

**Comments of the Indicated New York Transmission Owners**  
Brattle Group Report on Frame-Type Combustion Turbines

November 8, 2013

**1. The Board Should Utilize the Frame with SCR Plant as the Proxy Unit for New York City, the Lower Hudson Valley, and Long Island**

The Indicated New York Transmission Owners<sup>1</sup> have previously urged the Board to utilize a Frame model turbine with Selective Catalytic Reduction (SCR) as a basis for the Cost of New Entry in the Lower Hudson Valley and New York City. We have argued that such a configuration is technically feasible and more consistent with the definition of a “peaking unit” included in the Market Services Tariff than other technologies and configurations reviewed by the NYISO. The assessment completed by the Brattle Group validates these conclusions.

The Brattle Group’s report recognizes that although two attempts to combine SCR with Frame turbines with high temperature exhaust failed more than ten years ago, both plants suffered from design and operating issues that would not be repeated today. One plant appears to have undersized fans and/or an improperly installed catalyst system, while the other used the wrong fuel type. Both plants also used a catalyst widely considered obsolete today and that may be more vulnerable to failure.<sup>2</sup>

The Brattle Group report confirms that at least three plants utilizing Frame turbines and SCR are currently in operation in California. These installations are operating well and have achieved low NOx emissions,<sup>3</sup> indicating that whatever technical hurdles may have existed more than ten years ago have been overcome. Mitsubishi, a gas turbine and SCR manufacturer, has confirmed that a plant similar to the recommended proxy unit would qualify for its standard warranty coverage and would have

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<sup>1</sup> 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

<sup>2</sup> Independent Evaluation of SCR Systems for Frame-Type Combustion Turbines (“Brattle Group report”), The Brattle Group and Licata Energy & Environmental Consulting, Inc., November 1, 2013, p. 15-16.

<sup>3</sup> Although the Brattle Group states that units subject to LAER requirements have been subject to a steady-state NOx limit as low as 2 ppm in some instances, we note that recent permits issued by the New York State Department of Environmental Conservation have imposed a limit of 2.5 ppm or higher. See, e.g., Title V Permit, Gowanus Generating Station, June 20, 2013, p. 88, and Title V Permit, Astoria Gas Turbine Power, October 4, 2010, p. 32.

performance characteristics comparable to those assumed in the report.<sup>4</sup> The report also observes that the challenges faced when applying SCR to a hot exhaust stream from a Frame turbine are “not fundamentally different than those faced when applying SCR to aeroderivative turbines” and that “a number of aeroderivative simple-cycle gas turbines have been built with air dilution systems to protect the catalyst and extend catalyst life.”<sup>5</sup>

The Brattle Group further found that the major components of a Frame turbine plant with SCR are proven technologies and are readily available from multiple manufacturers (i.e., are “commercially available”).<sup>6</sup> In particular, maturation of catalyst technology has improved the feasibility of combining a simple cycle Frame turbine unit with SCR.<sup>7</sup> While proper design and installation are necessary, the Brattle Group concludes that there are no major technical hurdles to the configuration.<sup>8</sup> In fact, equipment manufacturers have advised one of the Indicated New York Transmission Owners that commercial interest in Frame model plants with SCR is increasing.

The report also correctly notes that using a Frame turbine plant with SCR as the basis for the Cost of New Entry in most of the state’s capacity markets would be consistent with FERC precedent. In the 2007 demand curve reset, the Commission upheld the NYISO’s decision to use the LMS-100 as the proxy unit in New York City and Long Island, despite opponent’s complaints that that turbine model had only limited operating experience.<sup>9</sup> We note further that the Commission has authorized use of a Frame model turbine with SCR to serve as the basis for the Cost of New Entry in PJM.<sup>10</sup>

Section 5.14.1.2 of the Market Services Tariff requires the NYISO to base its estimates of the Cost of New Entry upon the unit with “lowest fixed” and “highest variable” costs, among those that are “economically viable.” Of the simple cycle plants analyzed by the NYISO and its contractors, the Frame model turbine with SCR is the unit with the lowest fixed and highest variable costs. Arguably, it also the only simple cycle unit that is economically viable. For these reasons, the Board should direct NYISO staff

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<sup>4</sup> *Id* at p. 17-18. See also the NYISO’s “Response to the IPPNY Questions Received by the NYISO on Tuesday, November 5, 2013,” Question 9, p. 3.

<sup>5</sup> *Id* at p. 6-7.

<sup>6</sup> *Id* at p. 17.

<sup>7</sup> *Id* at p 7.

<sup>8</sup> *Id* at p. 7-8.

<sup>9</sup> *Id* at p. 17.

<sup>10</sup> PJM OATT, Attachment DD, Section 2.58.

to designate the Frame model plant with SCR as the basis for the Cost of New Entry in New York City, the Lower Hudson Valley, and Long Island.<sup>11</sup>

## **2. The Board Should Consider Additional Adjustments To The Proposed Demand Curves**

The capacity market demand curves proposed by the Brattle Group for New York City, Long Island, and the Lower Hudson Valley are based upon the cost of a single-unit Frame turbine plant with SCR, as presented in the NYISO Staff Proposal in early September.<sup>12</sup> While we agree that the Frame model turbine plant with SCR should serve as the basis for the demand curves if it is the most economic option that meets tariff requirement, it is likely that the NYISO Staff Proposal overstated the cost of such a plant. Various parties participating in the stakeholder process, including the Indicated New York Transmission Owners, have previously identified flaws in the analyses underlying all of the proxy unit options evaluated in the August 2013 report by the NYISO's independent consultants and in the NYISO Staff Proposal. Each of these flaws tends to overstate the Cost of New Entry or, in the case of misplaced zero-crossing points, will otherwise unnecessarily increase capacity prices.<sup>13</sup>

For the sake of brevity, we will not reargue each of the points previously raised by the Indicated New York Transmission Owners and other like-minded stakeholders at working group meetings and in written comments. However, we continue to believe that downward adjustments to the Cost of New Entry are justified in all regions of the state, even if the Cost of New Entry is based upon a Frame model turbine plant with SCR in most capacity regions. Our issues include, but are not limited to:

- The 20-25 year amortization period for the proxy unit, despite ample evidence that generators in New York retain significant value for 30 years or more;
- The arbitrary limit of 100-400 MW placed on the size of the proxy unit;

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<sup>11</sup> In filings to the Commission, the Indicated New York Transmission Owners endorsed a phase-in of the higher prices that would apply in the new capacity zone. (See Motion to Intervene and Protest of the Indicated New York Transmission Owners, Docket No. ER13-1380, May 20, 2013). A phase-in would continue to be justified and recommended regardless of whether the Board selects a Frame model turbine plant with SCR as the basis for the Cost of New Entry in the Lower Hudson Valley.

<sup>12</sup> Proposed NYISO Installed Capacity Demand Curves For Capability Years 2014/15, 2015/16 and 2016/17 ("NYISO Staff Proposal"), September 9, 2013, p. 27.

<sup>13</sup> See, e.g., Comments of the Indicated New York Transmission Owners dated August 30, 2013, April 26, 2013, and December 19, 2012 and the Board Appeal of the Indicated New York Transmission Owners dated October 2, 2013. See also Comments of the New York Transmission Owners, the New York State Department of Public Service, Multiple Intervenors, New York Association of Public Power, and Consumer Power Advocates dated June 17, 2013 and Supplemental Comments of Consolidated Edison dated August 30, 2013.

- The failure to recognize in the energy and ancillary services offsets the additional revenues that will result from recent market rules changes (e.g., scarcity pricing, operating reserves reference levels);
- Methodological flaws in the energy revenue model used by the consultants, such as the inclusion of a nodal adjustment and the inclusion of dummy variables for Astoria Energy II and Bayonne Energy Center;
- Lower, but still overstated, property tax rates in the Lower Hudson Valley and Rest of State;
- The inclusion of Local Distribution Company gas transportation costs in the Lower Hudson Valley Cost of New Entry and the assumption that the proxy unit in the Lower Hudson Valley must be dual fueled; and
- The use of a 115% zero-crossing point in the Lower Hudson Valley demand curve, instead of the 114% recommended by Potomac Economics.

We understand that the Board cannot carefully evaluate and correct each of these identified flaws in the short time remaining before new demand curves must be submitted to the Commission for approval. Nonetheless, we urge the Board to recognize that such flaws exist before approving any large upward adjustments to the Cost of New Entry and the price of capacity that may be suggested by other stakeholders. To the extent possible, the Board should also instruct NYISO Staff to correct any of the shortcomings previously identified by the Indicated New York Transmission Owners, the Department of Public Service, Multiple Intervenors, and The City of New York.

Further, we note that all parties have had only limited time to review the Brattle Group's findings. We reserve the right to comment in future FERC pleadings upon any and all of the assumptions underlying the Cost of New Entry and demand curves that are ultimately filed by the NYISO. For example, the NYISO has previously based the cost of the proxy unit for its capacity market demand curves upon the cost of two-unit gas turbine installations, because such plants are typically more cost-effective than single-unit plants.<sup>14</sup> The demand curves proposed by the Brattle Group appear to be based on the cost of a single-unit facility. The Board should, in particular, review whether a two-unit plant would be more economic than a single-unit plant in the Lower Hudson Valley, where consumers are expected to experience increases in capacity costs as a result of the establishment of the new capacity zone.

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<sup>14</sup> NYISO Staff has proposed to utilize a one-unit plant for the Rest of State proxy unit, because emissions from a smaller plant would fall below major source thresholds, making the plant more economic than a larger two-unit facility.