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To: NYISO Board of Directors
From: Chris LaRoe
Date: 11/8/13
Re: Comments of Independent Power Producers of New York on the “Independent Evaluation of SCR Systems for Frame-Type Combustion Turbines”

Independent Power Producers of New York, Inc. (“IPPNY”)¹ hereby tenders its comments to the NYISO Board of Directors (“Board”) on the report prepared for the NYISO by the Brattle Group (“Brattle”) and Licata Energy & Environmental Consulting, Inc., which evaluated whether a F-Class, frame-type simple cycle combustion turbine (“CT”) equipped with a selective catalytic reduction (SCR) system (“Frame + SCR”) could be practically constructed and was economically viable as those terms are used in the NYISO’s Services Tariff, and thus, could qualify as the proxy unit to set the Demand Curves for the 2014/15, 2015/16, and 2016/17 capability years.² Based upon its review of the issue over a period that spanned approximately just two weeks,³ Brattle concluded that the Frame + SCR “is economically viable technology and as such meets the tariff

¹ IPPNY is a not-for-profit trade association representing nearly 100 companies involved in the development and operation of electric generation facilities and the marketing and sale of electric power in New York. IPPNY is acting through its members on the NYISO Management Committee.

² Marc Chupka, The Brattle Grp. & Anthony Licata, Licata Energy & Envntl. Consulting, Inc., Independent Evaluation of SCR Systems for Frame-Type Combustion Turbines Report for ICAP Demand Curve Reset 3, (November 1, 2013) (“Brattle Report”).

³ *Id.*, p. 3.

requirement as lowest fixed, highest variable cost unit to be used in the demand curves for Long Island, New York City, and the G-J demand curve regions.”⁴

Two weeks is far too little time to credibly review these issues. As a result, the Brattle Report produced by this effort is, not surprisingly, flawed both procedurally and substantively and must be rejected. Instead, the Board should adopt the extensively studied and reviewed recommendations of the NYISO’s independent consultants—National Economic Research Associates, Inc. (“NERA”), with Sargent and Lundy (“S&L,” and with NERA, collectively, the “Demand Curve Consultants”)—which were selected as the consultants through an RFP process conducted in accordance with the NYISO tariff and who reviewed these issues thoroughly for the better part of a year—to choose the LMS100 as the proxy unit for New York City, Long Island and new G-J zones.⁵

The Board should not consider the Brattle Report because it would violate the NYISO’s Services Tariff and be highly prejudicial to market participants. The mere two weeks provided to Brattle was patently insufficient to adequately review these issues and produce a credible report, much less for stakeholders to then review, seek discovery of, and respond meaningfully to it.⁶ The choice of peaking technology has long been identified as one of the most significant issues affecting the Demand Curve Reset Process and, to date, there has been ample opportunity for review and analysis of the proxy unit

⁴ *Id.*, p. iii n.2.

⁵ *Id.*, p. 1.

⁶ Brattle did not even conduct a comprehensive Demand Curve Reset economic analysis or any other work related to determining how the Demand Curves should be established. Importantly, there was no comprehensive analysis to determine whether substitution of this one data point and the resulting Demand Curves would in fact encourage the merchant entry of a frame-type simple cycle CT with a SCR system. There was simply not adequate time to perform this analysis.

for the New York City, Long Island and G-J zones. Following not one, but two, analyses specifically focused on the viability of the Frame + SCR option, the Demand Curve Consultants found that it was not a proven technology, and thus, recommended the LMS100 + SCR for all Curves except the NYCA Curve.⁷ NYISO Staff subsequently endorsed this recommendation. Thus, the Demand Curve Reset Process has worked as intended. The issue of technology choice was thoroughly reviewed. While IPPNY recognizes that the Board is under considerable political pressure to avoid efficient, albeit, higher, electricity prices for consumers, such a significant eleventh-hour change is detrimental to the proper functioning of the competitive market. Generation developers may be reluctant to invest in a market structure in which they believe the rules can be changed arbitrarily and without stakeholder input. This could ultimately result in a less reliable system and higher costs for consumers.

A. Brattle Was Not Selected In Accordance With The Procedural Requirements Of The NYISO's Services Tariff And Was Retained Far Too Late In The Reset Process To Provide A Meaningful Review Of These Issues.

The NYISO's selection of Brattle to perform this additional analysis violated the NYISO Services Tariff provisions that govern the transparent selection of an independent consultant to study and recommend Demand Curve parameters in the Demand Curve reset process. The Services Tariff lays out the following comprehensive, twelve-step process to provide a thorough analysis of updated Demand Curves, which provides numerous opportunities for stakeholder review and input: (1) the NYISO to develop, with stakeholder review and comment, an RFP to retain an independent consultant; (2)

⁷ See *Brattle Report*, p. 1.

the selection of the independent consultant in accordance with the RFP; (3) the independent consultant to prepare a draft report on recommended demand curve values; (4) stakeholder review of and comment on the data, assumptions, and conclusions in the independent consultant's draft report; (5) an opportunity for the Market Monitoring Unit to review and comment on the draft request for proposals, the independent consultant's report, and its proposed Demand Curves; (6) issuance by the independent consultant of a final report; (7) issuance of a draft of the NYISO's recommended adjustments to the Demand Curves for stakeholder review and comment; (8) issuance of the NYISO's proposed Demand Curves, taking into account the report of the independent consultant, the recommendations of the Market Monitoring Unit, and the views of the stakeholders together with the rationale for accepting or rejecting any such inputs; (9) submission of stakeholder requests for the Board to review and adjust the NYISO's proposed Demand Curves; (10) stakeholder oral argument before the Board; (11) filing with FERC of Demand Curves as approved by the Board by no later than November 30; and (12) FERC action on the Demand Curves to be implemented by May 1.⁸

To ensure that each of these steps was adequately considered, the NYISO continued its practice of beginning the Demand Curve Reset Process in the fall of 2012. Nearly one year ago, the NYISO selected NERA and S&L as its independent consultants. As had been the case for the two prior reset processes, S&L was retained for their technical and engineering expertise and was primarily charged with addressing all of the issues associated with calculating the cost of new entry ("CONE") for the proxy unit in

⁸ NYISO Services Tariff §§ 5.14.1.2.1- 5.14.1.2.11.

each capacity sub-region. During the course of the reset process, S&L reviewed the issue of technology choice in detail with Market Participants.⁹

To assess the technology choice, S&L specifically evaluated the use of SCR with the SGT6-5000F(5) and found that it was not a viable option based on technical challenges,¹⁰ S&L's experience with clients developing power projects, and unsuccessful attempts to deploy the technology where catastrophic failure occurred.¹¹ Thereafter, some Market Participants pointed to the recent Marsh Landing facility and PJM's designation of this facility as a proxy unit and requested that NERA review its findings. In response to these requests, S&L conducted a second full evaluation of this issue. S&L confirmed that there was far too little experience with the most recent attempt to deploy the technology (May 1, 2013, commercial operation date) for the facility to be considered a proven technology, a key consideration when determining economic viability.¹² Specifically, during the July 9, 2013, ICAP Working Group meeting, S&L highlighted the fact that the Marsh Landing units were in test mode in Q1 2013, and thus, only start-up data was available, with Q2 data expected to be available by the end of July. Moreover, with the facility only operational since May, insufficient information would be available throughout the remainder of the year to allow for consideration of this technology choice in this reset process. S&L emphasized that, to gain industry acceptance, at least a full year of data is required to understand the forced outages and other factors.

⁹ *Id.*, p. 2.

¹⁰ *E.g.*, the design and operational challenges inherent in introducing diluent air to achieve uniformly lower gas turbine exhaust temperatures necessary for SCR to function.

¹¹ *E.g.*, unsuccessful deployments of frame gas turbines with SCR in Kentucky and Puerto Rico.

¹² The Marsh Landing Generating Plant in California began commercial operation only on May 1, 2013.

In stark contrast to S&L's extensive analysis, the Brattle Report was provided via e-mail to stakeholders at 6:58 p.m. on November 1, 2013. The only information accompanying the Brattle Report was that the NYISO Board had requested that Staff undertake further due diligence regarding the economic viability of the Frame and SCR technology for the reset period. The NYISO Staff, in turn, apparently hired Brattle to complete this due diligence effort using a selection process that was not disclosed. Based upon the limited information contained in the NYISO's e-mail, it appears that Brattle was given approximately two weeks to review this issue, conduct its due diligence, form its conclusions and draft a report.

The Board would make a mockery of the year-long reset process and discredit its own expert if it casts aside S&L's recommendation in favor of a demonstrably incomplete, two-week long analysis that formed the basis for the contrary recommendations of the Brattle Group.¹³ Thus, this work was completed and distributed to stakeholders after step 11 of the 12-step reset process, literally the 11th hour of the process, after all of the opportunities for meaningful Demand Curve Consultant work and, importantly, the necessary stakeholder review and comment of such work prudently built into the process had expired. The NYISO's grant of a one-week comment period on the Brattle Report, which is all the time that can be left at this late stage in the process, is far too short to perform a meaningful review and analysis of it and to develop the type of comprehensive comments that the NYISO's 12-step process prescribes. After the

¹³ In response to IPPNY's questions regarding the Brattle Report, which it sent to the NYISO on November 5, 2013, the NYISO stated that the "NERA Final Report, posted on August 2, 2013, has not been updated or revised and will remain available for the NYISO Board of Directors to consider along with the Brattle Group's Report on the question of proxy technology viability and selection." The fact that the Demand Curve Consultants, who have been entrusted by the Board to develop independently recommended Demand Curves over the past year, have not changed their position that the Frame + SCR is not viable in light of the Brattle recommendation, is strong evidence that Brattle's recommendation must be viewed with skepticism.

Demand Curve Consultants issued their draft report, there was adequate time built into the schedule for market participants to hire their own consultants and provide alternative evidence. IPPNY relied on the analysis and recommendation in the Demand Curve Consultants' report that the Frame + SCR is not viable, and based on that reliance, IPPNY did not retain a consultant to address the same issue and confirm the Demand Curve Consultants' recommendation. It is now too late for parties to hire their own consultants to provide the Board with additional perspective and evidence on this matter.

Further, in response to IPPNY's questions regarding the Brattle Report, the NYISO indicated that it did not select Brattle in accordance with the RFP that was developed with stakeholder review and comment.¹⁴ The RFP was designed to ensure that only qualified consulting firms without any conflicts of interest could bid. The NYISO's decision to select Brattle over all other qualified consulting firms is telling as there was little question Brattle was going to find the Frame + SCR to be a viable technology.¹⁵

There was little question Brattle was going to find the frame CT with SCR to be a viable

¹⁴ The NYISO asserted in its answer to IPPNY's question asking the NYISO to describe the process used to select Brattle that it engaged Brattle "to conduct additional due diligence on a single issue – choice of proxy unit technology – that the NYISO Board concluded was necessary to help it to determine which ICAP Demand Curves to "approve" for filing..." The NYISO further claimed that the Board's selection of Brattle "was distinct from the process used to retain consultants to determine "recommended values" for all ICAP Demand Curve parameters..." and that it "was in keeping with its authority to review any matter . . . on its own motion" under ISO Agreement. The NYISO's argument lacks merit because it suggests the Board can perform its own secret process in parallel with the reset process that must take place pursuant to the tariff. This is contrary to the tariff that requires that the recommendations that are made to the Board regarding demand curve values be developed through the process laid out in the tariff – a process that provides numerous opportunities for stakeholder review and input.

¹⁵ The Board requested additional due diligence on the Demand Curve Consultants' recommendation not to select the frame CT with SCR, an issue that could significantly reduce the Demand Curves, but did not seek additional due diligence on the Demand Curve Consultants' recommendation to select the frame without SCR for the NYCA Demand Curve, an issue that could significantly increase the demand curves. The Demand Curve Consultants initially advised that the frame CT without SCR could not be permitted and should not be selected as the proxy unit in the NYCA. In contrast, the Demand Curve Consultants, from the beginning, advised that the Frame + SCR is not commercially viable. The Board's decision to further investigate the issue that could lower the Demand Curves while not doing the same for the issue that could raise Demand Curves, which was the more appropriate issue to further investigate due to the Demand Curve Consultants' change in position, provides yet additional evidence of the Board's bias.

technology. To find otherwise would be disastrous for Brattle’s reputation because it would be entirely contrary to the advice and recommendation it gave to PJM two years earlier—an analysis that, as discussed below, NYISO Staff rejected as insufficient because it lacked rigor. Brattle is not truly unbiased, and thus, should not have been retained as an “independent” consultant here because it advised PJM that a frame CT with SCR is commercially viable.

In its final report, the NYISO Staff rejected Brattle’s analysis which supported its recommendation to PJM. NYISO Staff stated:

Further, the fact that PJM selected GE Frame 7 technology with SCRs as the proxy unit, as indicated by some market participants is not relevant, because the criteria used by PJM’s consultants [Brattle] in selecting that technology was “. . . three potential suppliers of hot SCR controls [stated]that they have received inquiries and budget requests for hot SCRs on large F-class turbines for projects currently under development in the USA” and that the Marsh Landing plant was scheduled to be completed in 2013. There was apparently little or no effort expended to assess the technical feasibility of the technology, or to show that the technology had been previously applied in a significant number of applications, and was therefore a proven, reliable technology. The NYISO believes that its DCR process is more rigorous¹⁶

Given that Brattle’s work was rebuffed by the NYISO Staff because it was not rigorous enough to be deemed credible, it is hard to fathom why the NYISO would choose Brattle to provide a fair and balanced assessment of this issue.

It appears clear that the NYISO’s selection of Brattle was results-driven. The NYISO clearly was not seeking to secure a true independent review of the issue as it is simply not realistic to assume that Brattle would make a determination that would

¹⁶ See NYISO Staff Final Recommendations, p. 14 (emphasis added).

undermine its recommendation to PJM. Nor is it reasonable to assume that Brattle—or any other reputable consultant for that matter—could produce a credible analysis in just a two-week period. Further, Brattle may have another conflict of interest. It was retained by the New York Power Authority (“NYPA”) to assist the New York Public Service Commission (“PSC”) and NYPA in reviewing generation projects that had responded to a NYPA RFP soliciting generation for consideration as part of the State’s determination that an Indian Point Energy Center (“IPEC”) Contingency Plan was warranted. Both the NYPS and NYPA have aggressively advocated that the Frame + SCR be selected as the proxy unit. The selection of the proxy unit in the G-J zone will likely impact whether any regulated generation projects must be selected.¹⁷ These conflicts could have been uncovered in the RFP process had the Services Tariff been followed. Therefore, the Board should reject the Brattle Report and instead adopt the recommendations of its Demand Curve Consultants, which have been endorsed by its Staff, to select the LMS100 as the proxy unit for the New York City, Long Island and G-J zones.

¹⁷ In fact, the PSC stated in its IPEC order that it was taking a wait and see approach on approving regulated generation projects because the development of the G-J zone and anticipated higher ICAP prices resulting from the new Demand Curves were expected to prompt a market response. *See* Case 12-E-0503, *Proceeding on Motion of the Commission to Review Generation Retirement Contingency Plans*, “Order Accepting IPEC Reliability Contingency Plans, Establishing Cost Allocation and Recovery, and Denying Requests for Rehearing,” pp. 6-7 (November 4, 2013). The NYPS held:

For the time being, however, we agree with DPS Staff’s recommendation to defer the choice of which, if any, of the proposals responding to the NYPA RFP should be included in the IPEC Reliability Contingency Plan portfolio. We leave this issue open in light of the uncertainties presently affecting the wholesale generation markets. First, in the coming months, it is possible that the NYISO will establish a new Installed Capacity (ICAP) Zone in the Lower Hudson Valley to meet Locational Capacity Requirements. Second, the NYISO is developing new “Demand Curves” for use in setting ICAP prices in the NYISO-administered markets. Both of these actions are very likely to increase ICAP prices that generators can expect to receive in the Lower Hudson Valley. At the same time, there are several merchant generating units, with a combined capacity.

B. The Brattle Report Does Not Provide Sufficient Evidence To Support Designating The Frame + SCR As The Proxy Unit

In addition to the procedural grounds for rejection of the Brattle Report, there are substantive grounds for its rejection as well. Brattle’s analysis does not provide any new material information that supports the position that the Frame + SCR is economically viable. Rather, based mostly on a one-day field trip to Mitsubishi’s factory and conversations with Mitsubishi representatives¹⁸—the company who stands to benefit the most as the SCR developer—Brattle apparently determined that five months of data from the operating Marsh Landing facility is adequate to conclude that the technology is economically viable. Moreover, Brattle speculates that there could be many future orders.¹⁹ Importantly, Brattle fails to actually identify any actual orders for plants, any plants in a queue anywhere or any applications for permits pending anywhere. Instead, Brattle can only point to Mitsubishi allegedly having “actively bid on several projects.”²⁰

Indeed, Brattle admitted that “the challenge of applying SCR to simple cycle frame-type turbines has led to few installations of SCRs and comparatively less data available on the operational performance of such systems.”²¹ Inexplicably, Brattle nonetheless concluded that:

The significant fixed-cost advantage of frame-type turbines over aeroderivative turbines for simple cycle applications

¹⁸ *Brattle Report*, p. 3.

¹⁹ *See id.*, p. 17.

²⁰ *See Brattle Report*, p. 16. Notably, and in conflict with Brattle’s recommendations, none of the generation projects that responded to NYPA’s RFP in the IPEC Contingency case proposed Frame + SCR technology. Given that the Demand Curve model estimates Frame + SCR as the cheapest unit that theoretically could be installed in the LHV if it were commercially viable, the absence of any such proposals to this potential reliability issue is an indication that such a unit is not actually commercially viable.

²¹ *Id.*, p. 7.

will continue to encourage strong commercial interest in SCR installations on frame-type turbines where emission limits require SCR. The modest expenditure needed to properly engineer, design and construct the SCR for reliable performance does not materially impact this cost advantage.

Brattle's conclusion clearly flies in the face of reality. If the Frame + SCR truly were economically viable, this cost advantage begs an important question: why are there no orders for Frames + SCR when there are dozens of LMS100 operating units and more orders being placed? Indeed, the two units cited by Brattle as having obtained permits to construct such facilities decided not to proceed with their development. The only logical explanation for the market's rejection of the Frame + SCR is that its "significant fixed-cost advantage" is clearly outweighed by its operational uncertainties, *i.e.*, it is too risky to be an economically viable unit.

This is borne out by the Marsh Landing facility example. Brattle points to no new data here that is dispositive. In fact, the CEMS data that it included in its report raises more questions than answers, questions that Brattle blithely attempts to gloss over. For example, Brattle is forced to concede that the CEMS data showed that operation of the Marsh Landing facility produced emissions "apparently over the applicable limits."²² Brattle cannot explain this outcome. Worse, Brattle defaults to asserting that the CEMS data it was using was "very limited (and not generally suited for determining compliance with complex permit conditions)."²³ Yet its inability to secure adequate data did nothing to deter Brattle from nonetheless concluding that the Frame + SCR application could serve as the proxy unit for the LHV, NYC and LI Zones.

²² *Id.*, p. 14.

²³ *Id.*

Moreover, it is notable that Brattle neglected to point out that Marsh Landing is supported by a 10-year contract pursuant to which all of its energy, capacity, and other products are purchased by a California investor-owned utility. As Brattle itself acknowledged, “Catalysts that operate at higher temperatures tend to be more expensive, less efficient and less durable.”²⁴ It is likely that the owner of the plant is recovering all of its capital costs over this 10-year period, thus managing the risk of a premature failure of the SCR. The NYISO Demand Curve modeling for the NYC and LHV zones assumes that costs will be recovered over 20 years, 2 times longer than the time period over which the owner of Marsh Landing assumed the risk of a failure. Thus, the Marsh Landing example is entirely inapposite to the NYISO’s Demand Curve model where merchant generators must bear the risk of constructing new facilities and obtaining sufficient revenues from the markets.²⁵

The lack of commercial acceptance of the Frame + SCR is in stark contrast to the experience of the LMS100, which the independent consultants, NYISO Staff, and the Board all concurred should be selected in the Demand Curve reset process in 2007. The NYISO’s independent consultant, which had been properly selected in accordance with the NYISO’s demand curve reset procedures at the beginning of the process, recommended the LMS100 throughout the process because there was extensive evidence

²⁴ *Id.*, p. 6.

²⁵ Brattle’s two other examples of CTs operating with SCRs, SMUD McClellan (“SMUD”) and Mid McClure, do not support its claim that the Frame + SCR is a viable proxy unit for the Demand Curves in New York. SMUD “operates very infrequently, averaging about 50 hours per year” and Mid McClure operates only 500 hours per year. This is in contrast to the proxy units which are modeled to provide greater than 1500 hours per year. Further, in its responses to IPPNY’s questions, the NYISO confirmed that no emissions data for these plants are available because they are exempt from the CEMS requirements. Thus, it is not possible to determine whether and how often these plants reach maximum output.

of market acceptance of the plant.²⁶ While it was true that only one unit was operational at that time and it was located in a rural setting, that unit had been operating for over one year, thereby providing a year's worth of operating data from which important factors, such as forced outage statistics, could be gleaned. The available data showed that the reliability was trending up.

Moreover, S&L found that there were five LMS100 units in the NYISO interconnection queue and reports indicated at least 13 other units had been sold, and that there also had been published reports of additional LMS100s planned at other locations in North America.²⁷ It was for these reasons that the Commission upheld the NYISO's decision to designate the LMS100 facility as the NYC and LI proxy unit notwithstanding the fact that it had not been operated in an urban environment.²⁸ Notably, when reviewing the Frame + SCR option, S&L reported that industry practice required at least one year of data to be able to recommend the technology as economically viable for the proxy unit.

²⁶ *Id.*, pp. 1-2.

²⁷ *Id.*, p. 17.

²⁸ To support its findings, the FERC emphasized that (i) an LMS100 unit located in South Dakota had been "in commercial operation" for more than a year "without any recurring issues or major problems, with reliability trending up, and availabilities in the upper 80 percent range;" (ii) construction of a second unit ha[d] begun at the same location and it [wa]s slated to be in service in June 2008;" and (iii) "eleven units ha[d] been sold in California and two in Canada." *See New York Independent System Operator, Inc.*, 122 FERC ¶ 61,064, at P 23 (2008).

The NYISO Board of Directors should reject the Brattle Report for the reasons established herein.

Dated: November 8, 2013

Respectfully submitted,

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