adequacy*
  - *Provide a market signal for investment*
  - *Recover a portion of fixed costs not recoverable in Energy and Ancillary Services Markets*
- **Capacity zones ("Localities") recognize the value of capacity in the area.**
  - *More focused price signal where capacity is needed*
  - *Help to address transmission system constraints*
  - *Long term investment signal*
    - **New - Locate**
    - **Existing - Maintain or increase capability**

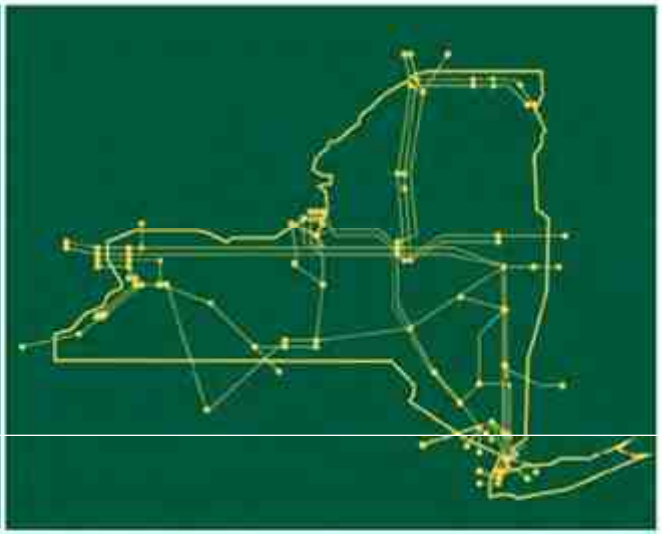
Localities

- The Services Tariff has the set of rules for the triennial process to determine if a new Locality is needed and the steps by which it is created (see Appendix Slides)
- The tariff is silent on the elimination of a Locality

Stakeholder Discussion

- **Do we need to eliminate Capacity Zones ?**
  - *G-J, J, K*
- **Suggested Topics**
  - *Elimination of a Locality*
    - Price convergence
    - Elimination of a deliverability constraint
    - Effect on Offer Floor of units subject to buyer-side mitigation
    - Effect on planning processes
    - Timing issues
- **Comments beyond today's meeting can be sent to Debbie Eckels (deckels@nyiso.com)**

The New York Independent System Operator (NYISO) is a not-for-profit corporation responsible for operating the state's bulk electricity grid, administering New York's competitive wholesale electricity markets, conducting comprehensive long-term planning for the state's electric power system, and advancing the technological infrastructure of the electric system serving the Empire State.



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Background for New Capacity Zones

- **FERC Filings and Orders**
  - *June 30, 2009 - FERC Order accepting the deliverability rules directed the NYISO and the NYTOs to jointly file a proposal to create a new capacity zone.*
  - *January 4, 2011 - NYTOs and NYISO filed proposed criteria and considerations to govern the evaluation and potential creation of new capacity zones.*
  - *September 8, 2011 - FERC issued an order which directed the NYISO to file tariff provisions to specify the process for evaluating, identifying and, if necessary, establishing new capacity zones.*
  - *November 7, 2011 - NYISO filed the tariff sheets containing the specific detail.*
  - *August 30, 2012 - FERC issued an order accepting the November 2011 filing and made the tariff revisions by which new capacity zones would be identified and created effective as of January 9, 2012.*
  - *June 29, 2012 - NYISO submitted a filing proposing buyer-side and supplier-side ICAP market power mitigation rules to apply to any newly created capacity zones.*
  - *June 6, 2013 - FERC issued an order conditionally accepting the proposed mitigation rules, subject to a compliance filing.*
  - *July 8, 2013 - NYISO filed in compliance with the June 2012 order.*
  - *August 23, 2014 - FERC issued a delegated letter order accepting the July 8, 2013 compliance filing.*

Process to Define New Capacity Zones

- **Rules**
  - *The Services Tariff Section 5.16 describes the required steps to identify and propose a New Capacity Zone (NCZ) and Section 5.14 describes how an NCZ is factored into the triennial ICAP Demand Curve reset process.*
  - *The NYISO is required to*
    - **Commence a triennial NCZ Study in the calendar year preceding the calendar year in which the NYISO is required to file the ICAP Demand Curves (ICAP Demand Curve Reset Filing Year).**
    - **Review with the stakeholders by October 1 of that preceding year the inputs and the assumptions to be used in the NCZ Study.**
    - **Complete the NCZ Study by January 15 of the ICAP Demand Curve Reset Filing Year.**
- **Filings**
  - *The Services Tariff requires the NYISO to make one of two types of filings on or before March 31 of each ICAP Demand Curve Reset Filing Year.*
    - **"[i]f the NCZ Study does not identify a constrained Highway interface, the ISO shall file with the Commission the ISO's determination that the NCZ Study did not indicate that any New Capacity Zone is required pursuant to this process, along with a report of the results of the NCZ Study."**
    - **Propose a New Capacity Zone if the NCZ Study identifies a constrained Highway interface into one of more Load Zones, including identify the boundary of one or more NCZs and file tariff revisions to implement new NCZ(s) along with the NCZ Study results.**
- **Process Timing**
  - *The steps were designed so that the NYISO's filing to propose an NCZ would be made in time for it to be considered as part of and concurrent with the periodic review of the ICAP Demand Curves for existing Localities and the NYCA,*
  - *Pursuant to the timing in the Services Tariff, the ICAP Demand Curves for an NCZ would be effective at the same time other revised ICAP Demand Curves; and in time for all ICAP market activities (e.g. setting the LCRs, import rights processes) for the first Capability Year after it is proposed and accepted.)*

ATTACHMENT 2

Capacity Zone (Locality) Predefine & Eliminate

Mariann Wilczek
Capacity Market Products
New York Independent System Operator

ICAP Working Group
November 17, 2014
NYISO, Rensselaer, NY

Objectives

- Discuss whether capacity zones should be predefined and, if so, market design concepts to predefine capacity zones
- Continue discussion whether capacity zones should be eliminated and, if so, market design concepts to eliminate capacity zones

Request from October 30 MIWG

- **Stakeholders requested a presentation on how PJM and ISO-NE eliminate capacity zones**
  - ***Stakeholders recognized that this request was in the context of markets that had different capacity zone constructs***
- **The following slides provide a brief overview of how PJM predefines and eliminates capacity zones**
  - ***ISO-NE will be presented at a future ICAP Working Group meeting***

PJM - Locational Deliverability Area

- **Locational Deliverability Area (LDA) - Reliability Assurance Agreement**
  - *Sub regions used to evaluate locational constraints. LDAs include EDC zones, sub-zones and combination of zones. A Zone is an area within the PJM Region or such areas that may be combined as a result of mergers and acquisitions; or added as a result of the expansion of the boundaries of the PJM Region. A Zone will include any Non-Zone Network Load located outside the PJM Region that is served from inside a particular Zone.*
  - *Limited ability to import capacity due to physical limitations of the transmission system, voltage limitations or stability limitations.*
  - *There are currently 27 LDAs.*
- **PJM will analyze the need for an addition of an LDA - Manual 14b**
  - *RTEP Market Efficiency Analysis - constrained facilities will be identified(persistent congestion on a 500kV or above facility or interface) for multiple years beyond the next Base Residual Auction*
  - *RTEP Long Term Planning - Future constrained facilities or clusters of facilities are identified utilizing the long term planning analysis. Potential facilities are screened using thresholds that are utilized in the RTEP long-term planning studies. This analysis is updated annually based on approved RTEP upgrades. 500 kV and above facilities that advance more than three years between RTEP cycles are identified for further consideration. If the driver for a 500 kV facility advancing more than three years is linked to a specific event (e.g. significant generation retirement), it may require further analysis.*
  - *Once a facility has been identified utilizing the above methods, distribution factor analysis is utilized to determine the specific busses included in the analyzed LDA.*
  - *The sequence of evaluating areas of differing size involves nesting small sub-areas into larger areas and finally areas into larger geographical areas of Locational Deliverability Area (LDA).*
- **Any other party may propose to PJM a new LDA and they will study**
- **PJM required to file with FERC if a new LDA (or aggregate of LDAs) is warranted**

Sources - PJM Schedule 10.1 of Reliability Assurance Agreement, PJM Manuals 14b PJM Region Transmission Planning Process, Manual 20 - PJM Resource Adequacy Analysis, Manual 18 - PJM Capacity Market, Manual 35 - PJM Definitions

PJM - Load Deliverability Study (CETO/CETL) Manual 18 - PJM Capacity Market

- The process of determining the Installed Reserve Margin (IRM) that meets the PJM reliability criterion assumes that the internal RTO transmission is adequate and any generation can be delivered to any load without transmission constraints. This process helps in determining the minimum possible IRM for the RTO. However, since transmission may have limitations, after IRM is determined a Load Deliverability analysis is conducted. The RTO is divided into different sub-regions for this analysis. These sub-regions are referred to as Locational Deliverability Areas (LDAs) in the Reliability Pricing Model.
- The first step in the Load Deliverability analysis is to determine the transmission import capability required for each LDA to meet the area reliability criterion of Loss of Load Expectation of one occurrence in 25 years. This import capability requirement is called Capacity Emergency Transfer Objective (CETO), expressed in megawatts and valued as unforced capacity. The standard generation reliability evaluation model is used to determine CETO.
- The second step in Load Deliverability analysis is to determine the transmission import capability limit for each LDA using the transmission analysis models. For this analysis, a Transmission Upgrade including transmission facilities at voltages of 500 kV or higher that is in an approved Regional Transmission Expansion Plan ("Backbone Transmission") will be included in the system model only if it satisfies the project development milestones set forth in the tariff. This import capability limit is called Capacity Emergency Transfer Limit (CETL), expressed in megawatts and valued as unforced capacity.
- If CETL value is less than CETO value, transmission upgrades are planned under the Regional Transmission Expansion Planning Process (RTEPP). However, higher than anticipated load growth and unanticipated retirements may result in the CETL value being less than CETO value with no lead time to build transmission upgrades to increase CETL value. These conditions could result in locational constraints in the RTO.

Sources - PJM Schedule 10.1 of Reliability Assurance Agreement, PJM Manuals 14b PJM Region Transmission Planning Process, Manual 20 - PJM Resource Adequacy Analysis, Manual 18 - PJM Capacity Market, Manual 35 - PJM Definitions

PJM - Locational Constraints

- **Locational Constraints are localized intra-PJM capacity import capability limitations (low CETL margin over CETO) that are caused by transmission facility limitations or voltage limitations that are identified for a Delivery Year in the PJM Regional Transmission Expansion Planning Process (RTEPP) prior to each Base Residual Auction. Such locational constraints are included in the RPM to recognize and to quantify the locational value of capacity within the PJM region.**

- **An LDA is modeled if:**
  - ***LDA has CETL < 1.15 CETO***
  - ***LDA had locational price adder in any of three immediately preceding Base Residual Auctions***
  - ***LDA is likely to have a locational price adder based on a PJM analysis using historic offer price levels***
  - ***LDA is EMAAC, SWMAAC, and MAAC***
  - ***An LDA that does not meet the criteria above may be modeled if PJM identifies reliability concerns with LDA***
  - ***LDAs modeled in a Base Residual Auction are modeled in the Incremental Auctions for the Delivery Year***
- **A Reliability Requirement and a Variable Resource Requirement Curve will be established for each constrained LDA to be modeled in the RPM Base Residual Auction.**
- **Capacity Import Limits**
  - ***First modeled in 2017/2018 year that will limit the delivery of capacity from external source zones***

Sources - PJM Schedule 10.1 of Reliability Assurance Agreement, PJM Manuals 14b PJM Region Transmission Planning Process, Manual 20 - PJM Resource Adequacy Analysis, Manual 18 - PJM Capacity Market, Manual 35 - PJM Definitions

PJM - LDAs

- **Mitigation**
- **VRR Curves**
- **Locational Requirements**

NYISO - Predefine Possible Options

- **Pursue an incremental approach first**
  - ***Based on the tariff's current deliverability construct***
    - **Look at what constraints are likely to bind or where there are likely to be export constrained zones**
- **The MMU has proposed a dynamic process - Discussion at August 20, 2014 and November 14 ICAP WG meetings**
  - ***Complicated to define***
  - ***Complicated to administer***
  - ***Requires significant changes to the current capacity market***

PJM approach

NYISO - Eliminate Possible Options

- Actual or projected price convergence with the NYCA clearing price
- Deliverability Constraints are Eliminated
- No need to eliminate as prices will converge or nearly converge

Potential Triggers for Elimination of a Capacity Zone

- Actual or projected price convergence with the NYCA clearing price
  - *What period of time - past or future or both*
    - How many months, consecutive ?
    - Studies performed that the prices converge in a period in the future ?
    - Does the IRM/LCR setting process impact the convergence ?

  Upcoming Market Events
    - Transmission builds and enhancements - how far ahead, base case inclusion rules
    - Resource retirements/additions
      - What is retiring/being added ? When ?
      - Should Mothballs and ICAP Ineligible be considered ?
    - How to look forward without Demand Curves for those periods

  How to look at Price Convergence
    - Planning Studies
      - Deliverability study, IRM/LCR study, a combination of planning studies or other study ?
      - How far out is the study horizon ?

Triggers for Zone Elimination (cont)

- **Deliverability Constraints are Eliminated**
  - ***What MW threshold is required to cause elimination***
    - **Incremental MW of interface deliverability capability have been added to eliminate all likelihood that the interface will become constrained within the horizon period ?**
    - **Compare amount of incremental interface capability to what ?**
    - **What about Generator retirements/additions?**
  - ***Planning Horizon***
    - **What is the time required to show the deliverability constraint has been adequately relieved ?**
      - **5 years ? 10 years ? Other ?**
      - **Baseline , inclusion rules ?**
      - **Scenarios**

Alternative Position

- **No need to eliminate as prices will converge or nearly converge**
- **Other analysis to support**
  - ***Changes to the IRM/LCR processes and/or DCR***
  - ***Export constrained zone***

Potential Issues to Elimination

- **Mitigated Units (buyer-side and supplier-side)**
  - ***Buyer -side (BSM)***
    - **If a mitigated unit is no longer in a mitigated zone is it no longer subject to an Offer Floor ?**
    - **What if the eliminated zone becomes a mitigated capacity zone in the future ?**
    - **New units could enter the newly eliminated zone and not be mitigated and others still mitigated**
    - **Continuation of BSM without the associated Locality creates a disconnect and unlikely the mitigated unit will come out of mitigation**
  - ***Supplier-side (Pivotal Supplier)***
    - **Are business decisions affected by the uncertainty of whether or not this might apply**

Potential Issues to Elimination (con't)

- CY deliverability study , impacts to SDU cost allocations, built or not built
- Import Rights analysis
- Tariff rule changes
- Software issues

Timing

- **When and how frequently is the periodic planning study or other analyses done?**
  - ***Seasonal***
  - ***Annual***
  - ***With NCZ study in a DCR year***
  - ***Should elimination be coupled with examination of other new zones or a reconfiguration of an existing one***
- **What time frame does the elimination become effective ?**

Studies and Analyses Impacted

- **Impacts**
  - ***What type of impacts***
  - ***Consumer impacts***

CRP, RNA

  - ***Do market based or backstop solutions impact the elimination of a zone ?***
    - **If so, how ?**

- **Interconnection, Class Year and Deliverability Studies**

MMA BSM determinations linked to CY Studies

- **Timing of studies for zone elimination may conflict with existing studies; e.g., DCR and IRM/LCR Studies**

Next Steps

- **Elimination**
  - ***Provide highlights of ISO-NE***
  - ***Continue stakeholder discussions on elimination concepts into 2015***

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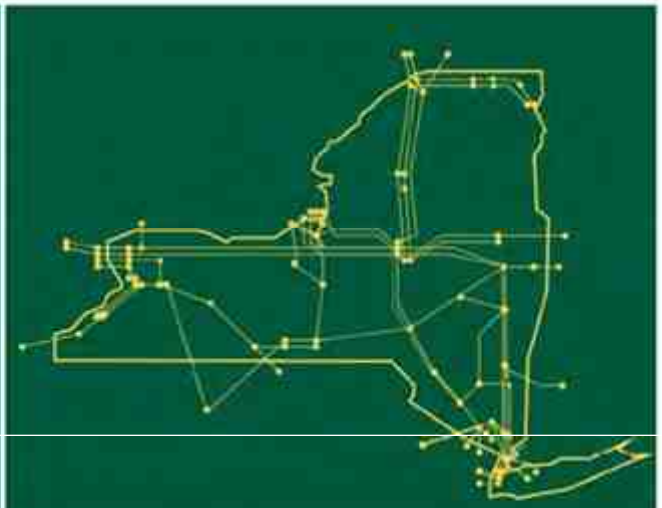

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ATTACHMENT 3

Treatment of Zone K Export Constraints into the G-J Locality : Market Design Concept

Randy Wyatt
Capacity Market Products
New York Independent System Operator

MIWG/ICAPWG
December 18, 2014
NYISO, Rensselaer, NY

Background: How did we get here?

- **The NYISO Tariff provides for the creation of import constrained zones (Localities)**
- **Tariff prescribed triennial process**
  - ***New Capacity Zone (NCZ)Study / Highway deliverability constraint test***

MST §5.16.2 - "In determining the New Capacity Zone Boundary, the ISO shall consider the extent to which incremental Capacity in individually constrained Load Zones could impact the reliability and security of the other constrained Load Zones, taking into account interface capability between the constrained load zones." (emphasis added)

  - ***Other than the above, the tariff is silent on treatment of export constraints into a Locality***
  - ***On April 30, 2013 the NYISO filed with FERC to create a G-J NCZ***
    - **K was not included in the NCZ boundary based on reliability analysis, (MST §5.16.2)**
    - **2013 BPWG Process identified MDCP for modeling export constraints in the ICAP Auction**

FERC Tech Conference

- The purpose of the conference was to discuss whether or not to model Load Zone K export-constraints in future Demand Curve reset proceedings.
- NYISO presented transmission security analysis and resource adequacy analysis material that demonstrates a 300 MW export limit from K to GHI
- MMU and stakeholder comments support valuing K capacity reliability benefits in the new Locality

11/25/14 FERC Order Resulting from the FERC Technical Conference

- **FERC's order**
  - ***Directed the NYISO to work with stakeholders "to explore whether a proposal can be developed that could reduce the cost of procuring capacity while meeting the NYISO LOLE objective."***
  - ***Directed the NYISO to "explore the issues and evaluate the proposals discussed at the conference, including the MMU's recommendations, through its stakeholder process and file an informational report with the Commission by June 1, 2015."***
  - ***"[A]gree[d] with NYISO that it is premature to require it to file tariff language by June 1, 2015."***

Pricing Hierarchy Rules

- **Hierarchy rules link Market-Clearing Price (MCP) outcomes in the auctions**
  - ***If NYC MCP < G-J* MCP, set NYC MCP = G-J* MCP***
  - ***If G-J MCP < ROS MCP, set G-J MCP = ROS MCP***
  - ***If LI MCP < ROS MCP, set LI MCP = ROS MCP***

* G-J Locality consists of the Lower Hudson Valley (Zones G-I) and New York City (Zone J)

Capacity Market Mechanics: Background

- **Conduct and solve Spot auctions for all Demand Curve "regions" (*i.e.*, the 3 Localities and the NYCA), MW that clear above a Locality's Locational Minimum Installed Capacity Requirement (LCR) are automatically "offered" to satisfy LSEs' additional minimum requirements as follows**
  - ***Zone J MW that clear above requirements are offered in the G-J Locality.***
  - ***Zone K MW and G-J Locality MW that clear above requirements are offered in NYCA.***
  - ***Resale of the MW that cleared above LCRs offsets the cost to load in the Locality***
  - ***Revenue to ICAP Suppliers in Localities where MW cleared above requirements is not impacted by the resale***

NYISO's Proposed Market Design Concept

- **Originally presented at FERC Tech Conference**
- **NYISO conceptual design elements**
  - ***One export constrained zone: Load Zone K***

Set up rules to ensure equivalent results to a simultaneous solution

- **Determination of a cap on Zone K capacity that could be used to satisfy the G-J LCR**
- **Model Zone K export caps in the Spot Auction**
- **This cap would stay fixed in the Spot auction**
- **Explore mitigation rules and subsequent settlement rules**

Market Design Concept: Auction Mechanics for Treatment of Export Constraints into a Locality

- Solve the auction as we do today, apply hierarchal pricing rules to result in a simultaneous auction outcome, with an additional step
- Offer the MW that clear above the Zone K LCR, up to the K export limit MW, into the G-J auction at a zero price
- Offer the remaining MW that clear in K above the Zone K LCR (i.e., those above the export limit) into NYCA at a zero price
- Clear NYCA same as today

Questions and Comments

- The NYISO is seeking comments on the treatment of Zone K export constraints
- Additional comments, beyond those received at today's presentation, should be sent to DEckels@NYISO.com by January 7, 2015

Next Steps

- January - review feedback from stakeholders re: Treatment of Zone K Export Constraints
- February - Continue discussions with stakeholders including stakeholder feedback and alternative approaches

ATTACHMENT 4

This Numeric Example has been posted on February 19, 2015 with the December 18, 2014 MIWG Materials to accompany the NYISO presentation entitled: "Treatment of Zone K Export Constraints into the G-J Locality: Market Design Concept"

Requirements	LI LSE	NYC LSE	LHV LSE	ROS LSE	Totals
LI Zone	6000	0	0	0	6000
NYC Zone	0	10000	0	0	10000
GHIJ Zone	0	10500	4500	0	15000
NYCA (TD) Zone	6500	11000	5000	17500	**40000**
GHI Zone	0	500	4500	0	5000
ROS Zone	500	500	500	17500	19000

Supply	LI	NYC	LHV	GHIJ Total	ROS	NYCA Total
Base Case	7000	11000	5500	16500	17500	**41000**

Base Case - LI with 1000MW of Excess over LCR Rqmt., 500MW in Excess of NYCA IRM Rqmt.

	LI	NYC	GHIJ	NYCA	
Clearing Prices	$7	$18	$12	$6	
Location	LI	NYC	LHV	ROS	Totals
Paid to Generators	$49,000,000	$198,000,000	$66,000,000	$105,000,000	**$418,000,000**
LI Requirement	6000	0	0	0	6000
LI Excess	1000	0	0	0	1000
LI Purchased	7000	0	0	0	7000
NYC Requirement	0	10000	0	0	10000
LI -> J Export	0	0	0	0	0
NYC Excess	0	1000	0	0	1000
NYC Purchased	0	11000	0	0	11000
GHIJ Requirement	0	10500	4500	0	15000
LI-> GHIJ Export	0	0	0	0	0
GHIJ Excess	0	1050	450	0	1500
GHIJ Purchased	0	11550	4950	0	16500
GHI Purchased	0	550	4950	0	5500
NYCA Requirement	6500	11000	5000	17500	40000
NYCA Excess	162.5	275	125	437.5	1000
NYCA Purchased	6662.5	11275	5125	17937.5	41000
ROS Purchased	-337.5	-275	175	17937.5	17500
Total Costs to Load					
LI	$49,000,000	$0	$0	$0	
NYC	$0	$198,000,000	$0	$0	
GHI	$0	$6,600,000	$59,400,000	$0	
ROS	($2,025,000)	($1,650,000)	$1,050,000	$107,625,000	
Total	$46,975,000	$202,950,000	$60,450,000	$107,625,000	**$418,000,000**

Requirements	LI LSE	NYC LSE	LHV LSE	ROS LSE	Totals
LI Zone	6000	0	0	0	6000
NYC Zone	0	10000	0	0	10000
GHIJ Zone	0	10500	4500	0	15000
NYCA (TD) Zone	6500	11000	5000	17500	**40000**
GHI Zone	0	500	4500	0	5000
ROS Zone	500	500	500	17500	19000

Supply	LI	NYC	LHV	GHIJ Total	ROS
Base Case	7000	11000	5500	16500	17500

Export Case - 300MW (Export Limit) of LI Excess to G-J, LI LSE's Receive G-J $

LI LSE -> GHIJ	LI	NYC	GHIJ	NYCA	
Clearing Prices	$7	$18	$10	$6	
Location	LI	NYC	LHV	ROS	Totals
Paid to Generators	$49,000,000	$198,000,000	$55,000,000	$105,000,000	**$407,000,000**
LI Requirement	6000	0	0	0	6000
LI Excess	1000	0	0	0	1000
LI Purchased	7000	0	0	0	7000
NYC Requirement	0	10000	0	0	10000
LI -> J Export	0	0	0	0	0
NYC Excess	0	1000	0	0	1000
NYC Purchased	0	11000	0	0	11000
GHIJ Requirement	0	10500	4500	0	15000
LI-> GHIJ Export	-300	210	90	0	0
GHIJ Excess	0	1050	450	0	1500
GHIJ Purchased	-300	11760	5040	0	16500
GHI Purchased	-300	760	5040	0	5500
NYCA Requirement	6500	11000	5000	17500	40000
NYCA Excess	162.5	275	125	437.5	1000
NYCA Purchased	6662.5	11275	5125	17937.5	41000
ROS Purchased	-37.5	-485	85	17937.5	17500
Total Costs to Load					
LI	$49,000,000	$0	$0	$0	
NYC	$0	$198,000,000	$0	$0	
GHI	($3,000,000)	$7,600,000	$50,400,000	$0	
ROS	($225,000)	($2,910,000)	$510,000	$107,625,000	
Total	$45,775,000	$202,690,000	$50,910,000	$107,625,000	**$407,000,000**

The prices and quantities used in the example are not actual values but are approximated to show relative magnitudes for the purpose of this illustration.

ATTACHMENT 5

2013 State of the Market Report Recommendation to Enhance Locational Pricing in the Capacity Market

Pallas LeeVanSchaick
NYISO Market Monitoring Unit
Potomac Economics

Installed Capacity Working Group
August 20, 2014

POTOMAC ECONOMICS

Introduction

- Additional details were requested about Recommendation #1 in the 2013 SOM Report, which was to:
  - ✓ Create a dynamic and efficient framework for reflecting locational planning requirements, including:
    - a) Pre-defining interfaces/zones to satisfy planning reqs
    - b) Granting financial capacity transfer rights for Tx upgrades
    - c) Set demand curves to minimize cost to satisfy planning reqs
- This presentation covers:
  - ✓ Concerns with current capacity market framework
  - ✓ Principles and objectives of an enhanced framework
  - ✓ Key elements of an enhanced framework for (a), (b), & (c)
  - ✓ An alternative concept for (a) & (c)

Current Capacity Market Framework: Overview of Concerns

- The following slides discuss five concerns with the current rules:
  1) The delay in the creation of an NCZ in SENY has contributed to an increase in overall costs for loads in recent years;
  2) Prices are inconsistent with the value of resources in each zone, leading to over-procurement in low-value areas;
  3) Transmission projects are not compensated for their value in the capacity market, undermining incentives for investment;
  4) If additional retirements lead to resource adequacy issues outside SENY, the capacity market will not provide efficient signals for investment; and
  5) The capacity market does not provide incentives for helping resolve transmission security issues, although these have become increasing prevalent in recent RNAs.

Current Capacity Market Framework: Effects of Delay in Creation of NCZ in SENY

- Resource Adequacy & Transmission Security issues for UPNY-SENY have long been identified in planning studies.
- The slow process for creating the G-J Locality has:
  - ✓ Contributed to the 21 percent decline in Lower Hudson Valley unforced capacity from Summer 2006 to Summer 2013;
  - ✓ Led to years of inflated LCRs and capacity prices for NYC (e.g., 3 percent increase in LCR → $47/kW for 2013/14);
  - ✓ Erected inefficient barriers to entry in Zones A to F where new resources would be subject to a more stringent Highway Deliverability Test; and
  - ✓ Contributed to a dramatic change in capacity prices for the Lower Hudson Valley from 2013/14 to 2014/15 (instead of gradual one).
- Under the current process, a new NCZ would be created 2 to 4 years after similar problems would emerge in the future.

Current Capacity Market Framework: Prices Not Consistent with Reliability Value

- The reliability value of adding resources in each area could be more efficiently reflected in the Demand Curves or the LCRs.
  - ✓ Capacity prices are not consistent with the LOLE impact of additional capacity in each area (in the scenario below where each area is at its LCR/IRM). Note, as Zone K capacity rises above the LCR, LOLE impact falls more quickly than in other areas.

2013 SOM Table 7: Cost of Improving Reliability from Additional Capacity

Locality	Monthly Demand Curve Reference Point ($/kW-mo) (1)	Annual Change in LOLE from 100 MW Capacity Addition (2)	Annual Cost of 1 Percent LOLE Improvement =(1)/(2)
G-J Locality	$12.14	0.9%	$12 Million
NYCA	$8.84	0.3%	$27 Million
Zone J (New York City)	$18.55	1.0%	$17 Million
Zone K (Long Island)	$7.96	1.0%	$7 Million

Current Capacity Market Framework: Under-Compensating Transmission Investment

- The current market rules provide no capacity payments to most internal transmission facilities.
  - ✓ However, transmission investment can significantly reduce the cost of maintaining adequate installed reserve margins.
    - Transmission provides a benefit in capacity market comparable to generation.
  - ✓ This may lead to under-investment in transmission.
- New generation projects may be able to interconnect in a manner that increases TTC on key interfaces.
  - ✓ However, this may require additional expenditures.
  - ✓ Hence, generators may forego opportunities to increase TTC, since they receive no compensation in the capacity market.

Current Capacity Market Framework: Effects of Future Retirements

- Future retirements could change the distribution of resources dramatically, which could increase the importance of interfaces not currently addressed in the capacity market.
  - ✓ Example: Retiring Ginna & Huntley would lead to resource adequacy violations in western New York.
    - The result of those events under the current market rules would be an increase in the IRM and/or LCRs.
- Even if necessary NCZs are eventually created, the lengthy and uncertain process will not provide efficient market incentives when critical resource adequacy needs arise in the future.
  - ✓ Investors will not have incentives to enter until after these issues become critical and costly.

Current Capacity Market Framework: Lack of Incentive to Resolve Tx Security Issues

- Inter-zonal transmission security violations could arise before resource adequacy violations.
  - ✓ This could occur even for an area modeled in the capacity market (e.g., RNA identifies violations into the G-J Locality).
  - ✓ A Regulated Solution might become necessary before the capacity market can incent new entry.
- Retirement/mothball requests by 115kV units outside SENY have led recent RNAs to identify Tx security violations.
  - ✓ The NYISO markets do not recognize the value of maintaining 115kV reliability and security.
  - ✓ Resources on the 115kV system often have fewer economies of scale than higher voltage units. This may lead them to retire sooner and/or enter into costly RSSA contracts.

Enhanced Capacity Market Framework: Introduction

- We recommend enhancements consistent with these principles:
  - ✓ Create interfaces and capacity zones based on where resources are needed to satisfy planning reliability criteria.
  - ✓ Compensate resources (incl. transmission) consistent with their value in satisfying NYISO planning reliability criteria.
- Such enhancements would provide the following benefits:
  - ✓ Increase incentives to entry for facilities that increase transmission capability.
  - ✓ Reduce overall cost to load by procuring capacity from resources most economic for satisfying planning criteria.
  - ✓ Provide more certainty to investors about how emerging reliability needs will affect capacity prices in the future.

Elements of an Enhanced Framework: Introduction

- There may be many ways to satisfy the design principles described above. This presentation discusses:
  - ✓ Elements of two potential enhanced market designs to illustrate how concerns with the current market might be addressed:
    - One design would pre-define Capacity Market Interfaces (slides 11-22) - For each interface, this would include:
      - Defining the downstream capacity zone
      - Defining the Fungible Area in the capacity zone
      - Treatment of Non-Fungible Area(s) in the capacity zone
      - Placement of the Demand Curve for the capacity zone
    - An alternative design concept is discussed (slides 26-27).
  - ✓ Compensating transmission for its capacity value (slides 23-25).

Elements of an Enhanced Framework: Pre-Define Capacity Market Interfaces

- Capacity markets exist to provide the "missing money" needed to satisfy resource adequacy and transmission security criteria.
- Interfaces modeled in capacity market should be derived from the associated planning assessments, including:
  - ✓ RNA interfaces that bind into capacity-short areas during MARS LOL events. (See possible interfaces in Appendix A)
- Benefits of pre-defined Capacity Market Interfaces:
  - ✓ Satisfies planning criteria at lowest possible cost;
  - ✓ Ensures price separation occurs when capacity is more valuable in one region; and
  - ✓ Provides more certainty to investors by helping them predict how reliability needs will affect future capacity prices.

Elements of an Enhanced Framework: Identify Capacity Zones

- For each Capacity Market Interface, there is a downstream capacity zone where resources can be placed to satisfy needs without increasing loading on interface. (see list of possible zones in Appendix B)
- Ideally, price separation should occur when the effect of downstream capacity on the NYCA LOLE is different from the effect of upstream capacity.
  - ✓ The amount of price separation should be proportional to the extent that the Capacity Market Interface binds limiting flows to the capacity-short area during MARS LOL events (for the As-found system).

Elements of an Enhanced Framework: Identify Fungible Area in Each Capacity Zone

- Within a particular capacity zone, transmission constraints may limit the deliverability of capacity from some areas.
  - ✓ However, capacity in such export-limited areas still may provide some reliability benefit.
- To set efficient capacity prices, it is important to distinguish between Fungible Areas and Non-Fungible Areas.
  - ✓ The Fungible Area includes zones where resources can provide relief that is roughly equivalent to the Proximate Zone (i.e., zone closest to a particular Capacity Market Interface).
  - ✓ Example: For capacity zone G to K, it is possible that:
    - The Fungible Area would include Zones G to J; and
    - The Non-Fungible Area would include that Zone K.

Elements of an Enhanced Framework: Identify Fungible Area in Each Capacity Zone

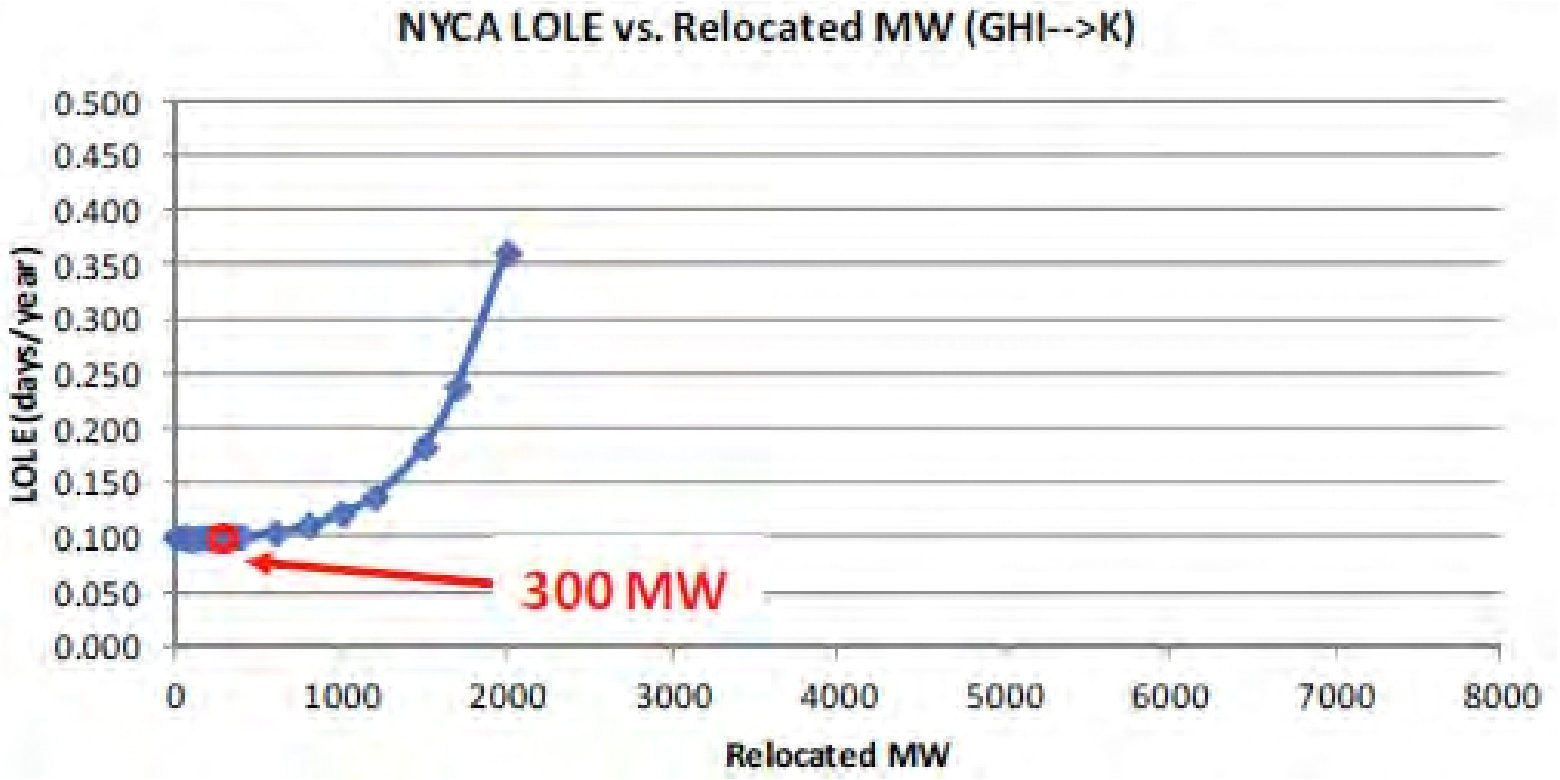
- Transparent and objective criteria for classifying areas as fungible or non-fungible is beneficial because it:
  - ✓ Facilitates pricing rules that compensate resources in proportion to the reliability benefit they provide; and
  - ✓ Enables prospective investors to predict how retirements and other market developments will affect future clearing prices.
- Such criteria could include a process whereby:
  1) The As-found system is moved to 0.1 LOLE by scaling load;
  2) For a capacity zone, MWs are shifted from the Proximate Zone to another zone until:
     - LOLE increases to 0.105; or
     - MW shifted equals 10% of capacity zone load.

Elements of an Enhanced Framework: Non-Fungible Areas - Export Limits

- For load zones that are not in the Fungible Area for a particular Capacity Market Interface:
  - ✓ Export Limit would limit sales from each Non-Fungible Area.
- In the capacity auction:
  - ✓ The Export Limit would be applied relative to the peak load;
  - ✓ Before Export Limit is reached, the value of capacity in a Non-Fungible Area is the same as the Fungible Area; and
  - ✓ Once Export Limit is reached, the value of capacity in a Non-Fungible Area would be discounted using a Benefit Ratio.
- The process for identifying a Non-Fungible Area and deriving an Export Limit would be similar to the NYISO evaluation of Zone K (although it was based on the As-found system).

Elements of an Enhanced Framework: Non-Fungible Areas - Export Limits

Slide 10 in NYISO Presentation at Zone K Tech Conference



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Elements of an Enhanced Framework: Non-Fungible Areas - Benefit Ratios

- Non-Fungible Areas provide reliability benefit to the extent that additional capacity relieves the Capacity Market Interface.
  - ✓ The benefit is inversely proportional to the extent of binding constraints in MARS LOL events (when the Capacity Market Interface is also limiting flows into the capacity-short area).
  - ✓ The price of capacity should be discounted accordingly.
- A Benefit Ratio could be used to clear and to discount the clearing price in the spot auction. (Appendix C discusses possible ways to calculate a Benefit Ratio.)
  - ✓ Example: if Zone K exports bind in 40% of LOL events when interfaces into capacity zone G to K also bind:
    - Zone K Benefit Ratio would be 60%, and the last 100 MW in Zone K would satisfy 60 MW of G to K requirement.

Elements of an Enhanced Framework: Non-Fungible Areas - Clearing the Spot Auction

- Spot Auctions should clear such that the reliability value of Non-Fungible Areas is accurately reflected in clearing prices.
- In each capacity zone, offers would be cleared from lowest to highest until intersection with demand curve.
  - ✓ Offer MWs & prices evaluated as current market for capacity:
    - In the Fungible Area; and
    - In the Non-Fungible Area until Export Limit is reached.
  - ✓ After Export Limit is reached:
    - Offer MWs multiplied by Benefit Ratio; and
    - Offer prices divided by Benefit Ratio.
- This is illustrated in Appendix D.

Elements of an Enhanced Framework: Demand Curve Parameters

- The current rules do not ensure that relative capacity prices are efficient. To illustrate, suppose that adding 100 MW in:
  - ✓ Zone 1 lowers LOLE by 0.010 where the price is $120/kW-yr.
  - ✓ Zone 2 lowers LOLE by 0.005 where the price is $100/kW-yr.
  - ✓ In this example, the price of improving reliability by 0.01 is $20 million/year in Zone 2 and $12 million/year in Zone 1.
    - Hence, prices are too high in Zone 2 and too low in Zone 1.
- Ideally, demand curves should be set such that capacity prices reflect the reliability value of additional capacity in each zone.
  - ✓ All areas would have the same ratio of: (a) capacity price to (b) rate of change in LOLE per MW.
  - ✓ This way, 1 MW in a $10/kW-month zone would provide twice the benefit of 1 MW in a $5/kW-month zone.

Elements of an Enhanced Framework: Demand Curve Parameters

- Pricing consistent with value would have several implications:
  - ✓ *More* capacity would be attracted to zones with a *low* Net CONE and where capacity provides *greater* benefit; and
  - ✓ *Less* capacity would be attracted to zones with a *high* Net CONE and where capacity provides *lesser* benefit.
  - ✓ Overall, capacity market costs would fall because each dollar of investment would provide more reliability.

Elements of an Enhanced Framework: Demand Curve Parameters

- In the demand curve reset, the NYISO could:
  - ✓ Create a Procurement Target to be used in place of the LCR.
    - The Procurement Target would be adjusted at the same time as other demand curve parameters rather than annually.
  - ✓ Define each demand curve (including a Procurement Target, a Reference Point, and a Zero Cross Point) such that:
    - All Proximate Zones have same ratio of: (a) capacity price to (b) rate of change in LOLE/MW of additional capacity,
    - When each capacity zone is at 100% of its Excess Level; and
    - When each capacity zone is at X% of its Excess Level (where X is a pre-defined margin moderately above the Excess Level).

Elements of an Enhanced Framework: Inter-zonal Transmission Security

- If the demand curve for each capacity zone is set relative to the Procurement Target as described, the zone may not satisfy inter-zonal transmission security criteria. In this case, a second demand curve could be modeled for the capacity zone with:
  - ✓ Procurement Target raised until criteria met at excess level.
    - This would give the security-constrained capacity zone a higher ratio of: (a) capacity price to (b) rate of change in LOLE per MW of additional capacity.
    - This would allow for downward adjustments in the Procurement Targets for all other capacity zones.
  - ✓ For any Non-Fungible Area, the Export Limit should be set to reflect transfer capability for the relevant N-1-1 scenario and the Benefit Ratio should equal 0.

Elements of an Enhanced Framework: Financial Capacity Transfer Rights

- The current market rules provide no capacity payments to internal transmission facilities.
  - ✓ However, transmission investment can significantly reduce the cost of maintaining adequate installed reserve margins.
    - Transmission makes existing resources more deliverable and reduces the effects of contingencies.
  - ✓ This may lead to under-investment in transmission.
- Ideally, transmission should receive capacity compensation to the extent it provides a service comparable to installed capacity.
  - ✓ Compensation should be based on the amount by which installed capacity requirements are reduced by the facility.

Elements of an Enhanced Framework: Financial Capacity Transfer Rights

- Efficient compensation for a transmission facility requires quantifying:
  1) The effect on the TTC of one or more interfaces from adding/ removing a facility.
  2) The marginal effect of a change in TTC on LOLE for the As-found system.
  3) The value of reliability in $s per unit of LOLE implied by the placement of the demand curves.
- Efficient compensation = (1) × (2) × (3)

Elements of an Enhanced Framework: Financial Capacity Transfer Rights

- Some generation affects the TTCs of interfaces in the RNA.
  - ✓ The 2014 RNA (pages D-11 & D-12) provides a list of Dynamic Limits, which are interface TTCs that depend on the commitment status of individual generators.
  - ✓ Example: Two Dunkirk units raise the Dysinger East interface TTC by 750+ MW.
- It would also be appropriate to compensate (or charge) individual generators for their impact on interface TTC.
  - ✓ Such compensation would provide incentives to interconnect at points that increase the deliverability of other generators.
  - ✓ Such charges would be more efficient than assigning SDU costs, since these can be a barrier to efficient investment if the SDU costs are higher than the value of the upgrade.

Alternate Capacity Market Framework

- An alternative approach (to the one discussed in earlier slides) would consist of:

  1) Developing a single capacity demand curve for all areas expressed in $/unit of change in LOLE (rather than $/kW in a particular location).

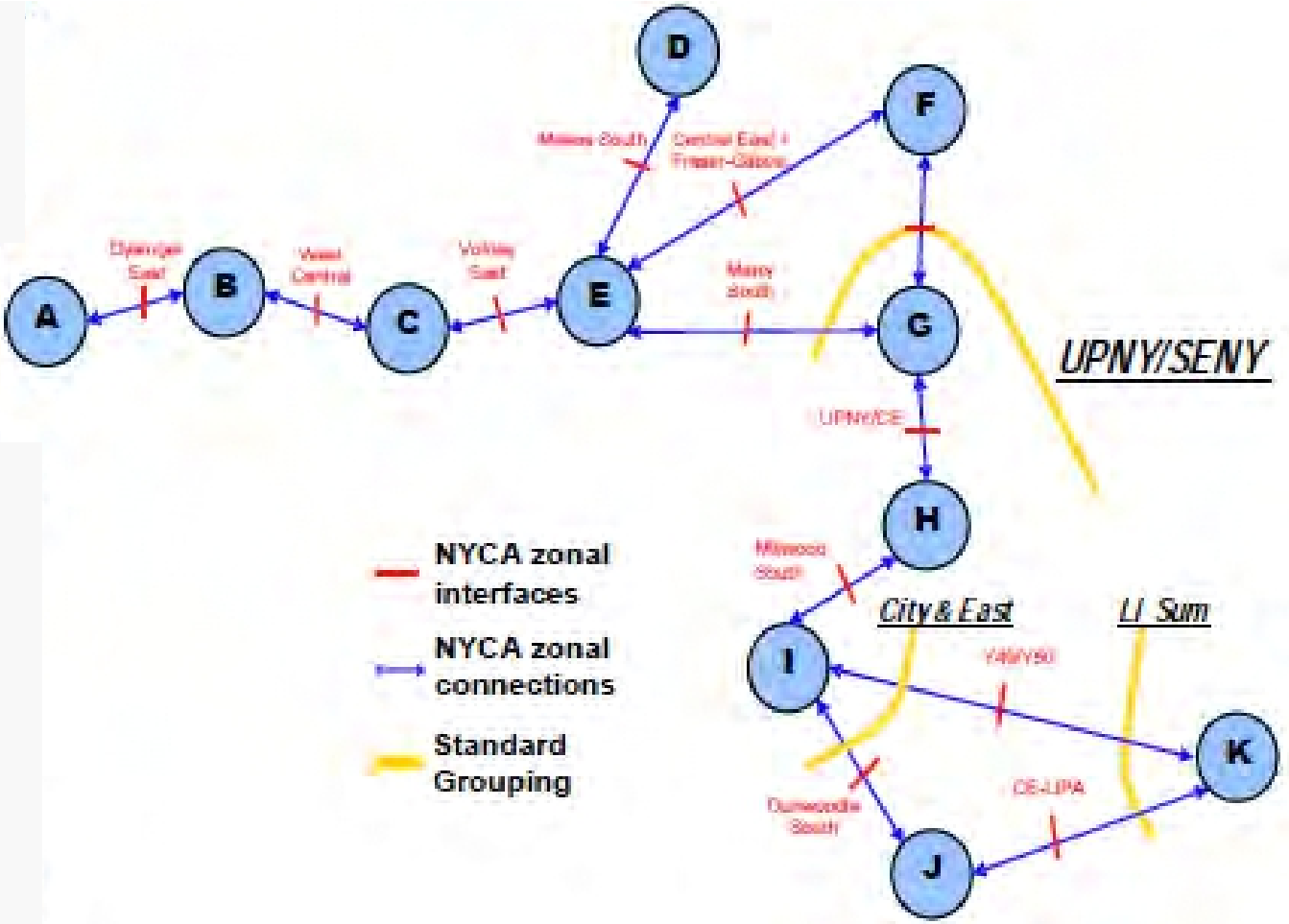
  2) Running MARS studies on the "As-cleared" system in each Spot Auction to estimate the marginal effect on LOLE from cleared MW for each zone.

  ✓ Cleared capacity resource payment (in $/MW) = (1) × (2).

Alternate Capacity Market Framework

- Advantages over the approach discussed earlier:
  - ✓ Capacity prices in each zone more accurately reflect the value of capacity, since this alternative approach uses fewer intermediate calculations and approximations.
  - ✓ May be less resource-intensive than the process of defining capacity zones, Fungible Areas, Benefit Ratios, etc.
    - However, some of these would still be necessary to account for inter-zonal transmission security.
- Disadvantages:
  - ✓ Spot auction becomes more resource-intensive, and it may be impractical to allow most resources to offer > $0.

Appendix A: Pre-Define Capacity Market Interfaces
Slide 6 in NYISO Zone K Tech Conference Presentation



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Appendix B: Identify Capacity Zones
List of Potential Capacity Zones

Capacity Market Interface(s):	Capacity Zone:
Dysinger East	Zones B - K
West Central	Zones C - K
Volney East	Zones D - K
Moses South	Zones A - C, E - K
CE Group	Zones F - K
UPNY-SENY	Zones G - K
UPNY-CE	Zones H - K
Millwood South	Zones I - K
City & East (group)	Zones J, K
Dunwoodie South	Zone J
Y49/Y50	Zone K

Appendix C: Elements of an Enhanced Framework: Non-Fungible Areas - Benefit Ratios

- At least two methods might be used to calculate Benefit Ratios.
  - ✓ Both start with a base case scenario where the Non-Fungible Area is at the Export Limit.

1) Delta LOLE Comparison Method: Calculate LOLE for:
   - ✓ Sensitivity Case 1: +X MW in upstream region;
   - ✓ Sensitivity Case 2: +X MW in Fungible Area; and
   - ✓ Sensitivity Case 3: +X MW in Non-Fungible Area.
   - ✓ Benefit Ratio = $(LOLE_1 - LOLE_3) \div (LOLE_1 - LOLE_2)$
   - ✓ X could be based on size of demand curve unit

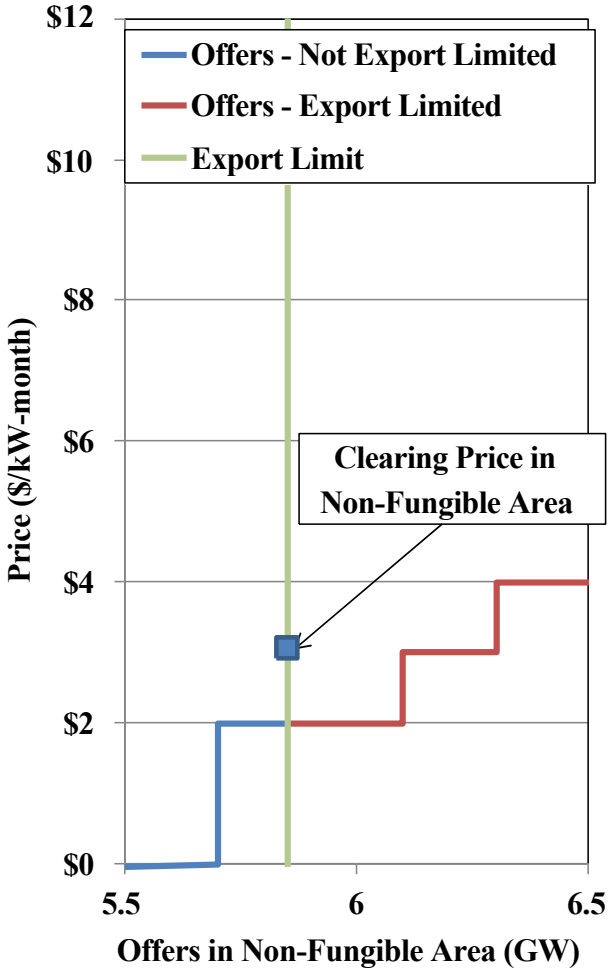
Appendix C: Elements of an Enhanced Framework: Non-Fungible Areas - Benefit Ratios

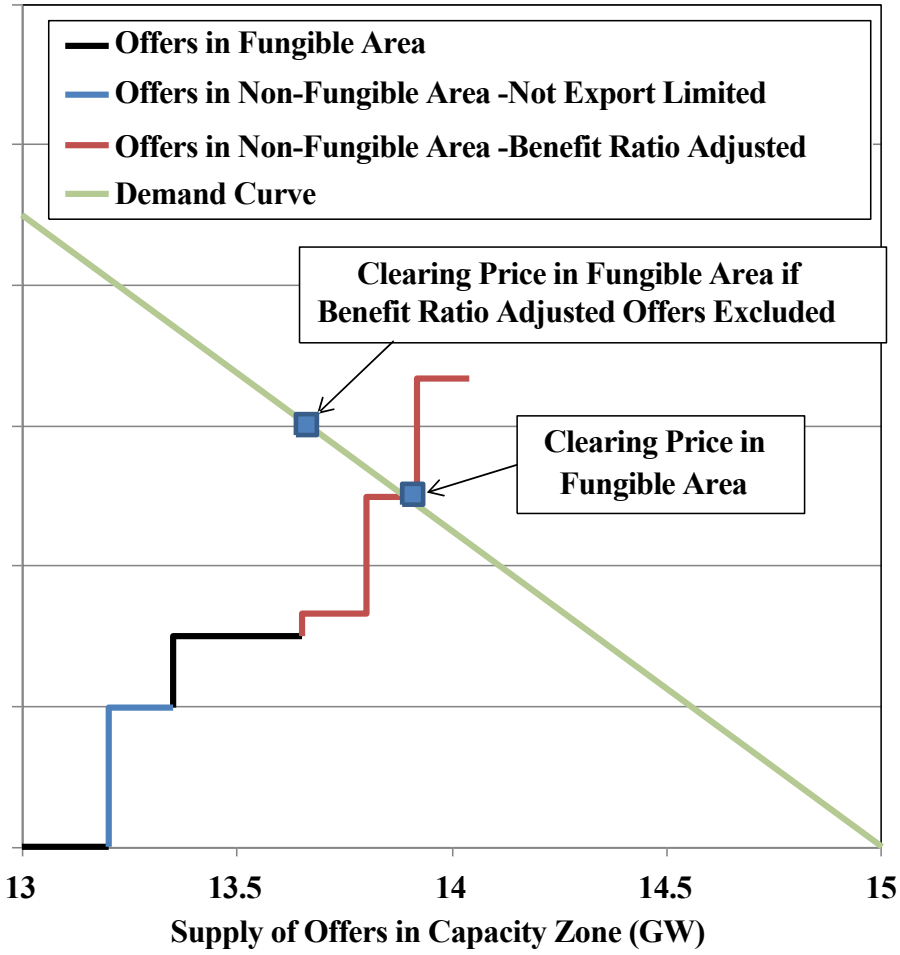
2) Binding Constraint Frequency Method:

- ✓ Run one MARS case where X MW is added to the base case in the Non-Fungible Area.
- ✓ Analyze the configuration of binding constraints relative to capacity short areas during MARS LOL events.

- For both methods, the Benefit Ratio could be calculated from more than one value for X.
- The second method would be less resource intensive.

Appendix D: Elements of an Enhanced Framework Non-Fungible Areas - Clearing the Spot Auction





ATTACHMENT 6

Compliance with FERC Order on Technical Conference re: Treatment of Zone K Export Constraints into the G-J Locality

Randy Wyatt
Capacity Market Products
New York Independent System Operator

ICAPWG
February 24, 2015
NYISO, Rensselaer, NY

Objective: In Compliance with the November 25, 2014 FERC Order on the (February 25, 2014) Technical Conference:

- Explore with stakeholders "whether a proposal can be developed that could reduce the cost of procuring capacity while meeting the NYISO LOLE objective."[emphasis added]: and
- "[E]xplore the issues and evaluate the proposals discussed at the conference, including the MMU's recommendations, through its stakeholder process and file an informational report with the Commission by June 1, 2015."

To facilitate exploration and evaluation, this presentation groups by issue proposals discussed at the Technical Conference.

Proposals Raised During the Tech Conference

- **Treatment of Zone K Export Constraint Limits in NYISO G-J Demand Curves**
  - ***Accurately reflect the reliability benefits of Zone K excess in SENY and NYCA***
  - ***Monitor export constraints for each DCR to determine if Zone K should be added to boundary of G-J Locality***
  - ***Recognize the reliability and transmission security benefits that Zone K can provide the NCZ***
  - ***Evaluate to what extent any export constrained zone in the NYISO should be allowed to sell capacity in any other zone***
- **Evaluate alternative LCR methodologies that**
  - ***better reflect the export constraint constraints***
  - ***more accurately reflect the reliability value of capacity resources in different areas, or***
  - ***considers a deliverability-based methodology for the LCRs associated with new Localities***
- **Evaluate rules to achieve price convergence or eliminate Localities**
- ***Assess improved methodologies for modeling deliverability constraints and identify deliverability constraint triggers that warrant pre-definition of capacity zones***
  - **Seek tariff amendments to include a detailed description of tests/metrics to be used in establishing NCZ boundaries**
- ***Consider developing a Capacity Deliverability Right for Transmission Expansion increasing the deliverability of the constrained interface***

Status of Discussions

- **MMU discussions at August 20, and November 14, 2014 ICAPWG meetings clarifying SOM recommendations re: An Enhanced Capacity Market Framework:-**
  - ***Dynamic locational requirements***
  - ***Fungibility and treatment of export constraints***
  - ***Procurement Targets to be used in place of the LCR***
  - ***Requires significant changes to current capacity market***

  Complicated to define and administer key elements

Status of Discussions (continued)

- **NYISO led discussions at ICAPWG and MIWG meetings regarding market design concepts for:**
  - *Capacity Zone Elimination - October 30, 2014 ICAPWG*
    - Is there a need to eliminate?
    - Zone elimination objectives and challenges
  - *Capacity Zone Predefine and Eliminate - November 17, 2014, ICAPWG*
    - Discussed whether there is a need to predefine and eliminate capacity zones, and if there is, discuss design concepts for each
    - Reviewed how PJM predefines and eliminates zones
    - NYISO possible options for predefine and eliminate
    - Potential triggers and issues to be addressed for zone elimination

Status of Discussions (continued)

- **NYISO led discussions at December 18 MIWG regarding market design concepts for the "Treatment of Zone K Export Constraints into the G-J Locality"**
  - ***Reviewed existing pricing hierarchal rules and auction mechanics***
  - ***Proposed to solve the ICAP Spot Auction as we do today, with an additional step***
    - **Count the MW that clear above the Zone K LCR, up to the K export limit MW, toward the G-J requirement, and count the remaining MW that clear in K above the Zone K LCR (*i.e.*, those above the export limit) toward the NYCA requirement**

Status of Discussions (continued)

- **NYISO is in the process of creating a task force to review within the ICAPWG the current LCR determination process for localities**
  - ***The Task Force was discussed with the Operating Committing meeting on January 15, 2015***

Process Steps for Evaluating Technical Conference Proposals

- March 18 ICAPWG - Stakeholders can present export constrained zone modeling concepts
  - *Objective*
  - *Preferred approach and alternatives*
  - *Numeric example*
  - *Benefits and detriments*
- April 30 ICAPWG: Continue stakeholder discussions
- June 1, 2015 - NYISO to submit informational report to FERC

ATTACHMENT 7

IRM/LCR Process & Dynamics

Presented to Joint ICAP/MIWG/PRLWG Mee;ng
January 29, 2015
by
Mark Younger
Hudson Energy Economics, LLC

Background

- The NYISO presented their analysis on the required LCRs for the 2015/2016 capability year at this month's OC mee;ng
- This engendered substan;al discussion about what was driving the LCR numbers and whether the methodology needs to be revised.
- The NYISO agreed to coordinate a discussion about the exis;ng IRM/LCR seYng methodology and a review of whether the methodology should be revised.

LCR Driving Factors?

- During the discussion, some par;es proposed that under the exis;ng IRM/LCR methodology adding capacity to a zone will cause the zones LCR to increase
- I noted that changes in UDR elec;ons could impact the LCR calcula;ons
- A number of par;es raised the concern that it is cri;cal to understand how specific drivers impact the LCR determina;on for each Sub---Zone

The Need To Analyze the Current Methodology

- The first step to determining whether the IRM/ LCR seYng methodology should be revised is to get a beaer understanding of how the process responds to changes to the system
- MPs are significantly hampered in geYng this understanding because most of the data is appropriately confiden;al
- Only the NYISO is in a posi;on to perform the analysis

Proposed Analysis

- I have developed some simple sensi;vi;es to provide beaer understanding of how the exis;ng process works and the factors that will affect it
- The intent of the analysis is to provide informa;on on how discrete system changes will affect the IRM/LCR values in the different zones under the exis;ng methodology
- With the analysis results we can get a beaer understanding of the current IRM/LCR methodology and whether those results indicate a need to revise the methodology

Proposed Analysis (cont'd)

- Start with the final database for the IRM/LCR that was approved for 2015/2016
- Each Sensi;vity is a discrete change to the final database
- Run a complete TAN---45 analysis for each of the sensi;vi;es to determine the IRM and then apply the LCR calcula;on process for each of the Capacity Zones
- Report the resul;ng IRM and LCRs for each sensi;vity

Sensi;vi;es

- Add a 500 MW generic generator to NYC with the generator EFORd set at the Zone J average
- Add a 500 MW generic generator to Zones G - I with the generator EFORd set at the LHV average
- Reduce UDR elec;ons into NYC by 300 MW
- Increase UDR elec;ons into NYC by 300 MW
- Model the TOTs Projects

ATTACHMENT 8

LCR Process Review

Dana Walters
Director Economic and Reliability Planning
New York Independent System Operator

LCR Task Force
March 5, 2015
NYISO, Krey Corporate Center

DRAFT - FOR DISCUSSION PURPOSES ONLY

Administrative

- Introductions
- Approach to Meeting
- Provide a starting reference for task force members for consistent understanding of objectives, issues, and processes
  - *Discuss background information*
  - *Discuss expressed concerns with LCR process*
  - *Discuss existing processes*
- Discuss topics for next meeting, but don't discuss specifics of alternatives or solutions at this meeting
- Discuss meeting schedule

Issue Statement

- **Some stakeholders have expressed concerns with the existing Locational Capacity Requirements (LCRs) process because:**
  - ***When load decreases and resources increase, then requirements in G-I may increase***
  - ***If the requirements increase, then Load Serving Entities (LSEs) need to buy more capacity.***
  - ***This seems counter-intuitive when new resources are available to respond to a need.***

Background of Request

- NYISO was asked by the Operating Committee to work with the ICAP WG to take the lead in considering an alternative process to calculate LCRs to address the concerns raised
- NYISO extended to stakeholders an invitation to participate on a LCR Task Force to consider the issue
- NYISO is coordinating the effort to scope the request, consider alternatives and perform analysis of potential viable options, as resources permit

Installed Reserve Margin

- A Power Grid requires Installed Reserve Margin (IRM) to operate its generating fleet and provide customers with reliable service
- There are infinite ways to calculate the LSE obligations to provide for the IRM and LCRs
- In NY, the Transmission Owners (TOs) reached an agreement to balance the obligation for the IRM between the upstate (north of NYC; Zones A-I) LSEs and the downstate LSEs (NYC & LI; Zones J & K)
- Roughly 50% of the peak electrical demand in NY is in Zones A-I and 50% in J & K

Background of Unified Methodology

- **Unified Methodology is a two step process**
  - *Step 1 (referred to as the Tan 45 method): Develop a curve with varying IRM versus locational requirements in Zones J & K, where all points on the curve will provide a one day in ten year (0.1) Loss of Load Expectation (LOLE)*
  - *Use a 45 degree line to intersect the curve and provide a 50% balance point*
  - *Step 1 is administered by NYSRC*
  - *Step 2 (LCR Method): Starting with the IRM as a reference, determine the locational requirements of Zones J & K and the G-J Locality*
  - *Step 2 is administered by NYISO*
- **Both steps use the GE Multi-Area Reliability Simulation (MARS) program, which uses a Monte Carlo probabilistic simulation to evaluate the LOLE**

Creation of New G-J Locality

- NYISO was directed by FERC to create a new Locality based on the outcome of study
- NYISO created the G-J Locality
- An LCR has to be established for each Locality, so the NYISO developed a process to calculate the G-J requirement without impacting the existing Tan 45 process

Setting of the IRM and LCRs
The Basic Process

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ICAP WG Task Force for LCR Review
March 5, 2015
NYISO , Rensselaer, NY

Objectives

- **Basic understanding of the NYSRC's process for setting the IRM[1]**
- **Basic understanding of the NYISO's process for setting the LCRs[2]**
  - ***The LCR process starts with the completed base case database for the IRM.***

1. **To find NYSRC Policy 5-8 go to Documents/Policies at http://www.nysrc.org.**
2. **To find NYISO LCR Calculation Process go to NYISO website at nyiso.com and look under Market Data/ICAP/Reference Documents/LCR_Calculation_Process**

IRM Process - Background

- The IRM study[3] occurs over a calendar year for an upcoming Capability Year (May-April)
- NYISO populates data and performs simulations under guidance of NYSRC's ICS.
- The NYISO is a technical resource for the NYSRC

3. To find present and past IRM reports go to Documents/Reports at http://www.nysrc.org.

IRM Process - Background

- IRM answers the question of how much ICAP is needed to meet the peak load.
- The year is simulated at least 1,000 times to give a Loss of Load Expectation (LOLE).
- Capacity is adjusted so that over the 1,000 iterations, the LOLE comes out to the NYSRC criterion of 0.100 days/year.

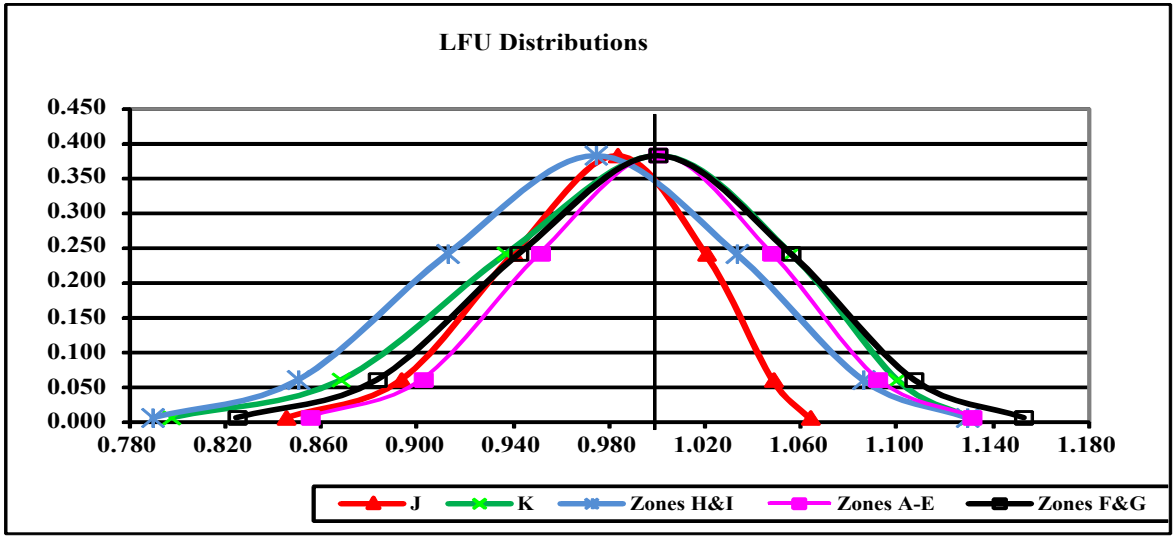
IRM Process - Load Inputs

- **The load forecast is based on previous year actual plus forecast growth (TO/NYISO agreement)**
  - *The forecast represents a 50% chance the actual load is higher (50/50 forecast)*
- **Uncertainty of load due to weather is studied.**
  - *Each 1,000 iteration case is run against seven load levels with various probabilities.*
  - *For example, one of the levels could indicate the load if there was only a 6% probability of being above that load (94/6 forecast).*
- **Each load level can have its own historic hourly load shape.**
  - *We currently use 3 shapes.*

Load Forecast Uncertainty

LFU Model

Load Forecast Uncertainty Models					
Multiplier	Zones A-E	Zones F&G	Zones H&I	Con Ed (J)	LIPA (K)
0.0062	0.8550	0.8245	0.7893	0.8449	0.7971
0.0606	0.9021	0.8830	0.8500	0.8929	0.8677
0.2417	0.9510	0.9420	0.9123	0.9397	0.9364
0.3830	1.0000	1.0000	0.9741	0.9831	1.0000
0.2417	1.0474	1.0554	1.0329	1.0202	1.0554
0.0606	1.0916	1.1067	1.0856	1.0481	1.0996
0.0062	1.1309	1.1524	1.1289	1.0635	1.1295



IRM Process, Load Inputs-continued

- **Reasons for using different load shapes:**
  - ***Historically, years where the peak was around the 90/10 forecast (higher load level), the hourly load shapes were peaked.***
    - **By peaked, we mean that the number of days whose peaks are near to the peak day were small**
    - **The shapes chosen are based on a conservative year, a peaked year, and a typical year**
- **Even though there are seven load levels, risk (LOLE events) occurs only in the top four bins.**

IRM Process - Capacity Inputs

- 5 years of historical performance is used to predict future availability of thermal and large hydro generators.
  - *Wind and solar use one year of production data.*
  - *Run of river hydro uses a plot of monthly output based on history*
- The simulation program uses a Monte Carlo methodology to probabilistically generate hourly outage patterns for thermal units for each of the 1,000 iterations.
- Special Case Resources (SCRs) are modeled based on registrations and are derated based on tested and historic performance.

IRM Process - Other Inputs

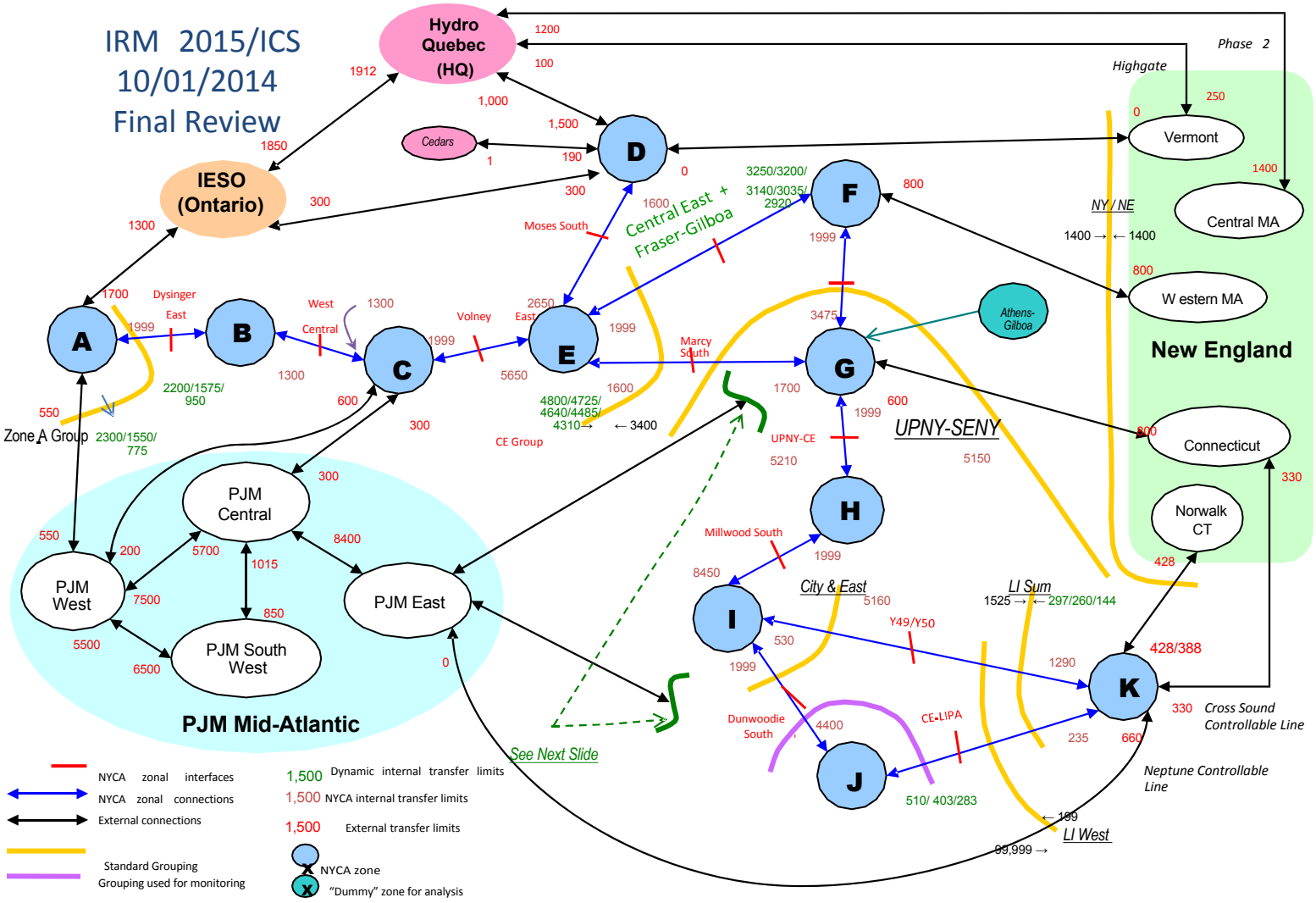
- We model interface limits between Zones and between Areas[4] (line and bubble diagram).
- Unforced Deliverability Rights (UDR) facilities, to the extent they have not elected to return them for the upcoming Capability Year (i.e., notification to NYISO by August 1) are modeled as contracts.
  - *Contract levels on UDRs are considered confidential*
  - *Any tie capacity left (after contracts) is available for emergency assistance*

4. Current computing capabilities do not support use of a power flow model in GE MARS.

IRM Process - Other Inputs

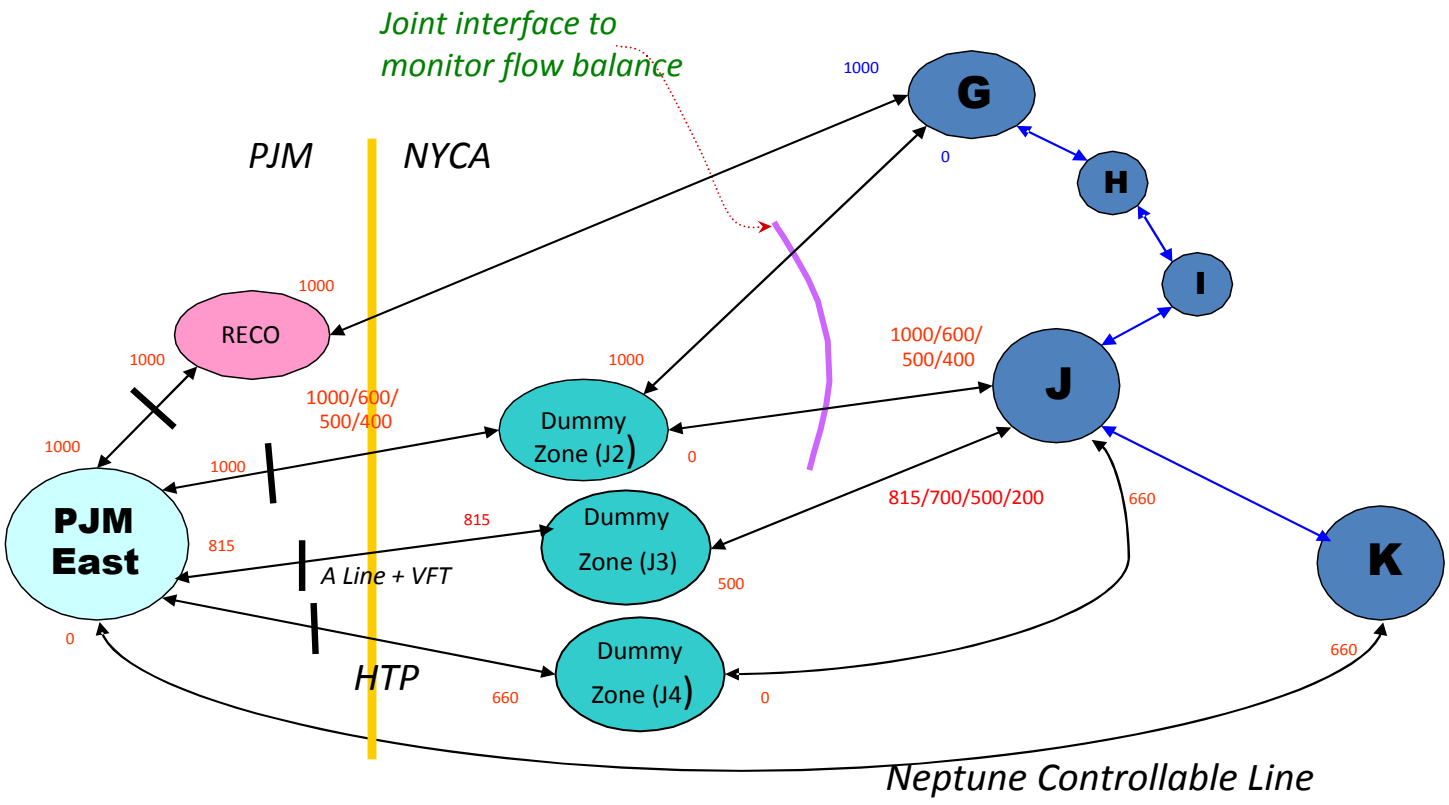
- **We model the Emergency Operator Procedures (EOPs) that can be employed during a system emergency.**
  - ***Such as: Voltage reductions, Emergency Demand Response Program (EDRP), Public Appeals, voluntary industrial curtailments, and operating reserves.***
- **Finally, we can ask for emergency assistance from our neighbors.**
  - ***We model neighboring interconnected Control Areas of PJM (classic footprint), New England, Ontario and Quebec***

Transmission System Representation for Year 2015 - Summer Emergency Ratings (MW) 6/30/2014



Transmission System Representation for Year 2015 - Summer Emergency Ratings (MW)

PJM-SENY MARS Model 6/30/2014



(PJM East to RECO) + (PJM East to J2) + (PJM East to J3) + (PJM East to J4) = 3075 MW

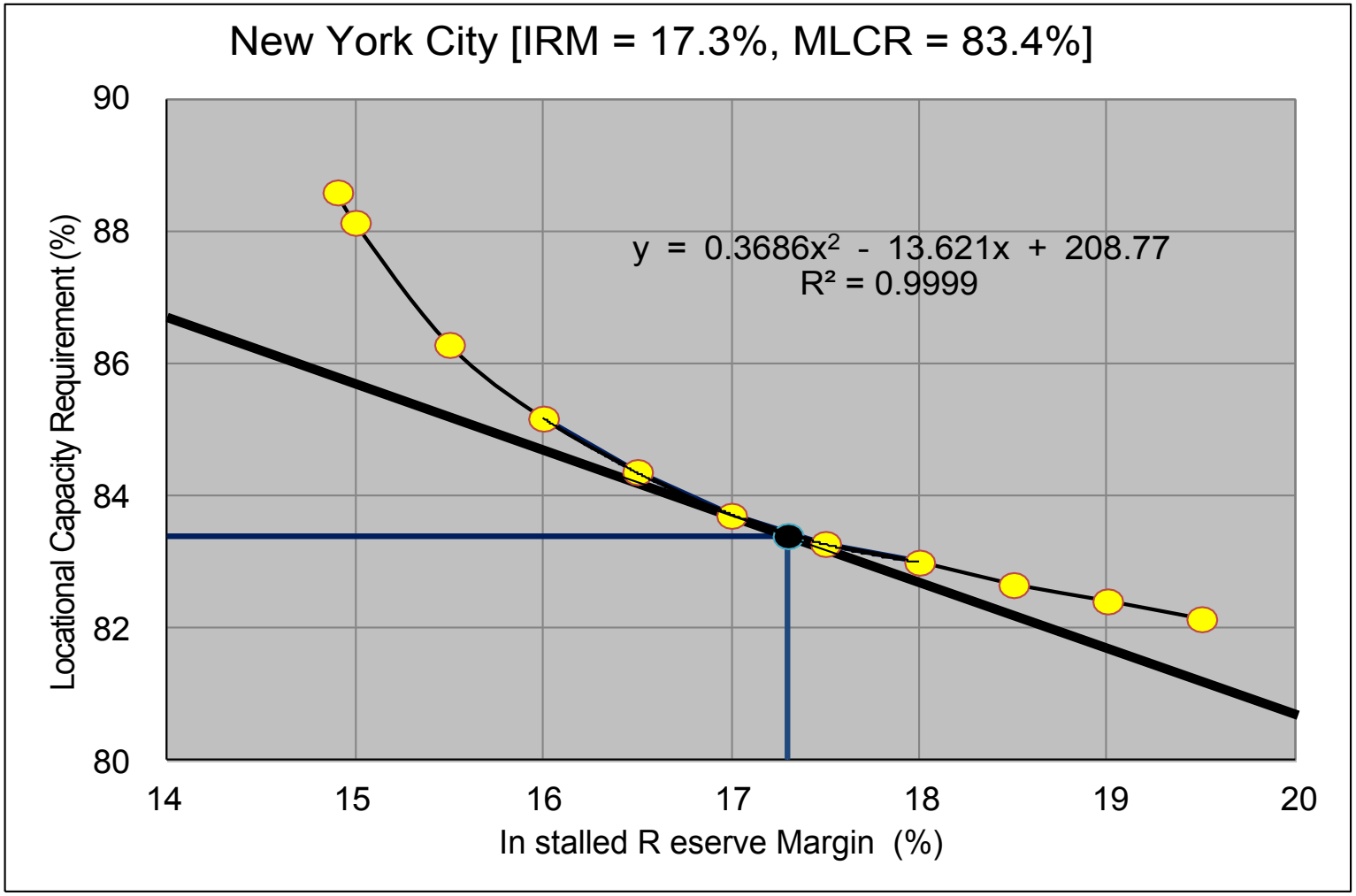
IRM Process - One Curve Point

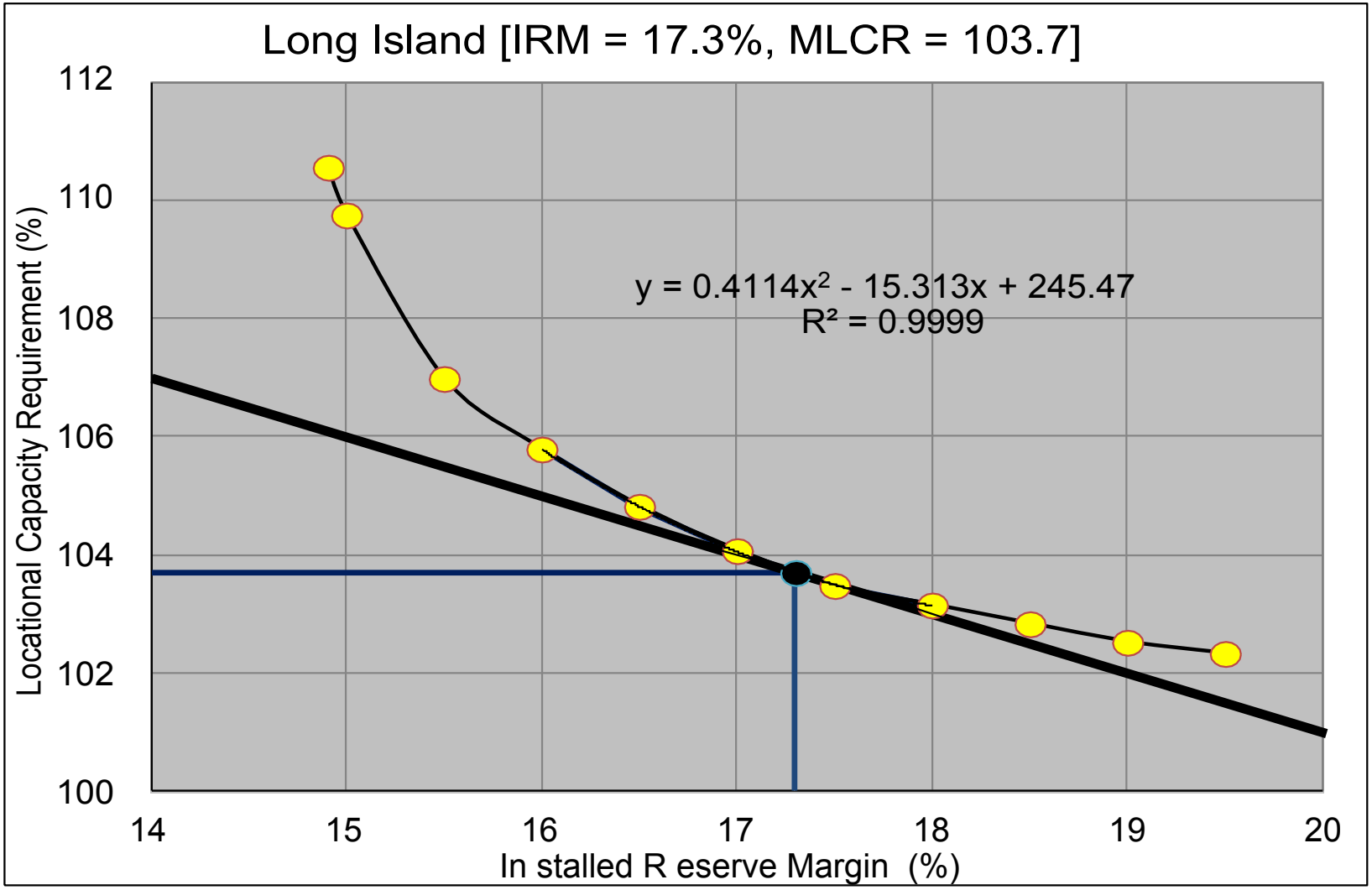
- If, after utilizing all means possible to meet the peak load, there is still a shortage, a loss of load event is registered.
- A single load level LOLE value is the expected loss of load events per year at this level.
  - *The final LOLE is arrived at by multiplying each load level probability times its result and adding the seven values.*
- The model is re-run varying the amount of capacity removed until 0.100 LOLE is met.
  - *NYCA currently has excess capacity*

IRM Process - Multiple Curve Points

- Capacity upstate has a different statewide LOLE impact than capacity downstate.
- Where and how the capacity is adjusted affects the final results.
- The IRM-LCR curve (next slide) shows the relationship of the tradeoffs between statewide and J&K locality values (all points are at criteria).
- The NYSRC technical report indicates the IRM at the knee (or tan 45) of the curve.

Figure 3-2 NYCA Locational Requirements vs. Statewide Requirements





LCR Process - Background

- The IRM study shows indicative LCR values for Zones J & K. Actual LCR values are found during the LCR study.
  - *The LCR Study starts with the completed IRM database*
- The LCR values must also comply with the LOLE criteria.
- A separate IRM-LCR curve is not created since the IRM value is a fixed input to the LCR study.

LCR Process - Input Changes

- The load forecast is updated between the time of the IRM and LCR studies.
- Other material changes[5] could also be incorporated.
  - *The resulting LCRs could look different than the ones shown in IRM.*

5. Material capability changes are individual changes that would increase or decrease generation, CRIS MW, or transmission transfer capability by 200 MW or greater.

LCR Process - Steps

- **At the established IRM study point:**
  - ***Reset all capacity to Zones J & K. to their 'as found' condition.***
  - ***Shift capacity from Zone J to upstate zones (A, C, and D) until the LOLE criteria is met.***
  - ***Reset the capacity from J and shift from Zone K.***
  - ***Reset the capacity from K and shift from J & K based on ratios found above. This sets the recommendation for the J and K LCRs.***
  - ***Reset J's capacity and freeze K's at the above found LCR level.***
  - ***Shift capacity from G-J. The remaining capacity divided by the G-J peak load is the proposed G-J LCR[6].***

6. The LCR values are rounded to the nearest 0.5% and the LOLE is verified to satisfy LOLE criteria

Numerical Example[7] of LCR Calculations

Setting of Zones J and K LCRs (example)

Zones	MWs Shifted:	J Ratio:	K Ratio:	Starting Capacity	After Shift Capacity	Peak Load Forecast	Margin %
Shift J alone	500			10500	10000	11929	
Shift K alone	400			6000	5600	5539	
		=500/(400+500)	=400/(400+500)				
Ratios found:		0.5555556	0.4444444				
Shift J and K	700						
Final J	388.9	=700*0.56		10500	10111.1	11929	84.8%
Final K	311.1	=700*0.44		6000	5688.9	5539	102.7%

Setting LCRs for the G -J Locality (example)

Zones	MWs Shifted:	J Ratio:	K Ratio:	Starting Capacity	After Shift Capacity	Peak Load Forecast	Margin %
Shift G - J	705			15425	14720	16340	90.1%
Fixed Shift of K:	311.1			6000	5688.9	5539	102.7%

7. All capacity values are in ICAP

Numerical Example[8] of LCR Calculations

After 600 MW Unit Addition in Zone G

Setting of Zones J and K LCRs (example)

Zones	MWs Shifted:	J Ratio:	K Ratio:	Starting Capacity	After Shift Capacity	Peak Load Forecast	Margin %	Initial Case Margin(%)
Shift J alone	*600*			10500	9900	11929		
Shift K alone	*500*			6000	5500	5539		
Ratios found:		0.545455	0.454545					
Shift J and K	*900*							
Final J	490.9			10500	10009.1	11929	83.9%	84.8%
Final K	409.1			6000	5590.9	5539	100.9%	102.7%

Setting LCRs for the G -J Locality (example)

Zones	MWs Shifted:	J Ratio:	K Ratio:	Starting Capacity	After Shift Capacity	Peak Load Forecast	Margin %	
Shift G - J	*905*			***16025***	15120	16340	92.5%	90.1%
Fixed Shift of K:	409.1			6000	5590.9	5539	100.9%	102.7%

8. All capacity values are in ICAP

The New York Independent System Operator (NYISO) is a not-for-profit corporation that began operations in 1999. The NYISO operates New York's bulk electricity grid, administers the state's wholesale electricity markets, and provides comprehensive reliability planning for state's bulk electricity system.

www.nyiso.com

LCR Process Review: Next Steps

Dana Walters
Director Economic and Reliability Planning
New York Independent System Operator

LCR Task Force
March 5, 2015
NYISO, Krey Corporate Center

DRAFT - FOR DISCUSSION PURPOSES ONLY

Scope

- **Discuss stakeholder concerns with the current process**
- **Discuss viable options to explore**
  - ***Strictly from the LCR perspective***
  - ***Whether it would be beneficial to involve IRM***

Concerns with changing the LCR process

- If the LCR increases in G-I, but the other Localities and NYCA minimum requirements decrease, stakeholders' views of the change may vary.
- There is only one variable in the LCR process after the application of the Tan 45 process (trade-offs for LSEs south of UPNY/SENY)

Stakeholder Suggestion

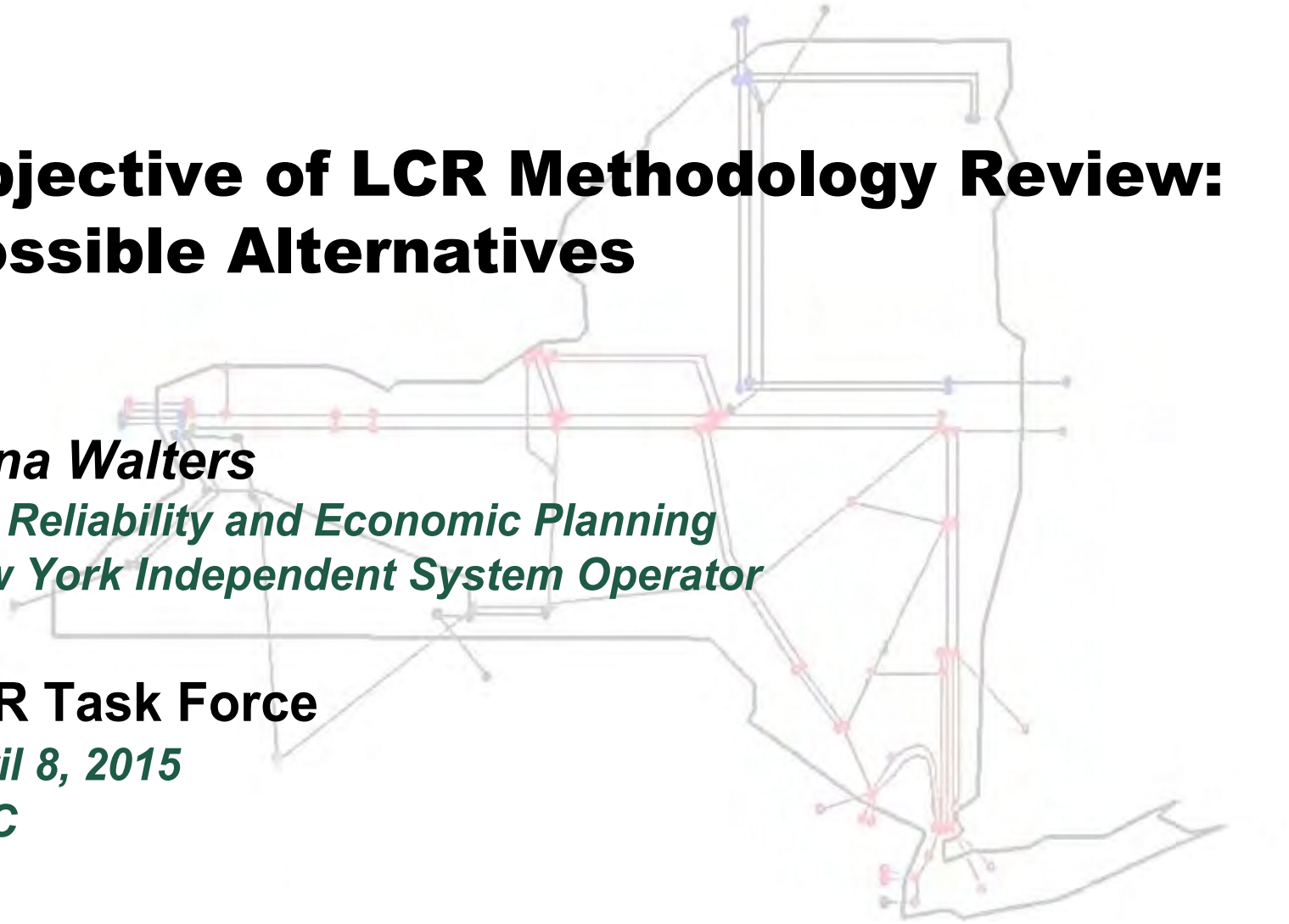
- ***Suggestion***: **As opposed to TAN45 optimizing b/w Zone J vs K and letting G-J "fall out" as a result; TAN45 optimizing b/w Zone K vs G-J and let J "fall out" as a result. In this manner Zone J is partially optimized through G-J.**
- ***Issue***: **We would need to decide how to optimize and what quantities to add/deduct by individual Zone (G, H, I, J). Optimization may not result in minimum requirements for an individual Zone.**

Stakeholder Concerns: Inter-relationship with IRM process

- Some possible LCR process revisions might not be possible without the IRM process being changed prior to or concurrent with a change to the LCR process
- Changing the IRM process is a more complicated issue and will raise other issues, most notably the IRM is under the jurisdiction of the NYSRC

ATTACHMENT 9

Objective of LCR Methodology Review: Possible Alternatives



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New York Independent System Operator

LCR Task Force

April 8, 2015

KCC

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Current Process

- NYSRC: Determine Installed Reserve Margin (IRM), where the IRM maintains reliability and establishes balance between the upstate and downstate requirements per Policy 5
- NYISO: There are multiple possible approaches to determine the Locational Minimum Installed Capacity Requirements (LCRs)
- The NYISO has been using Policy 5 as a guide for the methodology to establish the LCRs

Possible Alternatives

(Subject to maintaining LOLE of 0.1 and the IRM determined by NYSRC)

- ***Continue with current methodology***
- ***Minimize Cost***: **Explore methodologies to set LCRs for J, K and G-J with the objective of minimizing the NYCA-wide capacity procurement costs**
- ***Minimize total MW:*** **Explore methodologies to set LCRs for J, K and G-J with the objective of minimizing the NYCA-wide MW requirement**
- ***Lowest Possible G-J:*** **Retain J and K "as found" and determine the minimum G-J**
- ***Other ideas***