NEW YORK INDEPENDENT SYSTEM OPERATOR
10 Krey Boulevard ♦ Rensselaer, NY 12144

November 27, 2013

By Electronic Delivery

The Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission 888
First Street, N.E.
Washington, D.C. 20426

Re: New York Independent System Operator, Inc., *Proposed Tariff Revisions to Implement Revised ICAP Demand Curves and a New ICAP Demand Curve for Capability Years 2014/2015, 2015/2016 and 2016/2017 and Request for Partial Phase-In and for Any Necessary Tariff Waivers*, Docket No. ER14-___-000; and *Unrelated Ministerial Tariff Correction*, Docket No. ER12-360-000

Dear Ms. Bose:

In accordance with Section 5.14.1.2.11 of its Market Administration and Control Area Services Tariff ("Services Tariff") and Section 205 of the Federal Power Act ("FPA"), the New York Independent System Operator, Inc. ("NYISO") hereby submits amendments to Section 5.14.1.2 of its Services Tariff to define the Installed Capacity ("ICAP") Demand Curves[1] for the 2014/2015, 2015/2016 and 2016/2017 Capability Years. In addition to updating the existing curves for the New York City ("NYC"), Long Island ("LI"), and New York Control Area ("NYCA")[2] this filing also proposes to establish the first ICAP Demand Curve for the new "Locality"[3] encompassing Load Zones G, H, I, and J (the "G-J Locality").

[1] Capitalized terms that are not specifically defined in this filing letter shall have the meaning set forth in the Services Tariff as revised by the Commission's acceptance of the NYISO's filing to establish a New Capacity Zone and subsequent related filings in Docket Nos. ER12-360 and ER13-1380.. *See* New York Independent System 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) (the "April 2013 NCZ Filing") *and* New York Independent System Operator, Inc., *Initial Compliance Filing and Request for Shortened Comment Period and Expedited Action by July 1, 2013*, Docket No. ER12-360-001 (June 19, 2013).

[2] NYC and LI are the two established "Localities" in New York. *See* Services Tariff Section 2.12. The term "Rest of State" refers to capacity supplies located in the part of the NYCA that is not included in a "Locality." *See* Services Tariff Section 2.18.

[3] Effective January 27, 2014, Section 2.12 of the Services Tariff defines "Locality" as "[a] single LBMP Load Zone or set of adjacent LBMP Load Zones within one Transmission District or a set of adjacent Transmission Districts (or a portion of a Transmission District(s)) within which a minimum level of Installed Capacity must be maintained, and as specifically identified in this subsection to mean (1) Load Zone J; and (2) Load Zone K; (3) Load Zones G, H, I, and J collectively (*i.e.*, the G-J Locality)."

As discussed in Section V of this filing letter, the NYISO is proposing a "phase-in" of the new demand curve parameters for the G-J Locality to ameliorate the potential short-term consumer impacts that result from creating the new Locality. This filing also presents the results of the periodic review of the ICAP Demand Curves specified in Section 5.14.1.2.11.

The ICAP Demand Curves have now been used for a decade in the NYISO-administered ICAP Spot Market Auctions. They are a central component in the design of the NYISO's centralized capacity market. The NYISO's Board of Directors ("Board") remains fully committed to the process for developing the ICAP Demand Curves that is established in the Services Tariff and adhered to it in preparing this filing. The proposal in this filing is the product of extensive analysis by the NYISO's staff and consultants, substantial input from stakeholders, and, ultimately, the independent judgment of the Board. It is also informed by: (i) the input of the independent Market Monitoring Unit ("MMU"); (ii) the NYISO's experience with the currently effective and prior ICAP Demand Curves; and (iii) the guidance provided by the Commission in orders on prior ICAP Demand Curve reset filings, especially the most recent filing in 2010 (the "prior ICAP Demand Curve reset").[4]

As is explained in greater detail below, the NYISO's responsiveness to stakeholder input and its consideration of the most up to date information surpassed the detailed procedural requirements of the Services Tariff and *Installed Capacity Manual*.[5] For example, at stakeholders' request as well as at the urging of the MMU, the NYISO's consultants assessed the costs of combined cycle units even though the Services Tariff precludes them from being used to establish ICAP Demand Curves. Similarly, and again in response to stakeholder arguments and a review of the most recently available information, the Board exercised its authority to depart from NYISO staff's initial recommendation concerning the selection of the proxy unit for NYC, LI, and the G-J Locality. These additional efforts have helped the NYISO develop ICAP Demand Curves that will send more accurate and efficient signals regarding the need for investment in new and existing capacity to both existing market participants and potential new entrants.

For the reasons set forth in this filing letter, the proposed ICAP Demand Curves are just and reasonable, consistent with the Services Tariff, and in keeping with the underlying objectives for which ICAP Demand Curves were originally implemented. The Commission should therefore accept them without modification and make them effective on January 28, 2014.

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[4] *See New York Independent System Operator, Inc.,* 134 FERC ¶ 61,058 (2011) (the "First 2010 Demand Curve Order"); 135 FERC ¶ 61,002 (2011); 135 FERC ¶61,170 (2011) and 137 FERC ¶ 61,218; and *New York Independent System Operator, Inc.,* 122 FERC ¶ 61,064 (2008) ("2008 Demand Curve Order").

[5] The current version of the *Installed Capacity Manual* (dated April 2013) is posted at <*http://www.nyiso.com/public/markets_operations/documents/manuals_guides/index.jsp*>.

In addition, to the ICAP Demand Curve related proposals that are the subject matter of this filing, the NYISO has also included proposed ministerial tariff revisions to correct a minor and non-substantive drafting error that was made in an earlier filing. This proposed ministerial correction is addressed below in Section X of this filing letter.

Finally, to facilitate the Commission's review, the NYISO has prepared a brief summary of the major features of its proposed ICAP Demand Curves. That summary is set forth in Section XI of this filing letter.

I. LIST OF DOCUMENTS SUBMITTED

1. This filing letter;

2. A clean version of the proposed revisions to the Services Tariff and of the proposed correction to a ministerial error inadvertently included in the Services Tariff in an earlier filing ("Attachment I");

3. A blacklined version of the proposed revisions to the Services Tariff and of the proposed correction to a ministerial error inadvertently included in the Services Tariff in an earlier filing ("Attachment II");

4. Affidavit of Eugene T. Meehan, NERA Economic Consulting, including the *Independent Study to Establish Parameters of the ICAP Demand Curve for the New York Independent System Operator* (August 2013) (the "NERA/S&L Report") ("Attachment III");

5. *Proposed NYISO Installed Capacity Demand Curves for Capability Years 2014/2015, 2015/2016 and 2016/2017* (September 2013) (the "NYISO Staff Report") ("Attachment IV");

6. Affidavit of Mark W. Chupka, Principal, the Brattle Group (the "Chupka Affidavit"), including the *Independent Evaluation of SCR Systems for Frame-Type Combustion Turbines: Report for ICAP Demand Curve Reset* (November 2013) (the "Brattle Report") ("Attachment V");

7. *Responses to the IPPNY Questions Received by the NYISO on Tuesday November 5, 2013; Regarding the "Independent Evaluation of SCR Systems for Frame-Type Combustion Turbines - Report for ICAP Demand Curve Reset" prepared by the Brattle Group* (November 7, 2013) ("Attachment VI");

8. Affidavit of Anthony Licata, Vice President, Licata Energy & Environmental Consultants, Inc. (the "Licata Affidavit") ("Attachment VII");

9. Affidavit of Tariq N. Niazi, Senior Manager and Consumer Interest Liaison, NYISO (the "Niazi Affidavit") ("Attachment VIII");

10. Affidavit of Rana Mukerji, Senior Vice President Market Structures, NYISO (the "Mukerji Affidavit") ("Attachment IX"); and

11. "Class Years 2011 and 2012 GHI BSM Demand Curve" ("Attachment X").

II. COMMUNICATIONS

Communications regarding this proceeding should be addressed to:

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[6] The NYISO respectfully requests waiver of the Commission's regulations (18 C.F.R. § 385.203(b)(3) (2013)) to the extent necessary to permit service on counsel for the NYISO in both Miami and Washington, DC.

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III. BACKGROUND

The ICAP obligations for New York Load Serving Entities and the spot auction market prices for the associated monthly ICAP requirement are determined using separately established downward-sloping ICAP Demand Curves. Section 5.14.1.2 of the Services Tariff requires the NYISO to perform a triennial review to determine the parameters of the ICAP Demand Curves for NYC, LI, and the NYCA for the next three Capability Years.

The triennial review incorporates the development of an ICAP Demand Curve for any newly established New Capacity Zone concurrent with the review of ICAP Demand Curves for existing Localities and the NYCA. The economic parameters of each New Capacity Zone's ICAP Demand Curve are established on the same timetable as the reset procedure.[7] On April 30, 2013, the NYISO submitted tariff revisions, in accordance with the New Capacity Zone provisions, to implement the G-J Locality.[8] On August 13, 2013, the Commission issued an order accepting it with a May 1, 2014 implementation date.[9] Accordingly, the NYISO followed all applicable tariff procedures in establishing both the G-J Locality and its new ICAP Demand Curve.

Prior to the present ICAP Demand Curve review, the NYISO retained FTI Consulting to perform a comprehensive review of the New York capacity markets. FTI Consulting's final report contained three recommendations that had a direct bearing on the development of the NYISO Staff Report.[10] Those recommendations related to: (i) the use of a combined-cycle combustion turbine facility instead of a simple-cycle combustion turbine to establish the cost of new entry ("CONE") used to anchor the ICAP Demand Curves; (ii) the feasibility of using a demand response resource to establish those CONE values; and (iii) the use of an incremental reliability value approach as the basis for setting zero crossing points for the ICAP Demand Curves.[11]

In accordance with the procedure set forth in Section 5.14.1.2, the NYISO solicited proposals from qualified consultants in the third quarter of 2012 to identify appropriate

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[7] Sections 5.14.1.2 and 5.16 describe both: (i) the timing and sequence of the steps to evaluate the need for and to create a New Capacity Zone; and (ii) how the potential creation of a New Capacity Zone, is coordinated with the triennial ICAP Demand Curve reset process.

[8] *See* New York Independent System 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).

[9] *New York Independent System Operator, Inc.*, 144 FERC ¶ 61,126 (2013) ("August 2013 Order").

[10] *Evaluation of the New York Capacity Market*, March 5, 2013, prepared by FTI Consulting, available at <http://www.nyiso.com/public/webdocs/markets_operations/documents/Studies_and_Reports/Studies/Market_Studies/Final_New_York_Capacity_Report_3-13-2013.pdf> ("FTI Report").

[11] *See* NYISO Staff Report at 7.

methodologies and to develop the ICAP Demand Curve parameters for the three Capability Years beginning May 2014. The NYISO selected the team of National Economic Research Associates, Inc. ("NERA"), with Sargent and Lundy ("S&L") as NERA's subcontractor (collectively identified as "NERA/S&L"). They began their analysis in November 2012 and participated in twelve ICAP Working Group meetings between December 2012 and August 2013. NYISO stakeholders participated in these meetings and provided feedback on NERA/S&L's assumptions, methodology, analysis, estimates, and preliminary results. NERA/S&L produced multiple drafts culminating in the release of the final version of the NERA/S&L report on August 2, 2013 ("Attachment III").

On September 6, 2013, as amended on September 12, the NYISO staff submitted the NYISO Staff Report to the Board ("Attachment IV"). The NYISO Staff Report evaluated the NERA/S&L Report, addressed oral and written comments received through the stakeholder process and from the MMU, and set forth NYISO staff's recommended demand curve parameters. It accepted all but two of NERA/S&L's conclusions. Specifically, NYISO staff recommended: (i) no changes to the existing zero crossing points used for NYC, LI and NYCA; and (ii) a change in temperature and relative humidity assumptions in some locations in determining net ICAP revenues.

During the reset process, stakeholders submitted written comments to the NYISO on several occasions. On October 2, 2013 stakeholders provided written comments to the Board on the final NERA/S&L Report and the NYISO Staff Report.[12] Stakeholders also made oral arguments to the Board on October 14, 2013. The Board determined that stakeholders challenging the NYISO Staff Report's recommendations concerning the selection of the proxy unit for the NYC, LI, and G-J Locality had made a strong case and that further review of this issue was warranted. The NYISO informed stakeholders that the Board was seeking additional information on October 17, 2013. It also explained that it would share the results of the review during the first week of November 2013 and provide additional opportunities for stakeholder input.

The NYISO retained the Brattle Group ("Brattle") with Licata Energy & Environmental Consulting ("Licata") to conduct further analysis. Brattle and Licata collaborated with NERA, S&L, and the NYISO staff. They also engaged in various discussions with manufacturers of gas turbines and selective catalytic reduction ("SCR")

[12] The following stakeholders submitted written comments in response to the NYISO Staff Report: New York State Department of Public Service ("DPS"), the Indicated New York Transmission Owners ("Indicated NYTOs") (*i.e.,* Central Hudson Gas & Electric Corporation, Consolidated Edison Company of New York, Inc., New York Power Authority, New York State Electric & Gas Corporation, Niagara Mohawk Power Corporation d/b/a National Grid, Orange and Rockland Utilities, Inc., and Rochester Gas and Electric Corporation), the Independent Power Producers of New York ("IPPNY"), Entergy Nuclear Power Marketing, LLC ("Entergy"), Multiple Intervenors jointly with the City of New York ("MI/City"), and the New York Supplier and Environmental Advocacy Group. With the exception of DPS, these stakeholders also requested the opportunity to make oral arguments.

emissions controls in order to understand the current state of the technology and the industry. In particular, Brattle and Licata obtained a significant amount of information, from Mitsubishi Power Systems America, Inc. ("MPSA"),[13] a prominent vendor of large scale gas turbine technology and SCRs. As a result of these discussions, detailed further in Section IV.A.3.c, below, as well as their review of the reasonableness of the cost estimates completed by S&L for the application of SCR on simple-cycle combustion turbines, Brattle and Licata produced the Brattle Report. It concluded that the Siemens SGT6-5000F(5) class frame simple-cycle combustion turbine ("F class frame") with SCR emissions control ("F class frame with SCR") should be the proxy unit for the NYC, LI, and G-J Locality.[14]

The NYISO made the Brattle Report available to stakeholders on November 1 and invited written stakeholder comments. On November 7, the NYISO posted detailed responses to sixteen written questions that IPPNY had submitted on November 5. On November 8, stakeholders submitted written comments. These comments both supported and opposed the Brattle Report's findings.[15] After considering all of the information available to it, the Board approved the Brattle Report's conclusion regarding proxy unit selection and approved all of the other recommendations in the NYISO Staff Report. The Board therefore directed the NYISO to file proposed ICAP Demand Curves based on those determinations.

As is discussed below in Section IV.A.3.b of this filing letter, the Board had clear tariff authority to: (i) approve ICAP Demand Curves that differed from those recommended by NERA/S&L, and initially recommended by NYISO staff, and propose them to the Commission; and (ii) to seek additional input from Brattle/Licata and to base its approved ICAP Demand Curves, in part, on that input. The ICAP Demand Curves proposed in this filing are therefore consistent with the requirements of the Services Tariff and just and reasonable on their substantive merits.

IV. BASIS FOR THE PROPOSED ICAP DEMAND CURVES FOR CAPABILITY YEARS 2014/2015, 2015/2016 AND 2016/2017

A. Technologies Evaluated

The Services Tariff requires that the Demand Curve reset review "shall assess … the current localized levelized embedded cost of a peaking unit in each NYCA Locality and the

[13] MPSA recently designed and installed SCR applications on four Siemens SGT6-5000F(4) class frame simple-cycle combustion turbine in California at the Marsh Landing Generating Station that met BACT/LAER emissions requirements for NOx. These Siemens turbines are the preceding version of the F-class frame turbine evaluated by NERA/S&L.

[14] As is discussed in Section IV.C.1, the NYISO Staff Report recommended that an autoderivative GE LMS100 be used as the peaking unit for these Localities.

[15] The Indicated NYTOs and MI/City, submitted comments in support of the Brattle Report. IPPNY, Entergy, and Bayonne Energy Holdings LLC ("Bayonne") submitted comments opposing it.

Rest of State" to meet minimum capacity requirements.[16] For purposes of updating the ICAP Demand Curves, "a peaking unit is defined as the unit with technology that results in the lowest fixed costs and highest variable costs among all other units' technology that are economically viable."[17] Commission precedent is clear that "only reasonably large scale, standard generating facilities that could be practically constructed in a particular location should be considered."[18] The criteria "could be practically constructed" and "are economically viable" dictate that a peaking unit "must be able to comply with all applicable environmental limitations and utilize commercially available, proven technology."[19]

This section of the filing letter describes NERA/S&L's and the NYISO staff's consideration of generation technologies to serve as proxy units prior to the Board's request for additional due diligence. It also discusses the additional work done by Brattle and Licata and the Board's ultimate decision, based in part on the Brattle Report, that the F class frame with SCR was a technically and economically viable choice for NYC, LI, and the G-J Locality. Additional information concerning the choice of proxy units for the NYCA and the Localities is provided in Section IV.A.3 below. Finally, this section explains the NYISO staff's evaluation of whether demand response technologies could serve as a peaking unit.

1. Initial Evaluation of Generation Technologies

After a broader review of available generation technologies, NERA/S&L focused on four distinct natural gas/fuel oil fired technologies: aeroderivative simple cycle combustion turbines, larger industrial scale, frame size simple cycle combustion turbines, frame size combined cycle combustion turbines, and reciprocating internal combustion engines. The specific unit types that NERA/S&L evaluated were the:

- General Electric LMS100 hybrid aeroderivative gas turbine (Simple Cycle) ("LMS100");[20]
- F class frame gas turbine (simple cycle),[21]

[16] Services Tariff Section 5.14.1.2.

[17] *Id*.

[18] First 2010 Demand Curve Order at 37.

[19] Brattle Report at iii.

[20] The LMS100 was selected as the basis for the reference costs for the NYC and LI ICAP Demand Curves in the last two resets. NERA/S&L considered a two unit LMS100 installation, each with SCR emissions controls, at a nominal 200 MW rating. *See* NYISO Staff Report at 15.

[21] In previous ICAP Demand Curve resets, the NYISO's consultants had evaluated a similar large scale gas turbine manufactured by General Electric (the "GE 7FA"). A GE 7FAs with an annual operation cap to keep the potential NO_x emissions below major source thresholds was selected as the basis for the reference cost for the NYCA in the 2007 and 2010 ICAP Demand Curve resets. As was noted above in Section III, and discussed in greater detail below in Section IV.A.3, the Board ultimately selected the simple cycle version of the Siemens SGT6-5000F(5) Gas Turbine equipped

- F class frame gas turbine (combined cycle);[22] and
- Wartsila 18V50DF/18V50SG Reciprocating Internal Combustion Engines ("Wartsila Unit").[23]

Each of these unit types are reasonably large scale, standard generating facilities that are replicable.[24] As is discussed in the NYISO Staff Report, important selection criteria considered by NERA/S&L included compliance with environmental requirements, efficiency, commercial availability and industry e perience, operational fle ibility, and scale. With respect to environmental re uirements, NERA/S&L accounted for a significant change since the prior ICAP Demand Curve reset the Environmental Protection Agency's ("EPA") regulation of six greenhouse gas emissions, including carbon dioxide, under the "Greenhouse Gas Tailoring Rule."[25] It also considered new New York State environmental restrictions on water withdrawal establishing closed-cycle cooling requirements.[26]

The Services Tariff specifies that the reference cost for the ICAP Demand Curves be based on a "peaking unit," which the Services Tariff defines as "the unit with technology that results in the lowest fixed costs and highest variable costs among all other units' technology that are economically viable..... " A "peaking plant" is defined as the number of units

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with an SCR as the basis for the reference costs for the NYC, LI, and G-J Locality ICAP Demand Curves. As was also indicated above, this type of unit is generally referenced throughout this filing as the "F class frame with SCR." NERA/S&L considered a single SGT6-5000F(5) simple cycle plant at a nominal 215 MW rating without SCR and a 950 hour annual operating limit ("F class frame without SCR") to fall below project significance thresholds for NO_x found in 6 NYCRR Part 231 of the New York State Department of Environmental Conservation's ("NYSDEC") New Source Review regulations.

[22] *See* NYISO Staff Report at 15. As discussed below, NERA/S&L also considered the combined cycle version of this plant (1x1x1 configuration) at a nominal 300 MW rating for informational purposes.

[23] NERA/S&L considered 12 Wartsila Units, with SCRs, nominally rated at 200 MW. *See* NYISO Staff Report at 15.

[24] NERA/S&L Report at 7-8.

[25] *See* NYISO Staff Report at 9-11 and n. 8. All proxy plants evaluated by NERA/Sargent & Lundy were determined to be "major sources" pursuant to the NYSDEC air regulations and the federal Clean Air Act as they all would be expected to exceed 100,000 tons of CO_2 annually when dispatched by NERA's economic model. As a major source, the proxy plant must meet BACT/LAER emissions control standards by employing state of the art post combustion control technology, such as SCR, or by capping annual emissions below the project significance thresholds provided in 6 NYCRR Part 231. In the past Demand Curve Resets, the Proxy Plant selected for the NYCA was established using a large F class Frame unit that took a much higher annual operating limit to avoid exceeding the 100 tons per year major source thresholds for NOx.

[26] *See* NYISO Staff Report at 11.

(whether one or more) that constitute the scale identified in the periodic review.[27] The Commission has previously been clear that a peaking unit should be used as the basis for capacity cost estimates, rather than combined cycle units, because it was more "in keeping with standard approaches to estimating the marginal cost of capacity."[28]

Nevertheless, NERA/S&L reviewed combined cycle technology options in response to certain conclusions in the FTI Report[29] and a concern raised by the MMU.[30] Specifically, the MMU asked that the NYISO consider basing the ICAP Demand Curves on unit types that were not peaking plants to the extent that they were the lowest net cost unit.[31] Accordingly, NERA/S&L examined the localized levelized costs and net energy and ancillary services revenues of combined cycle version of the F class frame in all demand curve regions for informational purposes only.

2. NERA/S&L and Initial NYISO Staff Evaluation of the Technical and Economic Feasibility of the F Class Frame with SCR

NERA/S&L determined early on that all available proxy units being considered would be "major sources" under the Clean Air Act's New Source Review requirement. As a result all technologies were evaluated to determine if they could meet the Best Available Control Technology ("BACT") and Lowest Achievable Emission Rate ("LAER") emissions standards applicable in New York State. The Clean Air Act's BACT/LAER rules drive new major sources of pollutants, such as NOx, to employ state of the art emission control technology to meet stringent air emissions limits. The most stringent emissions limitations in New York State occur in severe nonattainment areas, such as those found in the greater New York City metropolitan area and Long Island.

Accordingly, NERA/S&L determined that all new units in the NYC, LI, and G-J Locality would be required to install SCR technology. Therefore, as it had done in the prior ICAP Demand Curve reset, NERA/S&L eliminated the F class frame from consideration in the review process for those regions. This decision was driven principally by S&L, which did not view the F class frame with SCR as a feasible technology based on the information

[27] Services Tariff Section 5.14.1.2.

[28] *New York Independent System Operator, Inc.,* 111 FERC ¶ 61,117 (2005) at P 24-25.

[29] NYISO Staff Report at 28-29.

[30] *See* NYISO Staff Report at 9.

[31] *See id*. at 12.

available at that time.[32] This led NERA/S&L to focus on LMS100 units with SCR technology throughout the State, except for the NYCA region. S&L believed that an F class frame unit could be built in the NYCA region without an SCR if it adopted an annual operational cap to limit its annual potential NOx emissions below 40 tons per year.

Importantly, however, a number of NYISO stakeholders asked that NERA/S&L continue to evaluate an F class frame with SCR as a potential peaking plant. Their requests were prompted, among other things, by the fact that the Marsh Landing Generating Station ("Marsh Landing") was commencing operations. Marsh Landing is nominally an 800 MW, $800 million facility composed of four similar F class frame turbines operating in simple cycle operation with SCR emissions controls for NOx. Installation of the SCR on these gas turbines have allowed Marsh Landing to meet California's strict BACT/LAER air permit requirements, which are very similar to those in the severe nonattainment areas in New York.

Marsh Landing's units commenced commercial operation in May and June of 2013. The existence and operation of Marsh Landing clearly demonstrates that an F class frame with SCR can be both technically and economically viable. S&L did not modify its position on technical and economic viability principally because there was relatively little Marsh Landing operating data publicly available when NERA/S&L finalized their report on August 2, 2013. As a result, the NERA/S&L Report did not recommend the F class frame with SCR in any of the Localities, despite the fact that it was by far the lowest fixed cost, highest variable cost peaking unit being evaluated.[33]

Some stakeholders also noted that the PJM Interconnection, LLC's ("PJM") tariff required that the CONE values used in its capacity markets be based on a two-unit simple cycle GE 7FA with SCR.[34] They argued that the fact that the Commission had authorized PJM to rely on such a unit in 2007 for a purpose analogous to establishing ICAP Demand

[32] NERA/S&L had determined early in the process that all of the generation technologies that they were evaluating would exceed major source thresholds for carbon dioxide based upon the dispatch in NERA's econometric model. As major sources, all technology would be subject to BACT and LAER emission control requirements under the Clean Air Act's New Source Review program, which is implemented by NYSDEC. Prior to the commercial operation of Marsh Landing, NERA/S&L identified SCR as a viable NOx emissions control technology for all unit types except for the F-class frame combustion turbines.

[33] This is clearly evidenced by the selection of F class frame turbines as the peaking plant for the NYCA for the current, and for the 2007 and 2010 ICAP Demand Curve resets. The F class frame turbine has significantly lower annual fixed costs ($/kW) in all regions when compared to the LMS100. It has a heat rate that is approximately 15% higher than the LMS100 making it clearly the lowest fixed, highest variable cost unit. The only reason that an F class frame turbine was not initially recommended in the current reset to be the proxy plant in all locations was due to the assumption that a large F class frame turbine would emit gases at too high temperatures to work reliably with SCR emissions controls.

[34] *See* NYISO Staff Report at 13-14.

Curves was clearly relevant to the question of the viability of an F class frame with SCR in New York.

After considering input from stakeholders, NYISO staff, and the MMU, NERA/S&L concluded that:

- The F class frame is the lowest capital and highest operating cost unit, and could be constructed practically in the NYCA. Construction of this unit in the NYCA was determined to be practicable when limited to a one unit plant that would accept a permit restriction on annual operating hours of between 1,000 and 1,100 hours to meet the emission control standards for NOx. Such a limitation would not, however, render the unit impractical or economically infeasible.

- The F class frame with an annual operating limit would not, in NERA/S&L's view be a practical, economically viable unit in NYC, LI, or the G-J Locality. The prevalence of more severe air quality issues in these Localities and, correspondingly, more stringent NOx emissions limits, would eliminate the possibility of accepting an annual operational limit to comply with applicable emission rate limitations.[35] NERA/S&L also believed that more stringent emissions limitations and the anticipated dual fuel requirement (which is discussed below) in the three Localities reduced the maximum number of hours that the unit could run with an annual operational limit below what would be practical or economical for a peaking plant. Without an economically acceptable annual operating limitation the unit would be required to apply emission control technology to comply with specific NOx emission rate limits.

- SCR is the post-combustion emission control technology that is most widely utilized to control NOx for combustion turbines. Notwithstanding the Marsh Landing facility, NERA/S&L concluded that at the time of their review SCR remained an unproven control technology for the larger F-class frame turbines operated in simply cycle mode, but that it could reliably operate with a simple cycle LMS100. Therefore, the LMS100 with SCR was NERA/S&L's recommended peaking plant for the NYC, LI, and G-J Localities instead of the significantly more economic F class frame turbine.

In support of this conclusion, S&L presented examples of two failures that occurred more than a decade ago when SCRs were installed on F class frame turbines: namely the Cambalache Facility in Puerto Rico and the Riverside Generation Station in Kentucky. S&L

[35] An annual hourly operations cap was identified as an alternative to SCR NOx emissions control for the F-class frame turbine in areas of the state that were in attainment, but this annual operations cap was not available in areas where the technology was required to operate on dual fuel or where the locality had been designated as severe nonattainment for ozone. Significant project thresholds for NOx fall from 40 tpy to 2.5 tpy in these severe ozone nonattainment areas. *See* 6 NYCRR Part 231-13.3, Table 3.

reported that in both instances the SCRs failed to reliably reduce NOx emissions from the exhaust gas in accordance with the plant's permit limits due to higher temperature exhaust gas produced by the F class frame turbine. Concerns regarding the commercial viability of hot temperature SCR applications, (*i.e.,* applications where the catalyst is exposed to gas temperatures greater than 850 °F, were not present with the LMS100, which produces lower temperature exhaust gas.

NERA/S&L acknowledged stakeholder arguments regarding the viability of Marsh Landing. They responded by pointing to the relative lack of available operating data for Marsh Landing (only two months of commercial operating data were available for the four units as of Summer 2013),[36] the past failures with combined frame and SCR configurations in Puerto Rico and Kentucky in the 1990s and in 2001, and the seeming lack of commercial interest in developing other plants like Marsh Landing.[37] Nonetheless, stakeholders requested that the Net CONE values be made available for the record based upon the vast price difference between the F class Frame without an SCR and the LMS100 proxy technology. On August 19, 2013, the NYISO incorporated the ICAP Demand Curve parameters developed by NERA/S&L for the F class frame with SCR in the NYISO Staff Report.

The NYISO Staff Report also stated that the use of GE Frame 7 technology as the proxy unit in PJM was "not relevant."[38] This determination was based upon S&L's recommendation that the technology was not feasible, and was also based upon a belief that the NYISO's proxy unit evaluation process was more rigorous than what PJM had done in the past. In short, the NYISO Staff Report assumed that the PJM determination was made with the presumption that SCRs would work at the higher temperatures created by F class frame turbines without conducting any analysis to demonstrate conclusively that they had or could do so. Consequently, the NYISO Staff Report accepted NERA/S&L's view that: (i) SCRs had not (as of that time) been successfully applied to combustion turbines with higher temperatures; and (ii) "that [the] proxy unit should not be based on a simple cycle F-class CT with SCR because of technical challenges, unsuccessful projects, and lack of market acceptance."[39]

The NYISO Staff Report adopted NERA/S&L's recommendations. It included the ICAP Demand Curve reference price for the NYCA that was based upon a single F class frame without SCR that relied on dry low NOx combustion for emissions control operating

[36] Further, there was not an in-depth analysis of what caused the SCRs installed on F class gas turbines, in Puerto Rico during the 1990s to fail. S&L attributed these failures to the inability of catalyst used in the SCR to withstand the significantly higher exhaust gas temperatures created by the F class frame turbine (1050 -1150 °F) as opposed to the 700-800 °F produced by the LMS100.

[37] NYISO Staff Report at 13.

[38] *Id*. at 14.

[39] *Id*.

up to 950 hours a year. This emissions-based operations limit is lower than the average annual expected estimated dispatch hours for this unit, which range from 982 to 1025 hours, but was lowered to account for the "lack of perfect foresight."[40]

3. Additional Evaluation of the Feasibility of the F Class Frame with SCR

a. The Board's Request for Additional Due Diligence

In early October, a number of written stakeholder comments on the NYISO Staff Report argued that the F class frame with SCR should be the proxy unit for NYC and the G-J Locality. Among other things, they pointed to the ongoing and apparently successful operation of Marsh Landing. They noted the use of comparable technology as the proxy unit in PJM and the fact that no stakeholder that was active in both the PJM and NYISO markets had objected to PJM's approach. They contended further that the examples of unsuccessful SCR applications on frame units identified by NERA/S&L and the NYISO Staff Report should not be dispositive because those facilities were older or otherwise dissimilar. Stakeholder comments supporting the use of the F class frame with SCR also emphasized that it was a substantially lower cost option. They warned that "ICAP costs could increase by approximately $140 million annually in [Load Zones G, H, and I], and more than $350 million annually in New York City . . . "if the NYISO Staff Report's recommendation were accepted.[41] Other stakeholders, such as Entergy and IPPNY, supported NERA/S&L's and the NYISO Staff Report's rejection of the F class frame with SCR. Stakeholders further developed their positions in the oral arguments before the Board on October 14.

The Board carefully considered all stakeholder arguments. It determined that the proponents of using a F class frame with SCR as a proxy unit had made a strong case and that the commissioning and several months of successful operation of all four units at Marsh Landing was evidence of the viability of an F class frame with SCR. At that point, the Board was fully authorized under the Services Tariff to approve the F class frame with SCR as the proxy unit for NYC, LI, and the G-J Locality. Instead, the Board decided that it would be prudent and beneficial to conduct additional due diligence, and seek additional stakeholder input, in the time remaining before the NYISO was required to submit its proposed ICAP Demand Curves. Thus, as noted above, Brattle/Licata were retained to assist the NYISO staff in conducting an additional review of the economic and technical feasibility of that technology.

[40] *Id*.

[41] *See, e.g. Comments of the Indicated New York Transmission Owners on Proposed ICAP Demand Curves for 2014-17* at 1.

b. The Board's Authority to Conduct Additional Due Diligence Regarding the Viability of an F Class Frame with SCR

Some stakeholders have contended that the Board lacked authority to take a more in-depth look at the proxy unit issue or to retain a new consultant to assist its review. But this is not the first time that the Board has modified ICAP Demand Curve parameters recommended by the NYISO's staff and consultants.[42] Nor is it the first time that the NYISO has considered updated information relevant to proxy unit selection near the end of the ICAP Demand Curve process. Specifically, the 2007 ICAP Demand Curve reset the NYISO relied on updated LMS100 cost information that was not provided by its consultants until early October 2007 and not discussed with stakeholders until an October 15, 2007 Board meeting. Certain protestors argued that the use of the updated cost information violated the Services Tariff and *Installed Capacity Manual* provisions governing the triennial ICAP Demand Curve reset process because it did not allow "stakeholders 30 days to provide the Board with supplemental analysis for the Board's consideration." The Commission rejected these arguments finding that stakeholders were afforded an adequate opportunity to express their views on the cost update and their procedural rights were not violated."[43]

Moreover, it is clear from the text of the Services Tariff, the *Installed Capacity Manual*, and the agreements establishing the NYISO that the Board had ample authority to conduct additional due diligence before making the final decision to approve recommended demand curve parameters. The Services Tariff and the *Installed Capacity Manual* place a great deal of emphasis on the role of the "independent consultant," *i.e.,* in this reset process, NERA/S&L in developing "recommended values" for use in ICAP Demand Curves. They also define an important role for stakeholders in evaluating and responding to that consultant's work. At the same time, the Services Tariff and the *Installed Capacity Manual* clearly establish that the Board, not the independent consultant, is ultimately responsible for deciding whether the "recommended values" should actually be included in the ICAP Demand Curve submitted to the Commission. For example, Section 5.14.1.2.9 of the Services Tariff specifies that stakeholders may ask the Board to "review and adjust" proposed ICAP Demand Curves developed by the independent consultant and NYISO staff. Section 5.14.1.2.11 states that the NYISO will file ICAP Demand Curves "as approved by the ISO Board of Directors."

The Board must have the ultimate decision-making in this area for the NYISO to function independently. The Board's authority to alter recommendations is also consistent with its authority to "review any matter . . . on its own motion" and with its "ultimate

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[42] *See e.g.* 2008 Demand Curve Order at 33 (affirming the Board's decision to reduce the assumed level of excess capacity in NYCA from the 2.8% assumption of the consultants to 1.5%.) and at 60 (accepting the Board's decision not to include an additional risk factor, as was recommended by the consultant).

[43] *2008 Demand Curve Order* at P 24.

responsibility for the operation of the ISO and the effective implementation of its basic responsibilities."[44] Nothing in Section 5.14.1.2.1 of the Services Tariff or the ICAP Manual could plausibly be read to prevent the Board from exercising its independent authority.

Similarly, there should be no question concerning the Board's authority to take into account the advice of a new consultant on a discrete question pertaining to ICAP Demand Curve parameters. Article 5.08 of the ISO Agreement empowers the Board to "appoint from time to time such employees and other agents as it deems necessary."

In the final analysis, the Board had clear authority to accept or reject the NYISO Staff Report's recommendation regarding the selection of a proxy unit, or any other parameter, based solely on the information available to at the conclusion of the stakeholder arguments in October. It would be irrational to contend that the Board could make a decision based solely upon stakeholder comments and oral arguments, but object to its ability to seek additional technical input so that it could make a better informed decision. Likewise it cannot reasonably be asserted that the Board's efforts to obtain as much additional stakeholder input as possible on this issue were in any way deficient. Again, the Services Tariff permits the Board to make a decision without seeking any further stakeholder feedback. Thus the Commission should reject any arguments that the Board improperly or unfairly performed additional due diligence. The Board acted reasonably and cautiously and provided stakeholders an opportunity for input well beyond what the tariff requires.

c. The Brattle/Licata Review

As is discussed in detail in the Brattle Report and in the Chupka and Licata Affidavits, Brattle/Licata carefully and completely evaluated the commercial and technical viability of an F class frame with SCR in NYC, LI, and the G-J Locality. They worked collaboratively with NERA/S&L, the NYISO staff, and various manufacturers of SCRs and other equipment to better understand the performance of Marsh Landing and its relevance to selecting a proxy unit in New York.[45] Because they were focused on a single issue, instead of the hundred or more that NERA/S&L had to consider, Brattle/Licata were able to examine in greater detail the past technical failures at the Puerto Rico and Kentucky facilities to evaluate their applicability today.[46] They also reviewed the performance and characteristics of two other reasonably analogous generating stations, *i.e.,* the McCellan and McClure Facilities in California which have been operating with high temperature SCR applications based upon design principles similar to those used for Marsh Landing.[47]

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[44] Art. 5.07 of the ISO Agreement.

[45] *See* Licata Affidavit at 13-15, 16, 25.

[46] *See id.* at 16, 19, 23.

[47] *See id.* at 20. Brattle and Licata also had discussions with ATCO Emission Management, an SCR vendor. These discussions, which were held too late to be included in the Brattle Report, provided Brattle and Licata with additional useful information about the technical and commercial

The Brattle Report fully addressed the engineering challenges associated with the configuration of SCR on simple cycle turbines with high temperature exhaust gas; the feasibility of compliance with environmental constraints in southeastern New York; the commercial availability and the technical advancement over the last decade of SCR and catalyst technologies for high temperature applications; the available operating performance of such high temperature applications on simple cycle gas turbine units; and the costs of construction, operation, and maintenance.

The Brattle Report concluded that both the F class frame and SCR emissions controls are mature and proven technologies that could be successfully and economically integrated to meet current BACT/LAER emissions requirements expected for southeastern New York. In addition, the Brattle Report concluded that S&L's estimate of additional costs to install and operate a hot temperature SCR on an F class frame was conservatively high. As a result, the Brattle Report further concluded that the F class frame with SCR is economically viable as required by the Services Tariff and therefore should be designated as the "peaking unit" - *i.e.,* "the unit with technology that results in the lowest fixed costs and highest variable costs among all other units' technology that are economically viable"[48] - for NYC, LI, and the G-J Locality.

The Chupka Affidavit and Licata Affidavit also make it clear that, notwithstanding certain unfounded allegations of "bias" made by certain stakeholders, Brattle and Licata conducted all of their work impartially and to the best of their ability without considering positions taken in prior work or the perceived interest of any other entity in their conclusions.[49]

As was noted above, the NYISO solicited and reviewed stakeholder comments on the Brattle Report that both supported and opposed its conclusions. In addition, on November 5, 2013, IPPNY submitted sixteen questions to the NYISO regarding the Brattle Report. The NYISO posted its responses two days later. All written stakeholder comments that were submitted to the Board were received on November 8, 2013.

d. The NYISO Properly Concluded that an F Class Frame with SCR Is Technically and Economically Viable for NYC, LI, and the G-J Locality

After reviewing the Brattle Report and the stakeholder comments responding to it the NYISO staff concluded that an F class frame with SCR was a technically and economically viable proxy unit technology. It came to this conclusion for multiple reasons.

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viability as well as the performance of SCR systems installed on simple cycle turbines, including F class frame turbines. *Id*. at 21.

[48] *See* Services Tariff Section 5.14.1.2.

[49] Licata Affidavit at 29; Chupka Affidavit at 9.

First, the Brattle Report explained the distinguishing characteristics of the failed Puerto Rico and Kentucky SCR installations and emphasized that their failure did not mean that SCR technology was incompatible with a F class frame unit today. While NERA/S&L had concluded that the F class frame unit with SCR should not be chosen as the proxy unit, in part due to the failure of the SCR when exposed to the higher temperature gases exiting the F class turbine, the Brattle Report provided evidence of successful mid-high temperature SCR applications. The Brattle Report also looked more closely at the failures in Kentucky and Puerto Rico and determined that they were caused primarily by poor engineering design specifications, inappropriate construction and the use of catalyst that is now off the market. It thereby dispelled the notion that there are inherent limitations in SCR applications caused by gases that reach temperatures in the range associated with the F class frame unit. Moreover, the Brattle Report explained that technology has advanced during the years that have passed since the failed installations at the Cambalache and Riverside Facilities.

Second, the Brattle Report provided additional information regarding Marsh Landing's continued successful operation and compliance with applicable environmental requirements. The Brattle Report reasonably relied on Continuous Emissions Monitoring System ("CEMS") data obtained from the EPA's Clean Air Markets website. Because the relevant EPA requirements are the same in California and New York, Marsh Landing's ability to satisfy its environmental restrictions is directly relevant to the ability of new F class frames with SCR to do so in NYC, LI, and the G-J Locality. [50]

Third, there is now three more months of operating data for Marsh Landing than there was when the NERA/S&L report was completed. Brattle/Licata had five months of data for all four. As NYISO stakeholders have argued, by the time that the Brattle Report was completed, Marsh Landing had nearly equaled the nine months and 587 hours of LMS100 operating history that existed at the time that the Board concluded that the LMS100 was viable in the last Demand Curve Reset. The Licata Affidavit also explains that there is every reason to expect that Marsh Landing will continue to perform well in the future.[51]

While the publicly available data and the information provided by MPSA show that the Marsh Landing project is operating successfully after six months, the NYISO understands that S&L continues to believe that an F class frame with SCR is not proven technology given the failures of previous projects. S&L would require twelve months of data before accepting that Marsh Landing was viable. As the Commission is aware, qualified experts can sometimes come to competing conclusions. This is especially true when it comes to predicting the future performance of technology. Nevertheless, based upon the clear

[50] As detailed in the Brattle Report, BACT/LAER emission control requirements established by the federal Clean Air Act and administered in New York State by the NYSDEC have resulted in very stringent emissions limits for major sources of criteria pollutants such as NOx. *See* Brattle Report at 8-9. Similar BACT/LAER emissions limits were established by the California Air Resources Board for Marsh Landing.

[51] *See* Licata Affidavit at 28.

evidence of technical and economic viability provided by Marsh Landing, and as is discussed in further detail below, the NYISO has concluded that the Brattle Report's recommendation on the feasibility of integrating two proven and mature technologies - an F class frame turbine engineered with SCR emissions controls - should be accepted.

Beyond Marsh Landing, the Brattle Report also detailed other examples of hot temperature SCR applications functioning well in the electric generating sector. These included two existing frame-type turbine and SCR installations that date to the mid-2000s, *i.e.,* the McClellan and McClure facilities in California, as well as other applications at aeroderivative combustion turbines.[52] Brattle/Licata examined more than 4,000 additional hours of relevant operating data for the McClelland and McClure facilities that was not considered by S&L. Brattle/Licata also gathered additional public information that indicated significant interest in high temperature SCR applications from both catalyst vendors, MPSA, and other SCR manufacturers, such as ATCO.

Fourth, in the 2007 ICAP Demand Curve reset the NYISO proposed and the Commission ultimately accepted the LMS100 as a proxy unit, even though certain stakeholders protested to the Commission that the viability of the LMS100 had not yet been demonstrated. The Commission rejected all such arguments. It emphasized that under the Services Tariff, "[e]conomic viability is a matter of judgment." It also stated that:

> The LMS100 is a relatively new technology with little operating history but its components are based on the 6FA and LM6000. In addition the CF6 gas turbine has over 100 million hours of operating experience in both aircraft engines and industrial applications. While it is accurate that this combination of the technology is new and may not follow the historic performance of the components in uncombined applications, we disagree with KeySpan's statement that this track record is inapplicable. The reliability of the components provides confidence in the combined application. This level of confidence is increased by the fact that the LMS100 has been operating without any recurring issues or major problems, with reliability trending up and availabilities in the upper 80 percent range.[53]

The NYISO respectfully submits that essentially the same considerations support finding that the F class frame with SCR is viable today. In 2007 the NYISO relied principally on the performance record of a single LMS100 in South Dakota, where there were not environmental restrictions similar to those in NYC. Thus, the NYISO's reliance on data from Marsh Landing is consistent with precedent. Similarly, like the LMS100, the F class frame with SCR is a combination of proven and mature technologies that have relatively recently demonstrated their ability to function together in a single integrated system. As the Brattle Report and Licata affidavits emphasize, with proper design and

[52] *See* Brattle Report at 11-13.

[53] *New York Independent System Operator, Inc.*, 125 FERC ¶ 61,299 (2008) at 22.

engineering of exhaust gas tempering and appropriate catalyst selection, these two technologies can work together reliably. The successful operation of Marsh Landing and the McClellan and McClure facilities shows clearly that the combination can be commercially and technically viable.[54] Although the record of successful operation of the F class frame with SCR is relatively short it is highly relevant.

Fifth, as the Licata Affidavit explains, the NYISO now has better reason to believe that there is significant commercial interest in developing F class frames with SCRs than was the case at the time that the NERA/S&L Report was completed.[55]

Finally, the NERA/S&L Report, Brattle Report, Meehan Affidavit, and Chupka Affidavit all affirm there is no question that F class frame with SCR units are the lowest fixed cost and highest variable costs option and are thus clearly "economically viable" In NYC, LI, and the G-J Locality. The only possible objection to their selection as the proxy unit for those regions is to argue that they are not technically viable. But the Brattle Report, Chupka Affidavit, and Licata Affidavit persuasively demonstrate that they are.

In the end, the Board properly concluded that the F class frame with SCR satisfied the tariff's requirements and thus should be selected as the proxy unit for the environmentally constrained portions of New York State. It could not reasonably have selected the much more expensive LMS100 unit given the information presented by stakeholder arguments, the Brattle Report and the Chupka and Licata Affidavits establishing the F class frame with SCR's technical and economic viability. This is especially true given that PJM has relied, with the Commission's approval, on similar technology for nearly seven years to set CONE values in its capacity markets.

4. Consideration of Demand Response Technology

In the prior ICAP Demand Curve reset, the NYISO "e plored and discussed with stakeholders the possibility of using dispersed generating resources or Demand Side Resources..... " as the peaking technology. The NYISO reasoned that:

> [D]emand response presently available generally does not have the ability to respond to longer deployments under current market rule designs. Further, there is not an established set of parameters or characteristics for a particular technology of demand response to be identified with any reasonable measure of certainty. Even if an identified technology could be ascertained with certainty, the fixed and variable costs made it unsuitable for consideration in the current Demand Curve reset review.[56]

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[54] Brattle Report at iv, 7-8; Licata Affidavit at 28.

[55] Licata Affidavit at 28.

[56] 2010 ICAP Demand Curve reset filing letter at 6 (Nov. 30, 2010).

But the NYISO also committed in that filing to consider the use of demand response as the peaking unit in the current reset cycle.[57]

The First 2010 Demand Curve Order accepted the NYISO's conclusion regarding demand response but also noted the NYISO's commitment to more closely study the use of demand response in this reset. The Commission stated:

> [W]e will accept NYISO's uncontested assertion that demand response technologies are not practical for use because of deployment limitations of current market rule designs, the lack of parameters for demand resource technology, and the unsuitability of fixed and variable costs. We note that NYISO states that it will consider the use of demand resource technology in the next demand curve reset cycle contingent upon better definition of the process for identifying technology types, and the methodology and a means to quantify… the fixed and variable costs associated with those technologies.[58]

The FTI Report recognized that demand response is an important participant in capacity markets. But it also explained that neither the cost nor the offer price of demand response was an appropriate measure of the long-run cost of capacity. Specifically, it observed that:

> The cost to power consumers of reducing consumption in order to provide incremental demand response would not provide a workable basis for setting net CONE because it is inherently customer specific, reflecting the net cost of reduced consumption unique to that consumer, rather than a generic cost that can be benchmarked in the same manner as the cost of building a generating facility.[59]

The FTI Report therefore concluded "that there is no well-defined exogenous cost of demand response that can be measured in advance and used as a superior benchmark for the long-run cost of capacity in NYISO markets" and that "the estimated long-run cost of physical generation used to meet firm load is a more reliable long-run benchmark for the capacity market demand curve."[60]

Certain stakeholders responded to the FTI Report by suggesting that an aggregate or resource-type cost for demand response could be identified. NYISO staff concluded that it had no data that could be used for this purpose.[61] The NYISO Staff Report therefore agreed

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[57] *Id*.

[58] First 2010 Demand Curve Order at P 37.

[59] FTI Report at ix.

[60] FTI Report at 19.

[61] *See* NYISO Staff Report at 44.

with the FTI Report that demand response technology should not be considered as a potential peaking unit in this reset.

Accordingly, the Board endorsed the NYISO Staff Report's determination that a generation technology should be used as the peaking unit. The NYISO respectfully submits that this proposal is just and reasonable given the nature on demand response resources and asks that the Commission accept it.

B. Development of Fixed and Variable Cost Elements and Determination of Net Energy and Ancillary Services Revenues

NERA/S&L developed the fixed and variable cost elements and the determination of net energy and ancillary services revenues that were utilized as the basis for developing the ICAP Demand Curve parameters for the NERA/S&L Report, the NYISO Staff Report and the Brattle Report. Brattle evaluated the costs developed by NERA/S&L for the F class frame with SCR peaking plant and determined that they were appropriate. Utilizing NERA developed costs and revenues across all the reports ensures consistency in the results.

1. Dual Fuel Capability

In the prior ICAP Demand Curve reset it was assumed that only the NYC peaking plant would require dual fuel capability. Such capability was required by the Consolidated Edison Company of New York's gas tariff. In the current reset, NERA/S&L determined that a more stringent 45 second fuel switching requirement had developed (under certain conditions) for NYC. The LMS100 and Wartsila units could meet these requirements but the F class frame could only do so with certain modifications. A fuel switching capability cost adder was therefore established for the NYC F class frame.[62]

Some stakeholders asked NERA/S&L to consider whether dual fuel capability should also be assumed for the peaking plants in other regions. After carefully examining the issues, NERA/S&L concluded that projects siting in LI or the G-J Locality would likely be required to have dual fuel capability. For example, the gas tariffs for the local distribution companies in LI and Load Zones G, H and I require that generating plants taking gas services have dual fuel capability. Further, NERA/S&L observed that nearly all the proposed and newly built facilities in these areas were being developed with dual fuel capability. NERA/S&L concluded that the dual fuel requirement assumed for these regions would not limit the interconnection locations for siting new plants in these regions and would facilitate the proxy plant being representative of potential new projects coming into these Localities. The NYISO Staff report agreed with this conclusion.[63]

[62] *See id.* at 15.

[63] *Id.* at 15-16.

Thus, NERA/S&L recommended that a requirement of dual fuel capability be assumed for each Locality, (*i.e.,* the G-J Locality, NYC and LI), but that no such capability is required for the NYCA proxy plant. The NYISO Staff Report agreed with this conclusion.[64]

Several stakeholders addressed the dual fuel issue in their comments on the NYISO Staff Report and their October arguments to the Board. Among the stakeholders that opposed the dual fuel requirements, DPS argued that the proxy unit in the G-J Locality could be served directly from an interstate pipeline and therefore would not need dual fuel capability.

Other stakeholders argued in favor of the assumption of dual fuel capability. IPPNY argued that dual fuel capability is necessary for economic viability for both the G-J Locality and NYC proxy units. Entergy supported the dual fuel capability requirement in the G-J Locality, as the gas transportation tariffs of the distribution companies in that Locality mandate that electric generators have dual fuel capability. Moreover, having dual fuel capability in that constrained Locality will support gas and electric market coordination issues.

The Indicated NYTOs agree that the proxy unit should be dual-fueled, but only in NYC and not in the G-J Locality, where there are no NYISO or interstate pipeline dual fuel capability requirements.

The Board accepted the NYISO Staff Report's recommendation.

2. Interconnection Costs

To determine the amount of interconnection costs to be included in the analysis, NERA/S&L developed estimates of System Upgrade Facilities ("SUF") costs based on substations with open breaker positions, as well as the bus type and voltage used in NYISO deliverability studies, using a larger contingency of 20% than was used for the plant cost estimates.[65] NERA/S&L based additional costs of protection SUFs, headroom payments, and Connecting Transmission Owner Attachment Facilities on an average of these costs for representative projects from class year (CY) studies for CY09, CY10 and CY11.

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[64] *Id.* *See also* Licata Affidavit at 18.

[65] There are two types of interconnection service available through the NYISO's interconnection process: Energy Resource Interconnection Service (ERIS) and Capacity Resource Interconnection Service (CRIS). The NYISO evaluates new projects requesting CRIS Rights within the Class Year study process using the deliverability test defined in Sec. 25.7.8 of the NYISO OATT. The projects that are determined to be deliverable in full or in part are awarded CRIS Rights up to their MW deliverability level. For those projects deemed undeliverable in full or in part, the NYISO determines the least cost system upgrades to achieve full deliverability, which are the System Deliverability Upgrade costs.

The NYISO's deliverability studies indicated that the gas turbine plants were deliverable at all substations in all zones. The only substantive comment by stakeholders related to interconnection costs raised the possibility that interconnections in NYC might have to include an allowance for "storm hardening" costs based on evaluations following Superstorm Sandy. A review with Con Edison of the substations selected for the interconnection estimates indicated that none of these substations required elevation.

The NYISO Staff Report agreed with NERA/S&L's conclusion,[66] and the Board accepted the NYISO Staff Report's recommendation.

3. Capital Investment and Other Plant Costs

The NYISO proposes to use the capital cost determinations that were developed by NERA/S&L. Identified capital costs include direct costs within the engineering, procurement and construction ("EPC") contracts, owner's costs not covered by the EPC including "social justice" costs, financing costs during construction and working capital and initial inventories. For locations in NYC, NERA/S&L developed and included an incremental cost of increasing plant elevations by 3.5 feet for flood protection, based on FEMA's post Superstorm Sandy inundation maps. NERA/S&L also included inlet evaporative cooling for all gas turbine technologies. For the regions where dual fuel capability is required, NERA/S&L included the associated capital costs as a separate incremental costs. For the proxy unit in NYC, NERA/S&L added 2% for the ability to swap fuel during operation. NERA/S&L also added in capital costs associated with the appropriate environmental costs for each unit and region. The capital investment costs for the plants for each Zone are included in Table A-3 of the NYISO Staff Report and in Table 3 of the NYISO Staff Report.

The NYISO Staff Report agreed with this conclusion,[67] and the Board accepted the NYISO Staff Report's recommendation.

4. Property Taxes

a. NYC Tax Abatement

The New York Legislature enacted legislation in May 2011 that amended the New York State Real Property Tax law to provide property tax abatements of 100% of the abatement base for the first 15 years to some electrical generating facilities located in NYC: peaking units, as defined by the NYISO tariffs, and units certificated before April 1, 2015 that average no more than 18 run hours per start annually.

[66] NYISO Staff Report at 16-17.

[67] *Id*. at 17-18.

The NERA/S&L model indicated that the F class frame with SCR meets the hourly run time per start criteria for tax abatement. Further, NERA/S&L determined that it was reasonable to assume that a peaking unit in NYC that is completed for operation during the period covered by this ICAP Demand Curve reset would have received its construction permit prior to April 1, 2015.[68] Accordingly, NERA/S&L accounted for the effect of the tax abatement in the determination of levelized carrying charges for the proxy unit in NYC.

The NYISO Staff agreed with the assumption that the abatement should be applicable in developing reference prices.[69] NYISO Staff fully expects the abatement provision to be extended by the Legislature.[70]

In its October comments on the NYISO Staff Report, the City expressed its strong support for the assumption that the proxy unit for the NYC Demand Curve would be fully eligible for, and therefore would receive, the tax abatement.

The Board accepted the NYISO Staff Report's recommendation.

b. Payments in Lieu of Taxes Elsewhere

NERA/S&L's final recommendation for a uniform property tax rate in all other regions of the state other than NYC is 0.75%. This rate, which is much lower than the initial recommended rate of 2%, takes into account stakeholder comments that many projects in other jurisdictions have been able to negotiate payments in lieu of taxes ("PILOT") agreements at rates substantially lower than 2%. NERA/S&L found that these PILOT agreements have been widely received by new power plant projects, even on LI where generation developers have very limited siting options.

The NYISO agreed with the final recommendation, finding it to be a reasonable representation of property tax rates based on available data.[71]

The Board accepted the NYISO Staff Report's recommendation.

[68] In contrast, NERA/S&L determined that the more efficient combined cycle plant would not qualify for the abatement, as the restriction on operating time would significantly reduce net revenues.

[69] NYISO Staff Report at 19.

[70] Although Governor Cuomo vetoed a bill that extended the abatement, along with unrelated expansion provisions, he indicated that he would sign a bill that extended the programs without the expansion provisions.

[71] NYISO Staff Report at 19.

5. Fixed Operating and Maintenance Costs

To develop the fixed operating and maintenance ("O&M") costs, which are summarized in Table A-3 of the NERA/S&L Report, associated with the proxy units, including the F NERA/S&L assumed that the land associated with the unit would be leased. Property taxes are based on typical taxes for the jurisdiction chosen in each market (NYC, LI and Capital Zone). NERA/S&L included an allowance for periodic operations and emissions testing for the units with dual fuel capability. In response to stakeholder concerns, NERA/S&L revised its initial estimate to reflect recent increases in insurance costs.

The NYISO Staff Report agreed with the recommended fixed O&M costs,[72] and the Board accepted the NYISO Staff Report's recommendation.

6. Performance Characteristics and Variable O&M Costs

NERA/S&L developed performance characteristics, emissions and start-up costs for the units it evaluated, which are set out in Table 4 of the NYISO Staff Report. The NYISO supplied data to NERA/S&L on the reference temperatures to use to determine capacity ratings for ICAP. The NYISO bases ICAP ratings for generating units on Dependable Maximum Net Capability tests, which are corrected to the average of the ambient temperature at the time of the NYISO seasonal peak loads over the last four years. NERA/S&L used average summer and winter conditions for each region to determine the capacity ratings used for estimating net energy revenues.

The variable O&M costs used in the model are primarily driven by the periodic maintenance cycles of each unit. Plant generating output also influences these costs.

The NYISO supports NERA/S&L's conclusions,[73] and the Board accepted the NYISO Staff Report's recommendation.

7. Development of Levelized Carrying Charges

NERA/S&L analyzed the elements to be used in developing levelized carrying charges and determined the annual carrying charge rate using the same methodology that was used for the previous Demand Curve reset study, with the exception that the current New York City property tax abatement is more appropriately treated in the levelized carrying charge than as a fixed operations and maintenance cost because the annual NYC property tax amount varies over the plant's useful life.

NERA/S&L proposed a 50/50 ratio of debt to total capital, with a 7% interest rate on debt and a 12.5% return on equity for determining the weighted average cost of capital. The return on equity was calculated using the Capital Asset Pricing Model ("CAPM"), which

[72] NYISO Staff Report at 19-20.

[73] *Id*. at 20-21.

yielded an average expected return of 11.29%, plus a "calibration adder" of 1.21%. NERA/S&L did not use a calibration adjustment in the prior ICAP Demand Curve reset but concluded that one was warranted at this time.[74] NERA/S&L reasoned that the CAPM results appeared to be "potentially too low relative to regulated rates of return" and that "the CAPM is subject to bias at times during the interest rate cycle."[75] NERA/S&L also were concerned that additional external factors, such as the Federal Reserve's quantitative easing program could distort CAPM results.[76]

NERA/S&L performed the calibration adjustment by applying the CAPM model to a sample of regulate utilities, including two New York transmission owners whose service territories encompassed all or portions of NYC and the G-J Locality, and comparing those expected returns to the returns allowed by regulators. On average, the CAPM model yielded an average expected return for regulated utilities of 7.72% and 7.65% for New York utilities. But in the real world, regulators are presently allowing higher returns, *e.g.,* generally between 9.5% and 10%. Allowed returns in New York State were only slightly below the average at 9.3%.[77] Accordingly, NERA/S&L applied a conservative calibration adjustment to increase the estimated return by the difference between the observed returns and a lower than average regulated return of approximately 9%.

The Meehan Affidavit provides additional explanation of why the calibration adjustment is appropriate given current financial market conditions and the inherent biases of CAPM.[78]

NERA/S&L considered stakeholder input on its analysis and gave a presentation on the subject at the June 22 ICAPWG meeting. In developing the financial parameters described above, NERA/S&L used a long term inflation rate of 2.3% and a short term rate of 2.2%. NERA/S&L recommend the short term rate of 2.2% for escalating the demand curves over the three applicable capability periods.

The NYISO Staff Report concluded that the debt/equity parameters provided a reasonable balance and concurred with NERA/S&L's recommendations. The Board accepted the NYISO Staff Report's recommendation.

a. Amortization Period

The ICAP Demand Curves must be based on an assumed amortization period at the equilibrium excess point that will yield revenues to induce new entry when it is needed to

[74] Meehan Affidavit at 20.

[75] *Id.*

[76] *Id.*

[77] *Id.* at 21.

[78] *Id.* at 22.

satisfy minimum requirements. In order to determine the amortization period for the proxy units, NERA/S&L revisited the methodology that it used in the prior ICAP Demand Curve reset, *i.e*., it did not strictly assume a fixed period. Instead, NERA/S&L considered the risk of excess capacity, the slope of the ICAP Demand Curves and the slope of the energy and ancillary service net revenue function. This methodology, which was reviewed extensively by the Commission during the prior ICAP Demand Curve reset, internally and automatically adjusts the reference prices to reflect the zero crossing point of the Demand Curve and can account for revenue volatility associated with alternate slopes.[79]

As part of its analysis in this reset process, NERA/S&L recommended an economic analysis period, *i.e.,* the period over which the economics of a generating unit investment are examined and over which an investor will recover a return of and on invested capital, of 25 years for the LMS100 and of 20 years for the F class frame. This is different from the periods used in two previous cycles, when NERA recommended 30 years for both technologies. The shortened time period reflects the possibility of changing technology, as investors will want to analyze a recovery period that is shorter than the potential physical life of the equipment to account for reduced revenues that could result from competition against new technology.[80]

The shortened economic analysis period, especially for the F class frame unit, also reflects the possibility of increased environmental regulations, especially those limiting carbon emissions.[81] The shortened economic analysis period is also more likely to result in prices that will attract investment, given the very real risk that generator performance will not be exactly as modeled. A period of 20 years is also consistent with the economic analysis period of 20 years that PJM uses for analogous purposes in its capacity market design.[82]

The NYISO Staff Report determined that the amortization periods chosen by NERA/S&L provided a reasonable balance, and concurred with the recommendations of 25 years for the LMS100 and 20 years for the F class frame.[83]

In their comments on the NYISO Staff Report, some stakeholders, including the DPS, and MI/City, criticized NERA/S&L for shortening the amortization periods, arguing that the changes are unjustified departures from past resets. Specifically, MI/City asserted that little, if any, justification has been provided to support the shorter amortization periods. MI/City claimed that the proposed adjustments to the amortization period are in fact an attempt by NERA/S&L to assume a greater level of excess capacity than the amount prescribed by the Services Tariff.

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[79] Meehan Affidavit at 14.

[80] *Id.*at 16, 17.

[81] *Id.*at 18.

[82] *Id.* at 19.

[83] NYISO Report at 22.

On the other hand, IPPNY argued for a shorter amortization period: a 20-year period in NYC and the G-J Locality and a 15-year period in NYCA. IPPNY suggested that the risk associated with new entry has increased, and facilities will only be financed if that risk is adequately addressed. Moreover, IPPNY suggested that the excess capacity levels that NERA/S&L built into the model, discussed below in Section IV.B.9, do not adequately address the fact that capital cost recovery time increases sharply with even a small amount of excess capacity.

The Indicated NYTOs supported the use of a 30 year amortization period, as simple cycle units more than 40 years old are common in NYC, and purchasers are willing to pay significant amounts for generators that are more than 20-25 years old (citing Tenaska's purchase of US Power Generating Company for $902 million). The Indicated NYTOs argued that there is no support for claim that investors will use a shorter time horizon in determining levelized costs or for the claim that developers will demand an accelerated recovery. The Indicated NYTOs suggested that NERA/S&L likely made the change to the amortization periods in response to the IPPNY's concern that actual excess capacity is higher than the level of excess capacity assumed in the model. The Indicated NYTOs also argued in the alternative that, if 20-25 year assumption is kept, the residual value should be changed, as it does not account for the additional net revenues that the proxy unit will receive.

The Board carefully considered all of these stakeholder arguments. It accepted the NYISO Staff Report's recommendation because it believed that it was the most reasonable for the F class frame with SCR. The economic analysis periods chosen for the evaluation were based on realistic expectations. Thus, the amortization period chosen by NERA/S&L was one of a set of reasonable financing assumptions that reflects projects associated with a larger corporate capital structure while recognizing the possibility of the development of peaking unit not associated with a larger corporate capital structure.

b. Original Issue Discount

In the comments on the NYISO Staff Report, IPPNY argued that some explicit original issue discount ("OID") costs must be included in the financing charges. IPPNY criticized NERA/S&L for assuming total financing costs for the proxy unit of $5.8 million, which is substantially below the total financing costs of recent units: Astoria Energy II's total financing fees of $37.9 million, Astoria Generating Company's total fees of $29 million and Bayonne Energy Center's total fees. According to IPPNY, the cost of debt that is reflected in the Demand Curve model should be consistent with real world experience and thus should be calculated using financing costs that approximate the properly adjusted average of recently completed financings in New York, some of which have the OID costs embedded in the cost of debt.

A bond is issued at a discount to its par value (and thus includes an OID) if its coupon rate is less than the return the market requires, given the riskiness of the debt. The yield to maturity ("YTM") of the bond reflects the periodic coupon payments as well as the appreciation of the bond price as it approaches par value at maturity. To the extent the bond price was issued at or remains below the par value, its YTM value will reflect the cost of this

discount. NERA estimated the 7.0% debt interest rate from the YTM values of currently-outstanding debt issues. Were those debt issues to include an OID, the associated cost would be reflected in the YTM values. However, none of the debt issues analyzed by NERA included an OID, so there was no associated cost embedded within the YTM values, and correctly so. Thus, an OID is not necessarily typical of all debt financings, contrary to IPPNY's assertion, and a further adjustment for it would not be appropriate.

Regarding the financing costs for the aforementioned projects, the financing fees were higher because the debt and equity issuances for those projects were for substantially larger dollar amounts. The total financing fees are comparable when expressed as a percent of total project debt.

The Board concurred with the NYISO Staff Report's conclusion not to include any OID costs in the financing costs.

8. Regulatory Risk

NERA/S&L indicated that "there are reasonable arguments that a market which is administrative [such as the Demand Curve] is subject to risks that can be categorized as regulatory risks." Thus, NERA considered whether a special "regulatory risk" adjustment was necessary. NERA/S&L found that the "Demand Curve construct has been operating for ten years. Efforts are constantly underway to improve the process and to refine elements that would bias the process." It concluded that a regulatory risk adjustment was not required due to the NYISO initiatives to develop tariff revisions that would improve its capacity market power mitigation measures. NERA/S&L recommended that this issue be considered again in future reset processes.

The NYISO Staff Report accepted NERA/S&L's conclusion.[84]

Although most stakeholders agreed with NERA/S&L's conclusion, IPPNY argued in its October comments on the NYISO Staff Report that, because no special allowance was made for regulatory risk, the ICAP Demand Curves do not adequately account for the risks that merchant developers in New York bear. IPPNY asserted that the current mitigation measures for NYC did not prevent the entry of allegedly state-subsidized and uneconomic projects, such as 660 MW of the Hudson Transmission Partners HVDC line and the Astoria Energy II generating unit. IPPNY blamed allegedly inadequate mitigation rules on the possibility of increased excess capacity in the market and questioned if the proposed revisions to the buyer-side mitigation rules can be relied on to eliminate future regulatory risk.

The Board accepted the NYISO Staff Report's recommendation not to include a special "regulatory risk" adjustment.

[84] NYISO Staff Report at 23.

The ICAP Demand Curves accepted by the Commission in 2008 and 2011 did not include a regulatory risk adjustment. The proposed ICAP Demand Curves are reasonable without including such an adjustment. The NYISO's capacity market and its mitigation rules have evolved over time and the NYISO is engaged in a continuous process with its stakeholders to development enhancements. In any case, the Commission's recently accepted capacity market power mitigation rules (buyer-side and supplier-side) for the G-J Locality, which are substantially similar to the established ICAP market power mitigation rules in NYC. Because these rules were accepted for filing by the Commission, without substantial modification, by the Commission, it is reasonable to conclude that they are adequate to address the risks that IPPNY would address through an additional risk premium. Moreover, IPPNY's concerns with the buyer-side mitigation rules were also addressed in the Commission's 2011 order accepting in part and rejecting in part IPPNY's complaint on the buyer-side capacity market power mitigation rules in NYC,[85] and the NYISO's subsequent compliance filing. In addition, the risks facing suppliers were already considered in the development of other ICAP Demand Curve parameters, *e.g.*, in setting the duration of the amortization period and by making a calibration adjustment to its return on equity estimate to ensure that it appropriately reflected the current market risk premium.

9. Assumptions Regarding the Expected Level of Average Excess Capacity

In the First 2010 Demand Curve Order, the Commission directed that net energy revenues be determined at the locational minimum capacity requirements and the NYCA installed reserve margin plus the capacity of the reference plant. NERA/S&L incorporated the Commission's guidance into their ICAP Demand Curve model. The model establishes the installed capacity baseline around which their analysis operates to determine both capacity and net energy revenues, which are then used to determine the reference price level and effective amortization period.

The NYISO Staff Report agreed with these assumptions.[86]

Certain stakeholders questioned these assumptions in context of the amortization period. IPPNY argued that the excess capacity levels built into the model do not adequately address the risk that capital cost recovery time increases sharply with a small amount of excess capacity and that it is unlikely that proxy unit could be financed.

[85] *Astoria Generating Company L.P., et al. v. New York Independent System Operator, Inc.*, 139 FERC ¶ 61,244 (2012).

[86] NYISO Staff Report at 23.

The Board accepted the NYISO Staff Report's recommendation, finding that the NERA/S&L model and its assumptions are reasonable.

10. Energy and Ancillary Services Revenue ("Net Revenue Offsets")

NERA/S&L used historical data from November 1, 2009 through October 31, 2012 to benchmark the operation of the NYISO system in order to determine likely projected Energy and Ancillary Services Revenues ("Net Revenue Offsets"), which were used to compute the net cost of new entry for the peaking unit. NERA/S&L's statistical model described the effect of various cost drivers on the observed zonal locational-based marginal prices (LBMP). The primary causal variables identified were load, temperature, daily natural gas prices and the addition of two major plants in NYC during the historical period. The statistical model was adjusted to reflect these additions as operating for the entire historical period.

NERA/S&L also adjusted the forecast to reflect the expected resource mix and conditions where the available capacity is equal to the minimum installed capacity requirement plus the capacity of the reference peaking plant. To make these adjustments, NERA/S&L used production cost simulations, which were by performed by GE Energy Consulting using its Multi-Area Production Simulation (MAPS) Software and which were consistent with simulations used for the most recent Congestion Assessment and Resource Integration Study (CARIS). NERA/S&L also developed the following LBMP adjustment factors:

- An adjustment to the resource mix for retirements and resource additions that occurred after the historical period;
- An adjustment to baseline conditions for the demand curve model;
- Factors for discrete capacity levels above and below this point to provide the model with the ability to adjust capacity levels in its determination of capacity and net energy revenues; and
- Factors to correct the zonal LBMP estimates in the model to nodal estimates.

NERA/S&L used the statistical model to dispatch the units to calculate both day-ahead and real-time energy revenues, while recognizing start-up parameters and operating constraints.

NERA/S&L estimated the ancillary services revenues using data supplied by the NYISO. For the peaking units, ancillary services revenues come largely from 10-minute non-spin reserves and voltage support. Currently, 10-minute non-spin reserves come in large part from older gas turbines in Eastern New York. Thus, NERA/S&L made an adjustment to the revenue date to account for the relatively high capacity factors of the LMS100. NERA/S&L also determined that the F class frame simple cycle could not reach full output in 10 minutes, so it would only qualify for 30-minute non-spin reserve. Ancillary services for the Siemens F class frame combined cycle unit come primarily from regulation and voltage support.

The NERA/S&L Report addressed several considerations and concerns raised by stakeholders, including:

- Specification of gas prices, including use of intra-day prices
- Locations selected for gas price basis
- Use of forward gas prices instead of historical gas prices
- Model specification for Astoria Energy 2 and Bayonne Energy Center
- Scarcity pricing
- Adjustment of ancillary service revenues for changes in NYISO market rules

The NYISO agrees with NERA/S&L's conclusions regarding Net Revenue Offsets and the resolution of these issues, and supports their adoption.[87] In the NYISO Staff Report, the NYISO commented that NERA/S&L's combined use of econometric modeling and the MAPS software is a significantly improved means of capturing the effects of capacity excess and is the only means to capture some of the changes in resource mix. The NYISO found the choice of locations for representation of gas prices to be consistent with CARIS, and the sensitivity results comparing historic gas prices and gas price forecasts to be comparable. The NYISO also noted that a comparison of predicted prices for the three year period showed reasonable agreement with forward electric prices.[88]

In their October comments, the Indicated NYTOs suggested that scarcity pricing was not sufficiently reflected in NERA/S&L's conclusion. IPPNY argued that the Net CONE calculated for the NYC proxy unit reflects revenues that are too high, because NERA/S&L improperly assumed that the proxy unit will earn revenues annually in the 10-minute non-spin reserves market. IPPNY asserts that the proxy unit cannot operate in this way without violating emissions limitations.

The Board concurred with the NYISO Staff Report's conclusions. The Board found that NERA/S&L's methodology for determining likely Net Revenue Offsets was reasonable and effective.

C. Choice of Peaking Unit by Region

The NYISO's tariff currently requires that the demand curve reference price be based on a peaking plant, and further requires that it be based on the peaking plant with the lowest fixed cost and highest variable cost. The second requirement would translate into the alternative with the lowest fixed cost and lowest energy and ancillary services revenues, reflecting the higher variable costs.

[87] NYISO Staff Report at 23-25.

[88] *Id*. at 25.

The NYISO's proxy plant recommendation for the CONE unit in each zone is summarized below:

Zone	CONE Unit
NYCA	F class frame without SCR with an annual hour operating limit
G-J Locality	F class frame with SCR
NYC	F class frame with SCR
LI	F class frame with SCR

The changes to key Demand Curve parameters that result from these recommendations are below.[89]

[89] Brattle Report at vi.

2014/2015 Demand Curve Parameters	NYCA	NYC	LI	NCZ
September 6, NYISO Report				
ICAP Max Clearing Price ($/kW-mo)	13.50	36.83	30.96	28.10
Reference Point ($/kW-mo)	8.84	25.57	13.28	17.86
Zero Crossing (% of req)	112.0	118.0	118.0	115.0
Summer DMNC (MW)	210.1	185.5	188.0	186.3
Annual CONE ($/kW-yr)	107.98	294.6	247.7	224.79
Annual EAS Revenues ($/kW-yr)	18.48	54.5	114.6	53.06
Annual Net CONE ($/kW-yr)	89.50	240.11	133.07	171.73
Brattle-Licata Report				
ICAP Max Clearing Price ($/kW-mo)	13.50	26.14	20.88	18.80
Reference Point ($/kW-mo)	8.84	18.55	7.96	12.14
Zero Crossing (% of req)	112	118	118	115
Summer DMNC (MW)	210.1	208.8	210.7	209.4
Annual CONE ($/kW-yr)	107.98	209.14	167.02	150.44
Annual EAS Revenues ($/kW-yr)	18.48	33.49	86.67	32.77
Annual Net CONE ($/kW-yr)	89.50	175.65	80.35	117.67
Percent Change				
ICAP Max Clearing Price	0%	-29%	-33%	-33%
Reference Point	0%	-27%	-40%	-32%
Zero Crossing	0%	0%	0%	0%
Summer DMNC	0%	13%	12%	12%
Annual CONE	0%	-29%	-33%	-33%
Annual EAS Revenues	0%	-39%	-24%	-38%
Annual Net CONE	0%	-27%	-40%	-31%

1. For the NYCA

For the NYCA, the NYISO's proxy plant recommendation is the F class frame, with dry low NOx combustion for NOx emissions control and a cap on operating hours.

While the Generation sector and some in the Environmental sector have challenged the permissibility of an F class frame without SCR, this has been the proxy plant in the NYCA for multiple prior demand curve resets. These stakeholders dispute that this unit is permissible under New York's siting and air permitting regulations, but based upon NYISO's inquiries with the NYSDEC, the NYISO staff determined that the unit could be permitted in the NYCA region while meeting New Source Review BACT/LAER requirements. It does this by taking an annual cap on its NOx emissions that prevents it from having to conduct a BACT/LAER analysis under the federal Clean Air Act and 6 NYCRR Part 231. Therefore, the F class frame without SCR but with an annual hourly operating limit is the lowest fixed, highest variable cost peaking unit that is economically viable for NYCA. The Board accepts the NYISO staff recommendations.

2. For the NYC, LI, and G-J Locality.

Given NYISO's agreement with Brattle/Licata that the F class frame with SCR is technically and economically viable for the regions with significant portions in severe nonattainment for the federal National Ambient Air Quality Standards for Ozone and given the F class frame with SCR's significant lower fixed costs than the LMS100, it follows that it should be the peaking unit for NYC, LI, and G-J Locality.

The total capital cost of the LMS100 proxy plant is approximately $100 million more than the F class frame with SCR in *all* zones. To put the fixed cost difference in perspective, the NYISO created the following table, which compares the Capital Cost Comparison of LMS100 to the F class frame with SCR by Zone.

	NYCA (Capital)		NYC		LI		LHV	
	F class frame w/SCR	LMS100	F class frame w/SCR	LMS100	F class frame w/SCR	LMS100	F class frame w/SCR	LMS100
Total Capital Cost	$ 164,793,000	$ 262,976,000	$ 236,302,000	$ 341,838,000	$ 210,407,000	$ 315,636,000	$ 191,139,000	$ 293,070,000
Cost of SCR	$ 16,447,000		$ 23,693,754		$ 21,097,290		$ 19,165,307	
As % of Total Costs	9.98%		10.03%		10.03%		10.03%	
ICAP MW	204.9	183.6	205.3	184	206.8	185.5	205.6	184.4
Total $/kW	**$ 804.26**	**$ 1,432.33**	**$ 1,151.01**	**$ 1,857.82**	**$ 1,017.44**	**$ 1,701.54**	**$ 929.66**	**$ 1,589.32**
SCR $/kW	$ 80.27		$ 115.41		$ 102.02		$ 93.22	
Capital Cost Difference (LMS100 less F class frame with SCR)		$ 98,183,000		$ 105,536,000		$ 105,229,000		$ 101,931,000
Estimated Value								

The NYISO finds Brattle's conclusion that SCR and F class frame units are two mature, proven technologies that can readily be integrated with proper engineering design to be reasonable and well-supported.

The F class frame with SCR thus satisfies the Services tariff requirement "as the unit with technology that results in the lowest fixed costs and highest variable costs among all other units' technology that are economically viable" in all zones but Rest of State, and the Board accepts the NYISO's recommendation.

D. Demand Curves' Slope and Length - Zero Crossing Point

The zero crossing point is the intersection of the ICAP Demand Curve with the x-axis, corresponding to the percentage of capacity beyond the requirement which results in a capacity price of zero. The FTI Report analyzed the zero crossing point of the NYCA, NYC, LI and the G-J Locality Demand Curves. FTI concluded that, although in general the zero crossing points and linear shape of the current Demand Curves tracked the incremental reliability value of capacity, the correspondence between the Demand Curve and reliability value would be enhanced by reducing the NYC zero crossing point from 118% to 115% and increasing the NYCA zero crossing point from 112% to 115%. FTI based these recommendations on an assessment of the incremental reliability value of capacity in NYCA, NYC, LI and in Zones G-J, which was based on an analyses of loss of load expectation

("LOLE") vs. incremental capacity additions using the Multi-Area Reliability Simulation ("MARS") model. NERA/S&L recommended moving the zero crossing points for NYC and the NYCA to a point halfway between the current zero crossing point and FTI's recommendations: to 116.5% and 113.5% respectively. For Zone K, both FTI and NERA/S&L recommended retaining the existing crossing point. For the new capacity zone, comprised of Zones G-J, NERA/S&L recommended a zero crossing point of 115%, midway between NYC and NYCA.[90]

Subsequently, the MMU also independently reviewed the analyses conducted for the FTI Report, and had several discussions with FTI, NERA and the NYISO. These discussions focused on the capacity shifting methodology used by FTI in the studies to determine the incremental value of capacity. The MMU recommended that the zero crossing point analysis could be improved by adding capacity to the area of concern instead of shifting it from other areas in the NYCA. FTI, NERA and the NYISO agreed with the MMU that this methodology has certain advantages over the shifting methodology utilized in the FTI Report.

The MMU also recognized that the LOLE decreased asymptotically as more capacity was added, *i.e.* that the demand curves would not be linear if they were to reflect the incremental value of capacity over the entire range where incremental capacity was valuable. However, the MMU also recognized that the linear demand curves currently in place reasonably approximate the incremental value of capacity in the neighborhood about which the market could reasonably be expected to clear, *i.e.* between 100% and 112% of the requirement. Additionally, the MMU proposed that the zero crossing point could be set such that the line drawn between it and the reference point corresponded to the most accurate estimation of the incremental value of capacity between 100% and 112% of the requirement. The NYISO conducted additional analysis at the request of the MMU, and the MMU presented this approach and initial results to stakeholders at the August 22 Installed Capacity Working Group.

Stakeholders had several concerns regarding the analysis being introduced late in the reset process, as they asserted there was little information and time to review the sufficiency of the MMU's methodology and assumptions - for example, the range in which the market could reasonably be expected to clear - to support the resulting changes to the zero crossing point. Stakeholders also commented, and the NYISO and the MMU concurred, that market certainty is a paramount objective in the demand curve reset process and that it is not clear at this time whether the proposed methodology would support the market certainty goal.

After reviewing these recommendations and the stakeholder concerns, the NYISO concluded that adopting any methodology to adjust the zero crossing point at this time could result in the implementation of a procedure that did not have enough time to be properly vetted and developed, and could potentially lead to fluctuations to the recommended zero

[90] Meehan Affidavit at 24.

crossing point at each Demand Curve reset, which would introduce undue volatility and uncertainty in the market.[91] In particular, the NYISO found the analyses conducted were highly sensitive to methodology, input assumptions, and transmission system topology, and there was overall insufficient support for the conclusion that a revised methodology would send a more accurate market price signal or otherwise better align the ICAP Demand Curves with the system reliability. Thus, there would not necessarily be a benefit that could, in whole or part, offset the additional uncertainty that might be introduced.[92]

Therefore, the NYISO Staff Report proposed to make no changes to the existing NYCA, NYC and LI zero crossing points, and the NYISO also recommends to establish a 115% zero crossing point for the NCZ based on the midpoint between the current NYCA and NYC zero crossing points and as recommended by NERA/S&L.[93] In response to the NYISO's recommendation, NERA/S&L adjusted the Demand Curves to use the existing zero crossing points for NYCA and NYC.[94]

Consistent with the requirement that the NYISO assess the zero crossing point in each Demand Curve reset process, the NYISO will gather information and conduct additional analysis over the next two to three years and continue the assessment of the appropriate zero crossing methodology in the next Demand Curve reset. Table 9 of the Staff Report shows the NYISO's recommended zero crossing points.[95]

In their comments on the NYISO Staff Report, the Indicated NYTOs argued that the zero crossing point of the demand curve for the G-J Locality should be set to 114% of the requirement, as there is no analysis supporting any other figure, including the 115% in the NYISO Staff Report. The NYTOs conceded that NERA/S&L's analysis might be imperfect, but stressed that it is the *only* analysis, and shows that the appropriate zero crossing point for the G-J Locality is about 114% of its requirement. The Indicated NYTOs warned that using 115% could increase capacity costs by as much as $70 million over a three year period. The NYISO does not share this view, because the NERA Demand Curve Model already takes into account the zero crossing point when solving for the reference point, and adjusts accordingly.[96]

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[91] NYISO Staff Report at 31-32.

[92] *Id.* at 32.

[93] A comparison of the zero crossing points in the current Demand Curves and per the recommendations in the FTI Report, the NERA/S&L Report and the MMU is set out in Table 8 of the NYISO Staff Report.

[94] Meehan Affidavit at 25.

[95] NYISO Staff Report at 31-32.

[96] Meehan Affidavit at 14.

The Board concurred with the NYISO Staff Report's conclusion, agreeing that the interest of market certainty and stability supported the decision to make no changes to the zero crossing point.

E. Winter/Summer Adjustment

The NYISO ICAP market operates in two six-month Capability Periods with different amounts of capacity available in each Period. This bifurcation is a result of the greater amounts of capacity available in winter when gas turbine and combined cycle generating units generally produce higher output due to lower ambient temperature. Installed capacity imported from External Control Areas, new generation and retirements also influence the quantity of capacity available. In previous Demand Curve resets, as in this one, the NYISO proposes an upward winter/summer adjustment to the demand curves to ensure that average annual revenue is adequate given differences between winter and summer capacity.[97] The Services Tariff specifies that the translation of the annual net revenue requirement into monthly values take into account "seasonal differences in the amount of Capacity available in the ICAP Spot Market Auctions." The NYISO makes this translation using a ratio of the amount of capacity available in the winter to the amount available in summer, the Winter/Summer Capacity Ratio.

The Commission has found this adjustment to be "reasonable and consistent with the Services Tariff,"[98] but in the First 2010 Demand Curve Order, the Commission directed NYISO to revise the winter/summer adjustment to reflect the assumption for the level of excess capacity.[99]

The reference value determined by NERA/S&L and recommended by NYISO[100] is a $/kW-year value. The ICAP Demand Curve reference point used in monthly ICAP Spot Market Auctions must include adjustments to take the seasonal effects into account. Each monthly Demand Curve reference point is set to the level that would permit a peaking unit to be paid an amount over the course of the year that is equal to the annual reference value established by this update.

NERA/S&L also included the Summer/Winter Capacity Ratio in the Demand Curve model for a more accurate representation of the impact of seasonal capacity levels on capacity and energy and ancillary service revenues over the lifetime of the peaking unit.[101] The model uses the same winter-to-summer capacity ratios that are used for the translation

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[97] *See, e.g.* First 2010 Demand Curve Order at P 157, 161.

[98] 122 FERC ¶ 61,064 at P 63-66.

[99] First 2010 Demand Curve Order at P 161. [100]

NYISO Staff Report at 32-33.

[101] Meehan Affidavit at 29.

into monthly reference prices. Those ratios are summarized and compared to the values used in the previous Demand Curve Reset in Table 10 of the NYISO Staff Report.

V. PROPOSED PHASE-IN OF THE PRICE IMPACTS RESULTING FROM THE ESTABLISHMENT OF AN ICAP DEMAND CURVE FOR THE G-J LOCALITY AND REQUEST FOR ANY NECESSARY TARIFF WAIVERS

The proposed ICAP Demand Curve for the G-J Locality[102] would be effective for the start of the 2014/2015 Capability Year, *i.e.,* on May 1, 2014. In order to reconcile the implementation of this very significant market design change with concerns regarding its short-term consumer impacts, the NYISO is proposing the values presented on the tariff sheets enclosed with this filing. Those values are less than the full net cost of new entry of the peaking plant for the first two years of the ICAP Demand Curves for the G-J Locality. It is a phase-in of the peaking plant net cost of new entry, upon which the ICAP Demand Curves are set in order to lessen the potential price impact on consumers.

A. Background

A number of stakeholders previously requested that the Commission require some form of "phase-in" of the G-J Locality in Docket No. ER13-1380-001.[103] The NYISO submitted a *Request for Partial Reconsideration* in that docket asking the Commission to reconsider the August 2013 Order's "decision to reject a phase-in of the price impacts of the G-J Locality."[104]

The *Request for Partial Reconsideration* emphasized that the G-J Locality should be implemented on May 1, 2014, the beginning of the 2014/2015 Capability Year. That implementation date is consistent with the Commission's and stakeholders' expectations and with the effective dates of the accepted tariff revisions by which the G-J Locality will be established.[105] The NYISO also emphasized, however, that a "phase-in of the price impacts is necessary to ameliorate effects on consumers and mitigate what has been described as potential 'rate shock.'"[106] It further stated that "a principal goal" of creating the G-J Locality, *i.e.,* "incentivizing investment in new capacity, would not be defeated by gradually

[102] *See* Attachments I and II.

[103] *See e.g. Requests for Rehearing of the Indicated New York Transmission Owners*, Central Hudson Gas & Electric Corporation and New York State Public Service Commission, Docket No. ER13-1380-000 (9/12/13).

[104] *Request for Reconsideration of the New York Independent System Operator, Inc.,* Docket No. ER13-1380-001 at 14 (October 28, 2013) ("NYISO Request for Reconsideration").

[105] *See New York Independent System Operator, Inc.,* 144 FERC ¶ 61,126 at P 1 (2013). [106] NYISO Request for Reconsideration at 2.

implementing the price signals over the three year duration of the initial ICAP Demand Curve for the G-J Locality."[107]

The NYISO continues to believe that a properly structured phase-in would not interfere with long-term investment decisions given the longer-term revenue forecast horizon typically used by developers "[s]o long as a sufficient price signal is present in the third-year of the G-J Locality ICAP Demand Curve and beyond."[108] It is therefore proposing a phase-in based on the G-J Locality peaking plant cost of new entry, as escalated, for the third year of the ICAP Demand Curve period under consideration in this filing.

B. Description of Proposed Phase-In

For the first year, the 2014/2015 Capability Year, the ICAP Demand Curve is established using the G-J Locality peaking plant net cost of new entry. The reference price for the first year would be determined from 76.06% of the G-J Locality annual reference value[109] for the peaking plant identified in Attachment V (the Brattle Report). That determined value is equal to the annual reference value for the 2014/2015 NYCA ICAP Demand Curve. The reference price for Load Zones G, H, and I would thus be very similar to the reference price[110] that would have applied in those Load Zones but for the creation of the G-J Locality.

Capacity prices in the G-J Locality, however, are not likely to be the same as those in the NYCA for the 2014/2015 Capability Year. Because it is anticipated that there will be a lower level of excess capacity in the G-J Locality than in the NYCA, it is reasonable to expect that clearing prices for the G-J Locality will be higher[111] than those in the NYCA for the first Capability Year notwithstanding the use of a very similar annual reference value as in the NYCA to determine the G-J Locality reference price.[112] Thus, customers in the G-J

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[107] *Id.*

[108] *Id.* at 11.

[109] The "Annual Reference Value" is the value, in $/kW-year, for which the NERA Demand Curve Model solves. In some places, such as the NYISO Demand Curve Recommendations and the Brattle Report, it is referred to as the "Annual ICAP Revenue Re uirement."

[110] The actual monthly reference points will not be equal to each other, despite being seasonally shaped from the same annual reference value, because Locality specific parameters are used in that shaping. These parameters include the peaking plant MW at ICAP, Summer, and Winter Conditions; the Winter/Summer ratio of available supply, and the Demand Curve zero crossing point.

[111] Market Clearing Prices for the monthly ICAP Spot Market Auctions in the G-J Locality will be strictly greater than or equal to the Rest of State price. That is consistent with the NYISO's rules and the manner in which Locality clearing prices in the ICAP Spot Market Auctions presently are set.

[112] The expectation of higher G-J Locality prices could be affected by changes in the supply curve, and is also dependent on the Locational Minimum Installed Capacity Requirement for the G-J

Locality would likely experience a price increase in the first year but the magnitude would not be nearly as great as it would be if the full G-J Locality reference value were used. Although the first year price increase would be lower under the phase-in, it would not be inconsistent with the Commission's directives concerning the need to establish new capacity zones,[113] *i.e.*, the need to attract new investment in this region.

For the second year*, i.e.*, the 2015/2016 Capability Year, the G-J Locality reference price would be derived using 88.03% of the G-J Locality annual reference value, which is equivalent to the average of (a) the proposed NYCA annual reference value escalated to 2015/2016 dollars using the escalation factor proposed for all ICAP Demand Curves and (b) the annual reference value identified by the Brattle Report for the G-J Locality, escalated to 2015/2016 dollars in the same manner.

For the third year, the 2016/2017 Capability Year, the proposed G-J Locality ICAP Demand Curves would be set using 100% of the inflation-adjusted annual reference value identified in the Brattle Report.

The 2014/2015 Capability Year G-J Locality annual reference value is a decrease of 7.10% or $6.85/kW-year by comparison to the 2013/2014 NYCA annual reference value.[114] However, even though this represents a decrease in the annual reference value, as described in the Niazi Affidavit and discussed and seen in the table in Section V.C below, the NYISO believes that it is reasonable to expect an increase from current prices for customers in Load Zones G, H, and I. The proposed annual reference value for the 2015/2016 Capability Year represents an increase of 18.29% or $16.36/kW-year from Capability Year 2014/2015.[115]

In summary, the phase-in would reduce the potential price increase of the G-J Locality ICAP Demand Curves (by comparison to curves based on the full annual reference value) for the 2014/2015 and 2015/2016 Capability Years, while steadily increasing prices each year until the full effect is reached in the 2016/2017 Capability Year. The actual price impacts for those years would depend upon other factors, particularly changes in supply. More detail is provided below, and in the Niazi and Mukerji Affidavits, on the potential clearing price impacts of the phase-in, along with an explanation of why those price impacts

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Locality ("LCR"). The LCR is not established until the first quarter of the calendar year, and after the New York State Reliability Council establishes the Installed Reserve Margin.

[113] The Commission concluded that "creating a new capacity zone is necessary to provide more accurate price signals over the long run to encourage new investment in the new capacity zone when it is needed" (August 2013 Order at P 25) and "the new capacity zone needs its own ICAP Demand Curve, reflecting its higher net cost of new entry, in order to send the necessary price signals over the long run and provide the higher capacity revenue over the long run needed to encourage new investment." *Id*. at P 26.

[114] The 2013/2014 NYCA annual reference value is equal to $96.34/kW-year. [115]

Nominal terms are used for these comparisons.

are reasonably expected to be sufficient to both retain existing capacity needed for reliability and attract new investment in the G-J Locality.

C. Potential Market-Clearing Price Outcomes Under Scenarios with Phase-In

As noted above, it is expected that the capacity supply in the G-J Locality will be tighter than in the Rest of State, relative to the respective requirements, and it is therefore expected that Market-Clearing Prices for capacity there will be higher than the NYCA clearing prices. As described in the Niazi Affidavit, the NYISO staff examined potential clearing prices under several different scenarios in order to inform the NYISO's consideration of a phase-in. The Niazi Affidavit is very clear that these scenario analyses are not price forecasts because the NYISO cannot predict with certainty the number of MW that will transact in any of the three capacity market auctions - *i.e.,* the Capability Period Auction, Monthly Auction, or ICAP Spot Market Auction - or certain parameters of the Demand Curve such as the LCR and load forecasts, which are subject to change each year.[116]

The NYISO staff considered each of the three Capability Years encompassed by the proposed ICAP Demand Curves, *i.e.,* 2014/2015, 2015/2016, and 2016/2017. That review included an examination of the potential clearing prices for the two years where there is a proposed reduction in the ICAP Demand Curve reference price, with and without the proposed phase-in. Key assumptions utilized in these scenarios are described in the Niazi Affidavit.[117] The results of the scenario analyses are presented in the following table for illustrative purposes. The table also identifies an average of the Summer 2013/2014 actual ICAP Spot Market Auction prices, and an estimated average of the Winter 2013/2014 prices.[118]

[116] *See* Niazi Affidavit at 13.

[117] Niazi Affidavit at 11.

[118] The Winter 2013/14 average price estimate was calculated considering historic patterns in the behavior of Market Participants and the results of the first two Spot Market Auctions of the Capability Period. It is not, and is not intended to be used as, a "price forecast" for the remaining four ICAP Spot Market Auctions. It is presented here with the limited purpose to act as a reasonable estimate for the purposes of this comparison.

Table 1 -- Summary of Results of G-J Locality Scenarios [119]

Capability Year - Scenario	Summer ($/kW-month)	Winter ($/kW-month)	Annual ($/kW-month)
2013/14	$ 5.80	$ 2.85	$ 4.33
2014/15 -- without Phase-In	$10.65	$ 6.11	$ 8.38
2014/15 -- with Phase-In	$ 8.09	$ 4.64	$ 6.37
2015/16 - without Phase-In	$ 10.18	$ 5.63	$ 7.91
2015/16 - with Phase-In	$ 8.95	$ 5.00	$ 6.98
2016/17	$ 11.72	$ 7.12	$ 9.42

While it is impossible to precisely predict future clearing prices, the phased-in figures shown above would significantly reduce consumers' cost to procure ICAP in the first two years of the G-J Locality. The NYISO believes using the phase-in to protect consumers from the risk of a sudden rate increase is both appropriate and necessary.

As noted above, ICAP market clearing prices cannot be predicted with certainty for the three year period covered by the implementation of the G-J Locality. Among other uncertainties, the NYISO does not know which resources may enter or exit the market during this period. The NYISO believes the risk of dramatic retail rate impacts identified by the New York State Public Service Commission ("NYPSC")[120] should be ameliorated using the

[119] Note that under the assumptions presented in the Niazi Affidavit, the potential G-J Locality clearing prices for the 2015/2016 Capability Year reflect more capacity transacted than in the 2014/2015 Capability Year. Without that additional capacity - *i.e.* if the supply stack had been held constant - prices for 2015/2016 would be higher than presented for both the scenario with phase-in and the scenario without phase-in. The same phenomena would carry forward to the 2016/2017 Capability Year.

[120] *See Request for Rehearing and Clarification of the New York State Public Service Commission,* Docket No. ER13-1380-000-001 at 4-5 (wherein the NYPSC indicated that consumers' bills could increase by as much as 25%) ("NYPSC Rehearing Re uest") *See also*, *Request for Rehearing of Central Hudson Gas & Electric Corporation,* Docket No. ER13-1380-000-001, at 8-9 ("Central Hudson Rehearing Re uest").

proposed phase-in.[121] The Commission should be aware, however, that consumer impacts may be materially lower if a significant volume of supply enters or re-enters the market over the next three years. One scenario that would have that effect is if the roughly 500 MW Danskammer Generating Station ("Danskammer") returned to service.[122]

D. Justification for the Proposed Phase-In

1. The Proposed Phase-In Would Not Unreasonably Delay the Price Signal to the G-J Locality

As stated above and in the *Request for Partial Reconsideration*, the NYISO believes that some form of phase-in is justified in order to ameliorate the potential consumer impacts of a significant change to the NYISO's capacity market design: the introduction of an ICAP Demand Curve specific to the G-J Locality.[123] There are many unknown variables that could result in significantly different actual wholesale price outcomes, some of which are described in the Niazi Affidavit. Nevertheless, the NYISO has concluded that it cannot ignore the risk that implementing the G-J Locality ICAP Demand Curve could dramatically increase consumers' retail bills, as computed by the NYPSC.[124] The Commission accepted a phase-in of the original ICAP Demand Curves for the NYC, LI, and NYCA in 2003 in order to ameliorate consumer impacts.[125] The Commission should do the same in this proceeding.

The NYISO believes that the proposed phase-in appropriately balances short-term consumer interests and the need for investment signals to the G-J Locality. As discussed above, even with a phase-in, prices in the G-J Locality are expected to increase. Assuming the supply stack is held constant with the scenarios described in the Niazi Affidavit, prices should increase by comparable amounts in the first, second, and third years. Significantly, by the third year, the ICAP Demand Curve reference price would increase to 100% of the

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[121] The NYISO also notes that other aspects of the proposed ICAP Demand Curves could ameliorate the effects of the price impact estimated by the NYPSC. Although the NYPSC did not identify the inputs to its retail rate impact analysis, the NYISO's previous G-J Locality scenarios (which were included in the simulations conducted by Mr. Niazi and included in the April 2013 NCZ Filing) were based on a different proxy unit *(i.e.*, a combined cycle) than the one proposed by the NYISO in this filing (the F class frame with SCR). If the NYPSC based its retail rate impact analysis on the April 2013 NCZ Filing's estimates of wholesale impacts then the retail impact identified by the NYPSC would reasonably be expected to be lower than 25% if it were conducted using the F class frame with SCR as the proxy unit.

[122] Danskammer was damaged during Superstorm Sandy in October 2012 and has been nonoperational since that time.

[123] The amount that Loads located in Load Zones G-J must purchase is the Locational Minimum Installed Capacity Requirement.

[124] *See* NYPSC Rehearing Request and Central Hudson Rehearing Request.

[125] *New York Independent System Operator, Inc.,* 103 FERC ¶ 61,201 at P 6 (2003).

escalated annual reference value. Thus, the proposed phase-in would not unreasonably delay the price signals necessary to attract new investment in the G-J Locality.

2. The Proposed Phase-in Is Just and Reasonable and Consistent with Prior Commission Rulings

The NYISO respectfully submits that the phase-in proposal should be accepted by the Commission as a just and reasonable implementation of both the ICAP Demand Curve and G-J Locality-related provisions of the Services Tariff.

The courts and the Commission have made clear for decades that there is no single just and reasonable rate. Instead, rates are just and reasonable so long as they fall within a "zone of reasonableness" that is bounded on the high end by the requirement to protect consumers against "e orbitant" rates and at the other by the "investor interest against confiscation."[126] Based upon the NYPSC's predicted retail rate impacts. the NYISO is concerned that setting the G-J Locality ICAP Demand Curve using the full net cost of new entry for the peaking plant might result in "e orbitant" short-term consumer impacts in the first two years of this new Locality. Those rates and their impacts would be lessened through the proposed phase-in, and the proposed ICAP Demand Curve rates would still fall within the zone of reasonableness.

At the same time, the NYISO sees little cause for concern that its proposed phase-in would result in "confiscatory" rates. Even with a phase-in, the new ICAP Demand Curve for the G-J Locality is expected to result in higher clearing prices starting in the 2014/2015 Capability Year. The Mukerji Affidavit concludes that it is reasonable to expect that capacity adequate to satisfy reliability requirements will be retained in the G-J Locality. [127] Mr. Mukerji explains that "[e]xisting capacity will have a pricing regime which is more attractive than the one currently in place in the first two years and will also have the expectation to get the full, escalated ICAP Demand Curve price in two years' time. [Thus,] most existing generation will have sufficient market incentive to continue to participate in the market."[128]

Mr. Mukerji also concludes that efficient new capacity would be attracted to the G-J Locality notwithstanding the fact that the proposed reference prices for the first and second years are derived from a value lower than the full net cost of new entry. Starting in the third Capability Year, the G-J Locality reference price would be set using the full peaking plant net cost of new entry. Because the construction of new generating resources would take at least two to three years, prospective investment decisions are more likely to be influenced by prices that reflect the full net cost of entry in the third year, than by reduced prices in the two

[126] *Jersey Cent. Power & Light Co. v. FERC,* 768 F.2d 1500 at 1503 (1985) citing *Permian Basin Area Rate Cases*, 390 U.S. 747 (1968).

[127] Mukerji Affidavit at P 17.

[128] *Id*.

intervening years. Thus, as Mr. Mukerji states in his affidavit, "the phase-in should not affect the market entry decision of most new generating capacity."[129] The phase-in accepted by the Commission and adopted in 2003 did not have any apparent adverse impacts on investment decisions, and the NYISO does not expect them now.[130]

Importantly, the phase-in would be consistent with a primary obligation of the Commission under the FPA -- to protect consumers.[131] Consequently, the NYISO believes that this short-term phase-in of the G-J Locality ICAP Demand Curve references prices is just and reasonable as a matter of law.

E. Request for Tariff Waivers That May Be Deemed Necessary by the Commission

Some parties may argue that the proposed phase-in would be inconsistent with certain Services Tariff requirements. For example, Section 5.14.1.2(i) specifies that the periodic review of revised ICAP Demand Curves "shall assess" the "current localized levelized embedded cost of a peaking plant in each NYCA Locality, the Rest of State, and any New Capacity Zone, to meet minimum capacity re uirements." Some parties may argue that basing the first two years of G-J Locality ICAP Demand Curve on a value less than the 100 percent of G-J Locality peaking plant net cost of new entry would be inconsistent with this requirement. The NYISO does not share that interpretation.

Nevertheless, if the Commission is concerned that the proposed phase-in would conflict with Section 5.14.1.2(i) or any other tariff provision the NYISO respectfully asks that it waive those provisions. Under established precedent and in similar circumstances, the Commission has granted tariff waivers when: the waiver is of limited scope; a concrete problem will be remedied by granting the requisite waiver; and the waiver does not have undesirable consequences, such as harming third parties.[132] Each prong of the waiver analysis is satisfied in this case. The NYISO is making a good faith proposal that it believes is necessary to avoid the risk of consumer "rate shock." The waiver would be confined to avoiding that risk by allowing for a gradual rate escalation that would continue to attract investment. Finally, while some may contend that temporarily lower capacity revenues

[129] *Id*. at 16.

[130] *New York Independent System Operator, Inc.,* 103 FERC ¶ 61,201 at P 6 (2003).

[131] *See, e.g., Atlantic Refining Co. v. Publ. Serv. Comm'n*, 360 U.S. 378, 388 (1959) (interpreting parallel provisions of the Natural Gas Act) ("The Act was so framed as to afford consumers a complete, permanent and effective bond of protection from excessive rates and charges"); *Southwestern Electric Power Co.*, 39 FERC ¶ 61,099 at 61,293 (1987) (The "primary purpose of the [FPA] is the protection of customers from excessive rates and charges"); *and Chehalis Power Generating, L.P.*, 145 FERC ¶ 61,052 (2013).

[132] *Midcontinent Independent System Operator, Inc.,* 145 FERC ¶ 61,070 (2013)(granting the requested tariff waiver and noting that the fourth criterion often considered by the Commission, where there was an underlying good faith error, was not relevant to its decision)

"harm" their financial interests, the NYISO believes that such arguments are without merit and that the phased-in rates are just and reasonable.

VI. PROPOSAL TO ADDRESS THE IMPACTS OF A PHASE-IN ON THE ADMINISTRATION OF "BUYER-SIDE" CAPACITY MARKET POWER MITIGATION EXAMINATIONS

The phase-in proposed in Section V of this filing would affect the evaluations that the NYISO conducts under the "buyer-side" capacity market power mitigation rules pursuant to Attachment H to the Services Tariff ("Buyer-side Mitigation Rules"). In accordance with the Commission's June 2013 order in Docket No. ER12-360-001, the Buyer-side Mitigation Rules (and supplier-side mitigation rules) will apply to the G-J Locality. The ICAP Demand Curve is utilized in both the "Part A"[133] and "Part B"[134] exemption tests, to determine the default Offer Floor, and in setting Offer Floors for projects that are subject to mitigation.[135]

Accordingly, buyer-side mitigation determinations for projects in Load Zones G, H, and I in Class Years 2011 and Class Year 2012 would be affected by a phase-in.[136] The

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[133] *See* Services Tariff Section 23.4.5.7.2. As the NYISO has explained, "[f]or each proposed new generating unit or UDR ("E amined Facility"), the Part A Test compares the forecasted annual ICAP Spot Market Auction revenues to the Default net CONE (DNC), which for the purposes of the Part A Test is defined as 75% of Mitigation Net CONE (MNC) ..... ICAP Spot Market Auction revenues are forecast for one Capability Year (two Capability Periods) occurring three years from the Summer Capability Period of the Class Year. These values are compared with the DNC projected for that same time period. For instance, when examining a project in Class Year 2011, the NYISO would utilize the ICAP Demand Curves for the 2014 Capability Year to forecast ICAP prices. Under the Part A Test, the Examined Facility is exempt from [buyer-side mitigation] if the forecasted annual ICAP revenues exceed the DNC." *Buyer Side Mitigation: Narrative and Numerical Example* ("BSM Narrative") *(Sept. 2013) at 1* (footnotes omitted) *available at <http://www.nyiso.com/public/webdocs/markets_operations/market_data/icap/In-City_Mitigation_Documents/In-City_Mitigation_Documents/BSM_Narrative_and_Numerical_Example%20September%203%202013.pdf>*.

[134] *See* Services Tariff Section 23.4.5.7.2. *See also* BSM Narrative at 2, "In the Part B test, the Unit Net CONE . . . is compared to the forecasted ICAP prices during the [Mitigation Study Period]. An Examined Facility is exempt from an Offer Floor if the forecasted price exceeds the Unit Net CONE."

[135] The Offer Floor is set at the lower of Unit Net CONE or the "default Offer Floor" (*i.e.*,, 75% of "Mitigation Net CONE," a value determined with reference to the accepted ICAP Demand Curves). *See* Services Tariff Section 23.2.1 (definition of "Offer Floor"); *see also New York Independent System Operator, Inc*., Compliance Filing, Docket No. ER10-2371 (Aug. 24, 2010).

[136] Projects located in Load Zone J would not be affected because the Services Tariff specifies that the buyer-side mitigation determination utilizes the ICAP Demand Curve of the "smallest" capacity zone. Therefore, the New York City ICAP Demand Curve, and not the G-J Locality ICAP

Mitigation Study Period, *i.e.*, the Capability Periods used for the buyer-side mitigation analysis uses the three-year period beginning with the "Starting Capability Period."[137] That period coincides in whole or in part with the three years of ICAP Demand Curves proposed in this filing.

The phase-in could impact the outcome of analyses under the "Part A" and "Part B" tests because both are based in part on forecasts of annual ICAP Spot Market Auction revenues. It is possible that these changed outcomes would be inconsistent with a key design element and underlying intent of the Buyer-side Mitigation Rules, which is to utilize as a benchmark the short term revenues available under the ICAP Demand Curves in order to determine whether the proposed project is making an economic entry decision. The NYISO believes that the implementation of a phase-in can and should be reconciled with the Buyer-side Mitigation Rules for the G-J Locality in a manner that effectuates the intent of the tariff.

Accordingly, the NYISO respectfully requests a limited waiver of the Services Tariff so that rather than utilizing the ICAP Demand Curves for 2014/2015 and 2015/2016 proposed in this filing when performing the buyer-side mitigation examination of projects in Load Zones G, H, and I in Class Years 2011 or Class Year 2012 at the time of the completion of the respective Class Years, *i.e.*, the proposed curves set forth in Attachments I and II, the NYISO would utilize for those years the ICAP demand curve information set forth in Attachment X, *i.e.*, the curves based on the full net cost of new entry of the peaking plant for the G-J Locality ("Class Years 2011 and 2012 GHI BSM Demand Curve"). If this waiver is granted, the NYISO would utilize the Class Years 2011 and 2012 GHI BSM Demand Curve for 2014/2015 and 2015/2016 instead of the Attachment I and II G-J curve, in the ICAP forecast in both the Part A and Part B test, and when determining the default Offer Floor in the described analyses.[138] The NYISO believes that evaluating these projects using ICAP revenues under the Class Years 2011 and 2012 GHI BSM Demand Curves is more consistent with the intent to examine the overall, long-term economics of an entry decision, rather than using the G-J Locality ICAP Demand Curves proposed for acceptance in this filing.

Granting such a waiver would be consistent with the waiver precedent discussed in Section V.[139] A waiver would be "of limited scope" and would address a "concrete problem" by preventing the one-time phase-in of a newly established ICAP Demand Curve from distorting the implementation of the Buyer-side Mitigation Rules by changing mitigation

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Demand Curve, would be utilized in the Buyer-side Mitigation Determinations for Load Zone J projects. *See* Services Tariff Section 23.4.5.7.2.7.

[137] *See e.g.,* Services Tariff Sections 23.4.5.7.3 (defining as Mitigation Study Period as the Capability Periods of expected entry) and 23.4.5.7.2 (defining "Starting Capability Period" as the Summer Capability Period commencing three years from the start of the year of the Class Year).

[138] To be clear, the NYISO would utilize Class Years 2011 and 2012 GHI BSM Demand Curves only as it applied to the Mitigation Study Period of the particular project.

[139] *See* fn 121 and accompanying text.

outcomes. It would not "have undesirable consequences, such as harming third parties" because it would merely be ensuring that the Buyer-side Mitigation Rules function as intended.

VII. DESCRIPTION OF REVISED TARIFF PROVISIONS

The ICAP Demand Curves are determined by the parameters specified in Section 5.14.1.2 of the Services Tariff. Accordingly, the tariff revisions submitted with this filing revise the table in Section 5.14.1.2 to add a row for the G-J Locality ICAP Demand Curve and to state the values for the G-J Locality, NYC, LI, and NYCA ICAP Demand Curves for the 2014/2015, 2015/2016 and 2016/2017 Capability Year.[140]

VIII. REQUESTED EFFECTIVE DATE

The NYISO requests an effective date of January 28, 2014 for the tariff revisions proposed herein, *i.e.,* the standard sixty day period under Section 205 of the FPA.

IX. REQUEST FOR WAIVER OF INAPPLICABLE COST OF SERVICE REQUIREMENTS UNDER PART 35 OF THE COMMISSION'S REGULATIONS

Section 35.13 of the Commission's regulations generally requires public utilities to file certain cost and other information related to an examination of traditional cost-of-service rates to support proposed changes to their tariffs or rate schedules. However, the tariff modifications proposed herein do not involve traditional cost-of-service "rates." Further, the NYISO is not a traditional investor-owned utility. The Commission's general practice has not been to apply the traditional Section 35.13 requirements to such filings. Nevertheless, to the extent necessary, the NYISO requests waiver of Section 35.13. Notwithstanding the request for waiver, the NYISO submits the additional information enumerated below is in substantial compliance with relevant provisions of Section 35.13:

- 35. 13(b)(1) - Materials included herewith are listed in Section I of this filing letter.
- 35.13(b)(2) - The NYISO's requests an effective date 60 days from the date of filing (*i.*e., January 28, 2014 as set forth in Section VIII of this filing letter.
- 35.13(b)(3) - Service has been made as provided in Section XI of this filing letter.
- 35.13(b)(4) and (5) - A description of the materials submitted in this filing, and of the reasons for this filing, is provided throughout this filing letter, particularly in Section IV.
- 35.l3(b)(6) - The NYISO's approval of these modifications is evidenced by this filing. As discussed in Section II of this filing letter, the changes have been approved by the

[140] These sheets also eliminate the values for the completed Capability Years established in the prior ICAP Demand Curve reset.

NYISO's independent Board of Directors after an extensive stakeholder review process described in Section 5.14 of the Services Tariff.

- 35.13(b)(7) - The NYISO has no knowledge of any relevant expenses or costs of service that have been alleged or judged in any administrative or judicial proceeding to be illegal, duplicative, or unnecessary costs that are demonstrably the product of discriminatory employment practices.

X. MINISTERIAL CORRECTION

The NYISO is also proposing to make a ministerial correction to Section 2.14 of the Services Tariff. That section currently contains two identical, and thus redundant, definitions of "New Capacity Zone" as a result of a drafting error in the NYISO's November 7, 2011 compliance filing in Docket No. ER12-360-000. The tariff section affected by the error was accepted by the Commission's August 30, 2012 order in that proceeding.[141] The NYISO proposes to correct this inadvertent mistake. Attachments I and II include clean and redlined tariff sections that depict the NYISO's proposed correction.

XI. SUMMARY OF 2013 DEMAND CURVE RESET FILING CONSIDERATIONS

To facilitate the Commission's review, the NYISO prepared the following brief summary of the major features of its proposed ICAP Demand Curves.

CONSIDERATION	NYISO DECISION
Selection of proxy units	Agreed with NYISO Staff recommendation that a generation technology should be used as the proxy peaking unit. An F class frame unit with an annual operating limit was selected as the lowest capital and highest operating cost unit for the NYCA. An F class unit with SCR emissions controls was designated as the proxy peaking unit for the NYC, LI, and G-J localities.
Dual-fuel capability of proxy unit	Agreed with NERA/S&L that dual fuel capability should be, and could reasonably be, assumed for the proxy unit in each Locality (the G-J Locality, NYC and LI), but not for the NYCA proxy unit.
Interconnection Costs	Agreed with NERA/S&L, which developed input based on estimates of System Upgrade Facilities and System Deliverability Upgrades as necessary

[141] *New York Independent System Operator, Inc.,* 140 FERC ¶ 61,160 (2012).

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Capital Investment and Other Plant Costs	Agreed with the use of capital cost determinations that were developed by NERA/S&L. Identified capital costs include direct costs within the engineering, procurement and construction ("EPC") contracts, owner's costs not covered by the EPC including "social justice" costs, financing costs during construction and working capital and initial inventories.
NYC Property Tax Abatement	Agreed with NERA/S&L's assumption that the abatement is applicable in developing reference prices.
Payment in Lieu of Taxes Elsewhere	Agreed with NERA/S&L's recommendation for a uniform property tax rate of 0.75% in all regions of the state other than NYC.
Fixed Operating and Maintenance Costs	Agreed with NERA/S&L's recommended fixed O&M costs.
Performance Characteristics and Variable O&M Costs	Agreed with variable O&M costs used in the model, which are primarily driven by the periodic maintenance cycles of each unit.
Development of Levelized Carrying Charges	Agreed with NERA/S&L's recommendation for a 20-year amortization period for a F class frame unit. Agreed with recommendation to not include Original Issue Discount charge in model.
Regulatory Risk	Agreed with NERA/S&L recommendation to not include adjustment.
Assumptions Regarding the Expected Level of Average Excess Capacity	Agreed with NERA/S&L recommendations.
Energy and Ancillary Services Revenues	Agreed with NERA/S&L recommendations.
Phase-in of G-J Locality Values	The NYISO is proposing to phase-in for the first two years, the peaking plant cost of new entry, upon which the ICAP Demand Curves are set, in order to lessen the potential price

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	impact on consumers. The third year would be the full, escalated cost. The NYISO also proposes, solely for purposes of the administration of the buyer-side mitigation rules, a table of values to be used for mitigation determinations (including Offer Floor determinations) instead of the phase-in values.

XII. SERVICE

The NYISO will send an electronic link to this filing to the official service list in Docket No. ER12-360-00 and to the official representative of each of its customers, to each participant on its stakeholder committees, to the New York Public Service Commission, and to the electric utility regulatory agency of New Jersey. In addition, the complete filing will be posted on the NYISO's website at www.nyiso.com. This is in accordance with 18 C.F.R. § 35.2(e).[142]

XIII. CONCLUSION

As a result of the processes described above, the new proposed ICAP Demand Curves are based on a thorough independent review and have been scrutinized in an extensive stakeholder process that included written submissions and oral presentations to the Board and additional due diligence at the Board's direction. Various stakeholders have advocated revisions which would result in raising or lowering the Demand Curves proposed herein. The NYISO incorporated comments and revised the inputs and methodology as appropriate. The proposed ICAP Demand Curves set forth in the proposed tariff revisions included in this filing are fully supported as described in this letter and the affidavits attached hereto. The proposed ICAP Demand Curves are just, reasonable, and consistent with the requirements of the Services Tariff. The NYISO therefore respectfully asks that the Commission issue and order accepting the proposed ICAP Demand Curves without modification and make them effective on January 28, 2014.

[142] Section 385.2010(i)(2) of the Commission's regulations specifies that "[s]ervice of any document must be made not later than the date of the filing of the document." The NYISO believes that providing for service on November 29 will comply with this requirement even though it is submitting this filing into the Commission's eTariff system on November 27. Because the NYISO is submitting this filing after 5 P.M. on November 27, and because November 28 is a holiday, the filing will not be accepted by the Commission until November 29. Thus the "date of filing" for purposes of section 285.2010(i)(2) will be the same as the date of service, *i.e.,* November 29. Nevertheless, if the Commission deems it necessary, the NYISO respectfully requests a waiver of section 385.2010(i)(2). No party would be prejudiced if such a waiver were granted because service will occur on the official filing date.

Respectfully submitted,

By: */s/ David M. Allen*

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CERTIFICATE OF SERVICE

I hereby certify that I have this day served through electronic means the foregoing document upon each person designated on the official service list compiled by the Secretary in Docket No. ER12-360-00 and, to the official representative of each of its customers, to each participant on its stakeholder committees, to the New York Public Service Commission, and to the electric utility regulatory agency of New Jersey in accordance with the requirements of Rule 2010 of the Rules of Practice and Procedure, 18 C.F.R. §385.2010.

Dated at Rensselaer, NY this 29th day of November, 2013.

/s/ John C. Cutting
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