UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

New York Independent System Operator, Inc.	**)**	**Docket No. ER17-386-000**

LIMITED PROTEST AND COMMENTS
OF INDEPENDENT POWER PRODUCERS OF NEW YORK, INC.

On November 18, 2016, the New York Independent System Operator, Inc. ("NYISO") filed, pursuant to Section 205 of the Federal Power Act, proposed tariff revisions to its Market Administration and Control Area Services Tariff ("Services Tariff"), which define new installed capacity ("ICAP") Demand Curves applicable for the 2017/2018 Capability Year and establish the parameters for conducting the annual updates to determine the ICAP Demand Curves for the 2018/2019, 2019/2020, and 2020/2021 Capability Years, with the Federal Energy Regulatory Commission ("Commission") in the above-captioned docket.[1] Pursuant to Rule 211 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.211, and the Commission's Combined Notice of Filings #1, issued on November 18, 2016, Independent Power Producers of New York, Inc. ("IPPNY")[2] hereby comments on, and submits this limited protest concerning one aspect of, the NYISO Filing.

[1] Docket No. ER17-386-000, *New York Independent System Operator, Inc.*, Proposed ICAP Demand Curves for the 2017/2018 Capability Year and Parameters for Annual Updates for Capability Years 2018/2019, 2019/2020 and 2020/2021 (Nov. 18, 2016) ("NYISO Filing").

[2] IPPNY is a not-for-profit trade association representing the independent power industry in New York State. Its members include nearly 100 companies involved in the development and operation of electric generating facilities and the marketing and sale of electric power in New York. IPPNY's members include suppliers and marketers that participate in the NYISO's energy and capacity markets. IPPNY filed a doc-less motion to intervene in this docket on December 8, 2016.

I. BACKGROUND & EXECUTIVE SUMMARY

On May 20, 2003, the Commission first approved ICAP Demand Curves for the NYISO ICAP market to replace a critically flawed capacity market structure that had led to severely depressed ICAP market clearing prices.[3] As the Commission has explained in previous orders addressing the NYISO's ICAP Demand Curves, the Demand Curves are derived by calculating the cost of new peaking generation—*i.e.*, the cost of new entry or "CONE"—and netting from this cost the projected net revenues the generator is expected to earn in the energy and ancillary services ("EAS") market at or slightly above the minimum reserve requirement, resulting in the "Net CONE."[4] More specifically, Net CONE is derived from an estimate of the annual capital and fixed operation and maintenance costs, including a return of and on investment, to construct a typical new peaking unit (*i.e.*, a simple cycle gas turbine plant), less projected EAS revenues, net of variable operating costs, that a new peaking unit could expect to earn specific to each zone at or slightly above equilibrium conditions.[5]

In stark contrast to the boom/bust nature of the vertical curve then in place, the Commission found that the Demand Curves would improve reliability in the New York Control Area ("NYCA") by providing transparent, accurate, and stable price signals to investors to construct new generation and retain needed existing generation, facilitating the formation of

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[3] *N.Y. Indep. Sys. Operator, Inc*., 103 FERC ¶ 61,201 (2003).

[4] *N.Y. Indep. Sys. Operator, Inc.*, 122 FERC ¶ 61,064 at P 22 (2008) ("January 29 Order") ("The peaking unit chosen for the development of an ICAP Demand Curve is critical because the cost of the unit is the single largest fixed-cost component used to set ICAP demand curves."); *N.Y. Indep. Sys. Operator, Inc*., 125 FERC ¶ 61,299 at P 38 (2008).

[5] *See* January 29 Order at PP 35–36; *see also N.Y. Indep. Sys. Operator, Inc*., 111 FERC ¶ 61,117 at P 16 (2005).

long-term bilateral transactions and reducing incentives to withhold capacity.[6] According to the NYISO's Services Tariff that was in effect for the NYISO Filing, the Demand Curves are reviewed every three years pursuant to an independent analysis and stakeholder comment process and are reset for a four-year period, referred to as the ICAP Demand Curve reset ("DCR").[7]

The choice of peaking technology has long been identified as one of the most significant issues affecting the DCR process. The Commission has ruled that in selecting a proxy generating unit, "only reasonably large scale, standard generating facilities that could be practically constructed in a particular location should be considered."[8] The NYISO Services Tariff requires the NYISO to base the Net CONE estimate on a proxy peaking unit with "the lowest fixed cost and highest variable cost among all other units' technology that are economically viable."[9] As the NYISO highlights in its Filing, "[t]he Commission has established that economic viability demonstrations are a matter of judgment that is informed by the consideration of multiple factors" which include, *inter alia*, "existence of sufficient operating experience to demonstrate that the technology is proven and reliable" and "the ability to achieve compliance with applicable environmental requirements and regulations."[10] Thus, to be

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[6] *N.Y. Indep. Sys. Operator, Inc.*, 103 FERC ¶ 61,201 at PP 31, 35 (2003).

[7] NYISO Services Tariff § 5.14.1.2.2. On July 18, 2016, the Commission approved an amendment to the Services Tariff to increase the period between DCRs from three years to four years and to provide annual updates of certain parameters of the ICAP Demand Curves for the second through the fourth years of each reset period. *N.Y. Indep. Sys. Operator, Inc.*, 156 FERC ¶ 61039 (2016). The NYISO Filing marks the first submission with these new rules in effect.

[8] *N.Y. Indep. Sys. Operator, Inc.*, 134 FERC ¶ 61,058 at P 14 (2011).

[9] *See* NYISO Services Tariff § 5.14.1.2.2.

[10] NYISO Filing at 6 (citing Commission orders issued in the 2007, 2010, and 2013 DCR proceedings).

economically viable, the technology in question must be a proven technology and must be capable of being replicated to meet the reliability needs in each capacity zone over the long term.[11]

The current Demand Curve reset process commenced in August 2015 when the NYISO retained the Analysis Group, Inc. ("AG"), and Lummus Consultants International ("Lummus") as AG's subcontractor (collectively the "Consultants"), to conduct an independent and comprehensive analysis and provide recommendations on the various parameters used to establish the ICAP Demand Curves for New York City ("NYC"), Long Island ("LI"), the G-J Locality, and the NYCA for the DCR period.[12] Numerous stakeholder working group meetings were held among NYISO Staff, the Consultants and market participants over a 12-month period.[13] At these meetings, the parties actively debated the inputs to the Consultants' model that would be used to determine the Demand Curves for each zone.[14]

The Consultants issued their draft report on June 23, 2016, and their final report on August 16, 2016.[15] In their draft and final reports, the Consultants recommended the continued

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[11] *See N.Y. Indep. Sys. Operator, Inc.*, 122 FERC ¶ 61,064 at P 23 (2008); *see also* NYISO Filing at 6 (establishing that, to achieve the fundamental objectives of the ICAP Demand Curves, proxy unit must be reliably constructed and operated in multiple instances).

[12] NYISO Filing at 4.

[13] *Id.*

[14] *Id.*

[15] Paul Hibbard et al., *Study to Establish New York Electricity Market ICAP Demand Curve Parameters*, AG & Lummus (June 23, 2016), http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_icapwg/meeting_materials/2016-06-27/Analysis%20Group%20NYISO%20DCR%20Draft%20Report%20-%20FINAL.pdf ("Consultants' Draft Report"). In accordance with the requirements of the NYISO's Services Tariff, the Consultants updated the final report on September 13, 2016 to reflect final values for the ICAP Demand Curves for the 2017/2018 Capability Year using the historic data period from September 2013 through August 2016 for determining net EAS revenue estimates, which was not yet available when the final report was issued on August 16, 2016. The updated version of the Consultants' final report is included as Exhibit D of the *Affidavit of Paul J. Hibbard, Dr. Todd Schatzki and Craig Aubuchon* attached to the NYISO Filing as Attachment III ("Consultants' Final Report").

use of the F class frame turbine, which was previously approved by the Commission for the last DCR process and is the basis for the Net CONE calculations in effect at this time, as the peaking unit technology for each of the ICAP Demand Curves.[16] Consistent with the last DCR,[17] the Consultants recommended that the peaking plants continue to include dual fuel capability and selective catalytic reduction ("SCR") emissions control technology to ensure compliance with applicable environmental requirements for the NYC, LI, and G-J Locality ICAP Demand Curves.[18] The only major difference in the Consultants' reports and the proxy units approved by the Commission in the last DCR with respect to the peaking plant technology is the Consultants' recommendation that the peaking plant for the NYCA ICAP Demand Curve be equipped with dual fuel technology and SCR emissions controls.[19]

In developing its draft recommendations, the NYISO considered the feedback from stakeholders throughout the process, as well as the analysis and recommendations of the Consultants.[20] IPPNY and other market participants submitted detailed written comments on the Consultants' draft report to the NYISO Staff. IPPNY strongly supported the Consultants' recommendations with respect to the peaking plant technologies and other important assumptions and parameters in the Consultants' reports. The NYISO Staff issued its draft and final recommendations for the 2017/2018 ICAP Demand Curves and the methodologies and

[16] Consultants' Draft Report at 9; Consultants' Final Report at 8.

[17] *See N.Y. Indep. Sys. Operator, Inc.*, 146 FERC ¶ 61,043 (2014) ("2013 DCR Order").

[18] *See* Consultants' Final Report at 32.

[19] *Id.*

[20] NYISO Filing at 5–6.

inputs to be used in conducting annual updates for the 2018/2019 through 2020/2021 Capability Years on August 17, 2016 and September 15, 2016, respectively.[21]

After consideration of the feedback from both stakeholders and the NYISO's independent Market Monitoring Unit ("MMU"), the NYISO Staff made recommendations fully consistent with the Consultants' final report with one significant exception. Over IPPNY's objections and despite the recommendations of the Consultants and the MMU that the NYCA proxy peaking plant should include dual fuel technology, the NYISO Staff disregarded the weight of the evidence in the record before it and instead recommended that the peaking plant for the NYCA ICAP Demand Curve consist of gas-only technology.[22] The NYISO Staff appropriately concurred with the Consultants' recommendations that the NYCA peaking unit include SCR technology and that the NYC, LI, and G-J peaking units include dual fuel and SCR technologies.[23] After written comments and oral argument from stakeholders to the NYISO Board of Directors ("Board"), the Board adopted the NYISO Staff's final Demand Curve recommendations in their entirety and directed NYISO Staff to file them with the Commission.[24]

As discussed below, to ensure that the Demand Curves will accurately reflect the cost of new entry, it is critical that the Commission order the NYISO to adopt the recommendation of

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[21] *Proposed NYISO Installed Capacity Demand Curves for Capability Year 2017/2018 and Annual Update Methodology and Inputs for Capability Years 2018/2019, 2019/2020, and 2020/2021*, NYISO (Aug. 17, 2016), http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_icapwg/meeting_materials/2016-08-19/Initial%20Draft%20NYISO%20DCR%20Recommendation%20Final.pdf. NYISO Staff's final recommendations are included as Exhibit A of the *Affidavit of David Allen* attached to the NYISO Filing as Attachment V ("NYISO Staff Final Recommendations").

[22] The NYISO Staff's final report included comments from the MMU which supported the Consultants' recommendation that the NYCA peaking plant include dual fuel technology. NYISO Staff Final Recommendations at 75.

[23] *See* NYISO Filing at 9–10, 15.

[24] *Id.* at 5–6.

the MMU and the Consultants to set the Net CONE for the NYCA proxy peaking unit based on dual fuel technology, rather than gas-only technology. The Commission should accept all other aspects of the NYISO Filing, including the NYISO's proposals that:

- the F class frame turbine continue to be used as the technology for the proxy peaking units for the NYC, LI, G-J, and NYCA;
- the proxy peaking unit for the NYC, LI, and G-J continue to be configured with dual fuel technology;
- the proxy peaking units for the NYC, LI, G-J, and NYCA be configured with SCR;
- TETCO M3 be designated as the natural gas hub for Zone C;
- Iroquois Zone 2 be designated as the natural gas hub for Zone G; and
- the assumed property tax rate for the proxy peaking units outside of New York City be 0.75%.

II. PROTEST

A. The Commission Should Reject the NYISO's Proposal That the Proxy Peaking Unit for the NYCA Be Gas-Only and Order It to Accept the Consultants' and the MMU's Recommendation That the NYCA Proxy Peaking Unit Be Configured with Dual Fuel Capability.

IPPNY strongly supports the Board's concurrence with the recommendations of the NYISO Staff, MMU, and the Consultants that the determinations reached in the last DCR process to include dual fuel capability for the proxy peaking units in NYC, LI, and G-J Zones remain just and reasonable, and, thus, the proxy peaking units should continue to be configured with dual fuel capability in these zones. The need for siting flexibility in this part of the system, which continues to be highly constrained, and reliance on natural gas as the predominant fuel

remain key considerations supporting the need for dual fuel capable proxy units in the NYC, LI, and G-J Zones. Indeed, as reflected in the NYISO Filing, reliance on natural gas in this area of the State has only become more pronounced in the intervening three years since the last reset process.

While the NYISO correctly proposes dual fuel capability for the NYC, LI, and G-J proxy peaking units, its proposal that the NYCA proxy peaking unit be gas-only is flawed and should be rejected. Instead, the Commission should order the NYISO to modify its DCR proposal and adopt the recommendation of the Consultants and the MMU that the NYCA proxy plant be configured with dual fuel. To justify its divergence from the Consultants' recommendation that a dual fuel capable unit be used in the NYCA, the NYISO contends that, unlike in other Zones, the local gas distribution companies ("LDCs") in Zones C and F do not mandate dual fuel capability.[25] The NYISO asserts that this moots the siting flexibility advantages inherent with dual fuel capability because a gas-only plant could be sited throughout the LDC systems in Zones C and F.[26] Per NYISO Staff, the use of a gas-only proxy unit in the NYCA is reasonable due to the absence of a dual fuel mandate, the general availability of gas in Zones C and F, and "the fact that the estimated incremental net EAS revenues for dual fuel units in Load Zones C and F do not offset the increased capital costs of such capability over the historic period analyzed in determining the ICAP Demand Curves for CY 2017/18."[27]

[25] NYISO Filing at 16–18.

[26] *Id.* at 18.

[27] NYISO Staff Final Recommendations at 5.

The Commission should reject the NYISO's proposal that the NYCA peaking unit be gas-only because it failed to adequately consider numerous critical factors identified by the MMU and the Consultants. As the Consultants and the MMU correctly recognized, the Consultants' estimate that a gas-only unit would have a slightly lower Net CONE than a dual fuel unit does not account for the reliability and hedging benefits of dual fuel that were not captured in the Consultants' quantitative analysis.[28] The Consultants demonstrate that the "modest cost" increases associated with maintaining dual fuel capability (testing, inventory, installation, etc.) are "perhaps significantly" outweighed by the benefits of having the optionality to operate on oil when the price of natural gas is high, especially during winter months.[29]

In addition, as the MMU found in its comments recommending that the NYCA proxy peaking unit be dual fuel, the Consultants' model assumes a 10% gas premium and discount on intraday gas purchases and sales, respectively, in the NYCA under all conditions.[30] The MMU demonstrated that this simplifying assumption is not a concern for a dual fuel unit because it would burn oil during high gas price days, but it is a concern for a gas-only unit because it may over-estimate the net revenues of a gas-only unit on high gas price days, thereby underestimating the Net CONE of a gas-only plant.[31] The MMU stated that "the use of a dual fuel unit would make the analysis less sensitive to the Consultants' assumptions about gas availability during tight gas market conditions, and it would be more consistent with recent entry decisions in Zone

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[28] *Id.* at 75.

[29] Consultants' Final Report at 33.

[30] NYISO Staff Final Recommendations at 75.

[31] *Id.*

F."[32] The MMU concluded that "the demand curve should be set based on the most economic type of resource, which is most likely the dual fuel unit."[33] Recent reports issued by the NYISO[34] and EIPC[35] further support making the NYCA proxy unit dual fuel capable. These reports demonstrate that dual fuel capability makes more financial and economic sense than obtaining firm transportation capacity on an interstate or LDC pipeline.

The Consultants' model also assumes that there are no days with Operational Flow Orders or other factors that make it challenging for a unit to obtain sufficient quantities of natural gas deliveries.[36] The Consultants specifically note that this should not be a significant concern because the dual fuel unit would be able to burn oil on that day. This logic does not apply if the Commission approves a gas-only unit for Zones C and F.

The Consultants' findings are further supported by a review of current and projected system conditions. As NYISO Staff recognized, dual fuel facilities provide important reliability benefits "particularly in consideration of the potential future unit retirements and increasing levels of intermittent renewable resources, both of which may further increase reliance on gas fired capacity in New York."[37] These facilities will, in fact, be needed to balance the large

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[32] *Id.*

[33] *Id.*

[34] *See, e.g.*, *Fuel Assurance Operating and Capital Costs for Generation in NYCA*, Levitan & Assocs., Inc. (May 22, 2013), http://www nyiso.com/public/webdocs/markets_operations/committees/bic_egcwg/meeting_materials/2013-06-17/NYISO%20Task%201%20Final%20Report%20-%20Redacted.pdf.

[35] *Gas-Electric System Interface Study, Target 4 Report, Fuel Assurance: Dual Fuel Capability and Firm Transportation Alternatives, DOE Award Project DE-OE0000343*, Levitan & Assocs., Inc. (Dec. 1, 2014), http://nebula.wsimg.com/ef3ad4a531dd905b97af83ad78fd8ba7?AccessKeyId=E28DFA42F06A3AC21303&disposition=0&alloworigin=1.

[36] Consultants' Final Report at 73.

[37] NYISO Staff Final Recommendations at 5.

amount of renewable power that is anticipated to be developed to meet the State's clean energy goals. Indeed, the NYISO has commissioned a Clean Power Plan study, in part, to identify and quantify increased ramping and regulation needs on its system. Given that the State's newly implemented Clean Energy Standard, requiring that New York, *inter alia*, procure 50% of its electricity from renewable energy resources by 2030, far surpasses the levels otherwise required under the Clean Power Plan, the impact on ramping and regulation requirements will only be magnified.[38] Thus, New York's growing dependence on fuel-diverse, more flexible units is expected to continue in the coming years. Yet, it has come at a time of ever-increasing difficulties in siting new gas pipelines.[39] To ensure these facilities will be available to provide the necessary ramping and regulation services, dual fuel capability is critical.

Moreover, as revealed by the NYISO's report for the 2013–2014 peak winter conditions, many gas-only units were forced to take derates due to a lack of fuel during peak winter conditions.[40] Thus, New York has already experienced the impacts of increasingly tight gas supply conditions in winter months. In fact, New York's dual fuel fleet has often been cited as one of the main reasons that New York was less susceptible than the adjoining regions during the

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[38] *See, e.g.*, Peter Carney, *CPP Study Plan: Phase I Status Report and Preliminary Findings*, NYISO (July 5, 2016), http://www nyiso.com/public/webdocs/markets_operations/committees/bic_espwg/meeting_materials/2016-07-05/NYISO%20CPP%20Study.pdf.

[39] *See, e.g.*, *New York State Department of Environment Conservation Denies Water Quality Certificate Required for Constitution Pipeline*, N.Y. State Dep't of Envtl. Conservation (Apr. 22, 2016), http://www.decny.gov/press/105941 html.

[40] Wes Yeomans & Kelli Joseph, *Winter 2013–2014 Cold Weather Operating Performance*, NYISO (Mar. 13, 2014), at 5–8, 11–12, 14–16, 18, http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2014-03-13/Winter%202013-1014%20NYISO%20Cold%20Snap%20Operations%20EGCW-MIWG.pdf.

2013–2014 winter to price spikes and was in a better position to manage core reliability concerns effectively.[41]

Nor is the need for dual fuel capability simply a polar vortex issue. As the NYISO's peak winter report for this past winter showed, even in years when New York has experienced a very mild winter overall, natural gas supply became stressed during the one limited stretch of cold temperatures.[42] While the NYISO argues that there is likely sufficient gas supply upstate, lessening the need for dual fuel resources, the availability of gas supply is different from the availability of shipping capacity. Without additional pipeline capacity, any new generators siting in New York will be relying on existing pipeline capacity, which could make shipping gas more challenging.

Generators, especially peaking plants, purchase both gas supply and gas shipping capability in the secondary markets—*i.e.*, a bundled product via the capacity release market. In fact, the DCR model assumes that the peaking unit does not hold firm transportation, and instead purchases gas shipping transportation in the secondary markets. What is available in the secondary markets for shipping is completely dependent on the amount of existing pipeline capacity. Without new pipelines, all new generators will rely on existing pipeline shipping capacity available in the secondary markets.

However, recent NYISO studies demonstrate that much of the pipeline system in New York is fully subscribed and already experiencing constraints even without the addition of new

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[41] *Id*. at 22.

[42] *See* Wes Yeomans, *2015–2016 Winter Capacity Assessment & Winter Preparedness*, NYISO (Dec. 17, 2015), at 9, 16, http://www.nyiso.com/public/webdocs/markets_operations/committees/mc/meeting_materials/2015-12-17/Agenda%2005_Winter%202015_16%20Capacity%20%20Assessment_Winter%20Preparedness.pdf.

gas-fired generation capacity.[43] Further, the New York Department of Environmental Conservation ("NYDEC") recently denied a permit to a pipeline proposed to be sited in one of the most constrained parts of the gas system in upstate New York.[44] Faced with increasingly tight natural gas supply conditions, challenges siting new pipelines, and given expected changes in the NYISO fleet, it is highly unlikely that a peaking unit in New York would choose to site without dual fuel capability.

In addition, to the extent a proxy peaking unit is not dual fuel capable in the NYCA, the Commission should direct the NYISO to adjust the net EAS model to accurately reflect that there will likely be days when the gas system will be congested and gas-only peaking units cannot nominate gas. An upstate generator that chooses to site behind a gas LDC, an option assumed in the Consultants' report, will be subject to the gas LDC tariff. Pursuant to Niagara Mohawk Power Corporation's Gas Transportation Service for Dual Fuel Electric Generators service classification, the only way for a generator to avoid a dual fuel requirement is to accept that its gas transportation service shall be subject to interruption up to 30 days per year.[45] Niagara Mohawk may disconnect and cancel service to a customer that does not discontinue use when called to do so. Thus, if the proxy plant for the NYCA is gas-only, the net EAS revenues must be reduced to reflect that the peaking unit could be off-line up to 30 gas system peak days of the year.

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[43] *NYCA Pipeline Congestion and Infrastructure Adequacy Assessment*, Levitan & Assocs., Inc. (Sept. 2013), http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_egcwg/meeting_materials/2013-10-23/Levitan%20Pipeline%20Congestion%20and%20Adequacy%20Report%20Sep13%20-%20Final%20CEII%20Redacted.pdf.

[44] *See* N.Y. State Dep't of Envtl. Conservation, *supra* note 38.

[45] *See* Niagara Mohawk Power Corporation, PSC No. 219, Schedule for Gas Service, Leaf 221.

In recognition of the increasing tightness of the gas system, which could result in limitations on gas shipping capability in the future, the NYISO has been pursuing a project to consider the development of new critical day performance rules.[46] This project has been included in the list of candidate projects for 2017.[47] These rules may potentially penalize generators that do not have dual fuel capability or firm gas transportation, which is likely to be much more costly than dual fuel capability. Further, if a peaking unit is not committed in the Day Ahead Market prior to the closing of the Timely Nomination Cycle window, there remains a risk that the unit will be unable to nominate gas to meet a Real Time schedule on cold winter days. There would be no reason to develop these rules if all units were always able to obtain natural gas, especially during the operating day.

Assuming, *arguendo*, that the Commission nevertheless accepts the NYISO's proposal to use a gas-only proxy peaking unit in Zones C and F, it should, at a minimum, direct the NYISO to modify the NYISO tariff to require that the Net CONE of the proxy peaking unit and the associated reference prices be adjusted automatically to reflect the costs of dual fuel capability. This adjustment should be made on the effective date of any performance rules that effectively require dual fuel capability or firm gas arrangements.

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[46] *2017 Project Candidates*, NYISO (June 24, 2016), at 8, http://www.nyiso.com/public/webdocs/markets_operations/committees/mc_bpwg/meeting_materials/2016-06-24/2017%20Project%20Candidate%20Descriptions.pdf.

[47] *See* Ryan Smith, *2017 Project Prioritization & Budgeting Process*, NYISO (June 24, 2016), at 12, http://www.nyiso.com/public/webdocs/markets_operations/committees/mc_bpwg/meeting_materials/2016-06-24/2017%20Project%20Prioritization%20Process.pdf; Alan Ackerman, *NYISO 2017 Budget Overview*, NYISO (Sept. 28, 2016), at 6, http://www.nyiso.com/public/webdocs/markets_operations/committees/mc/meeting_materials/2016-09-28/Agenda%2006_2017%20Draft%20Budget.pdf.

III. COMMENTS

A. The NYISO Has Correctly Proposed That the Proxy Peaking Unit for All Zones Should Be Equipped with SCR Technology.

IPPNY strongly supports the NYISO's determination that the F class frame with SCR emission control technology represents the highest variable cost, lowest fixed cost peaking plant that is economically viable and practically constructible across all locations. For the reasons discussed in the NYISO Filing, NYISO Staff Final Recommendations, the Consultants' Final Report, and the attached position paper of two leading permitting and air quality experts from the environmental consulting firm, Ecology and Environment, Inc. ("E&E"),[48] a developer would be very unlikely to be willing to construct an F class frame unit that was not equipped with SCR technology in any Load Zone in New York due to siting, permitting, and future market risks, and, thus, the cost of the technology must be included in each proxy unit's Net CONE to ensure the proxy peaking unit for each zone is economically viable.

Addressing environmental requirements in the NYISO Filing, the NYISO establishes from the outset that the environmental regulatory framework has changed significantly since the 2013 DCR process.[49] Following a comprehensive review of, and taking into consideration, all permit requirements, the NYISO concludes that the F class frame proxy peaking unit in all locations "should include SCR emissions controls regardless of whether the plant includes dual fuel capability."[50]

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[48] *See Position Paper*, E&E (Aug. 19, 2016) ("E&E Position Paper") (attached hereto as Exhibit I).

[49] *See* NYISO Filing at 12.

[50] *Id.*; *see also id.* at 15 ("Net EAS revenues should be estimated for the peaking plant technologies using gas prices consistent with and reflective of the LBMPs used within each Load Zone for the purposes of estimating revenue streams over the plant's economic life. The choice of gas price indices should also reflect, in part, reasonable

With respect to the G-J, NYC, and LI proxy peaking unit, nothing has changed since the 2013 DCR process that would reduce the need for SCR in these zones. Some market participants have claimed that a proxy peaking plant without SCR in Zones C, F, and G (Dutchess) could be permitted and constructed if the plant has an operating hour limit below the major source threshold pursuant to the U.S. Environmental Protection Agency's New Source Review ("NSR") regulations. In the last DCR process, the NYISO proposed, and FERC accepted, SCR for the F class frame unit for all regions except for the NYCA.[51] The peaking plant in the NYCA was not configured with SCR because the NYISO believed that a developer could agree to an operating hour restriction that would limit nitrogen oxide ("NOx") emissions below the annual emissions limits that would trigger the need for SCR.[52]

While IPPNY did not agree that SCR for the proxy unit in the NYCA could be avoided with an operating hour limit in the last DCR process, there have been significant changes in the regulatory and market landscape that now make an operating hour limit infeasible, thereby driving the need for SCR for the proxy peaking plants in all regions. The Board has correctly determined that a number of factors—including current and future market and regulatory risks and requirements—prevent a developer from constructing an F class frame unit without SCR in any zone in New York.[53]

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expectations for a long-term equilibrium in delivered natural gas prices that would be available to a hypothetical new peaking plant").

[51] 2013 DCR Order at PP 57, 74.

[52] *Id.* at P 75.

[53] *See* NYISO Filing at 9–15.

With respect to the regulatory climate, there has been a dramatic change in attitude with respect to fossil fuels in New York since the last DCR process. Opposition to fossil generation is much greater than it was only a few years ago. This change in attitude is demonstrated by three recent events. First, New York banned hydraulic fracturing for natural gas two years ago.[54] This has emboldened environmental groups to shift their opposition to the transporting and burning of "fracked" natural gas. Second, New York rejected an application for a water quality permit for the proposed Constitution natural gas pipeline in New York, effectively thwarting a pipeline that would have significantly lowered energy prices for New Yorkers.[55] Third, the New York Public Service Commission ("NYPSC") adopted a Clean Energy Standard this past August that seeks to achieve a 40% reduction in carbon dioxide emissions by requiring that 50% of the electricity consumed in the state by 2030 will be produced by renewable facilities.[56] With a renewed focus on clean energy resources, it is likely that developers of new gas-fired generation in New York will face significantly more opposition than they have ever faced in the past.

Under Article 10 of the New York State Public Service Law, all proposed electric generating projects 25 MW and greater must apply for and obtain a certificate of environmental compatibility and public need ("Certificate") from the Board on Electric Generation Siting and the Environment ("Siting Board") prior to commencing construction.[57] Under Article 10, the

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[54] *See* Thomas Kaplan, *Citing Health Risks, Cuomo Bans Fracking in New York State*, N.Y. Times (Dec. 17, 2014), http://www.nytimes.com/2014/12/18/nyregion/cuomo-to-ban-fracking-in-new-york-state-citing-health-risks.html.

[55] *See* Erin Ailworth, *New York Environmental Regulators Deny Permit for Constitution Pipeline*, Wall St. J. (Apr. 22, 2016, 7:12 PM), http://www.wsj.com/articles/new-york-environmental-regulators-deny-permit-for-constitution-pipeline-1461366759.

[56] NYPSC Case 15-E-0302, *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard*, Order Adopting a Clean Energy Standard (Aug. 1, 2016) ("NYPSC CES Order").

[57] N.Y. Pub. Serv. Law § 162 (McKinney 2016).

Siting Board is required to implement a rigorous public involvement process that requires the applicant to provide significant levels of funding to parties opposing its project.[58] Under Article 10, the Siting Board may not grant a Certificate for a new generating facility unless it determines that the applicant has minimized or avoided adverse environmental impacts to the maximum extent practicable.[59]

E&E explains that a proposed project without emissions control technology, such as SCR, would not likely meet the Article 10 requirement to minimize adverse environmental impacts.[60] Given that the Article 10 siting process provides for a mandatory public involvement process, which is funded by the developer to ensure parties that wish to raise issues can do so,[61] it is almost certain that parties engaged in environmental issues will raise this issue. Parties opposing fossil generation will likely place extreme pressure on the Siting Board to, at a minimum, condition issuance of a siting Certificate on the developer making its plant as clean as possible. Importantly, the Siting Board is authorized to impose conditions more stringent than federal or State regulatory requirements.[62] Thus, it is highly likely that, due to the extreme pressure from environmental groups opposed to the siting of natural gas facilities, the Siting Board will, at a minimum, condition approval of a peaking plant on the installation of the best technology available, which is SCR.

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[58] *See id.* §§ 163–64.

[59] *Id.* § 168(2).

[60] E&E Position Paper at 9.

[61] *See id.*

[62] *Id.*

The Consultants demonstrated that, in contrast to the 2013 DCR, an F class frame unit with SCR would have a lower potential to emit NOx than a gas only plant with an operating limit.[63] Annual NOx emissions from a unit that avoids SCR with an operating hour limit is 2.5 times greater than the NOx emissions of a unit with SCR.[64] The Siting Board's granting of a Certificate to a unit without SCR technology would be entirely inconsistent with the State's multi-billion-dollar effort to reduce air emissions through the development and maintenance of renewable energy and nuclear facilities.[65]

An operating hour limit is also unlikely to avoid the need for SCR because a plant without SCR may have difficulty meeting the 1-hour nitrogen dioxide ("NO2") National Ambient Air Quality Standard ("NAAQS"). E&E states:

> Demonstrating compliance of conventional peaking units without SCR through modeling is difficult because of the statistical form and concentration value of the 1-hour NO2 NAAQS. Modeling of NOX emissions from relatively simple, minor emission sources often show noncompliance with the standard. Locating emission sources close to property boundaries or fence lines and short exhaust stack heights can also contribute to a modeled NO2 NAAQS noncompliance. Using SCR to reduce the NOX emission rate may be necessary to model compliance with the 1-hour NO2 NAAQS.[66]

E&E has determined that, since 1990, every peaking unit permitted in New York, New Jersey, and Connecticut, with the exception of one project permitted in New Jersey in 2001,

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[63] Consultants' Final Report at 27.

[64] *See id.*

[65] It bears note that, throughout the Clean Energy Standard proceeding, the Staff of the Department of Public Service ("DPS Staff") and the NYPSC itself established that the loss of significant existing zero-emission resources would be replaced by fossil-fueled facilities. NYPSC CES Order at 19. In light of this information, it strains credulity that the NYPSC in its capacity on the Siting Board would be willing to grant Certificates to the next generation of fossil-fueled facilities without mandating that these facilities control their emissions with SCR technology.

[66] E&E Position Paper at 5.

includes SCR technology.[67] E&E explains that the sole New Jersey project without SCR, which was developed by Consolidated Edison ("Con Edison"), includes a limit on its operation of 1,050 hours per year.[68] Back 15 years ago, the United States Environmental Protection Agency disagreed with the New Jersey Department of Environmental Protection's issuance of the permit with a lowest achievable emissions rate emission limit of 9 ppm because it did not agree with New Jersey that the frequent start and shutdown events and the hot exhaust gas temperature made the application of SCR infeasible.[69] To satisfy the economic viability requirement set forth in the Services Tariff, the NYISO must demonstrate that a facility can be replicated in the relevant zone, not simply that one unit can be built on a one-off basis as was the case with the Con Edison New Jersey project. Real-world experience thus supports continuing to recommend that the proxy peaking plants be equipped with SCR technology in all regions in the State.

Some parties argued that Article 10 grants the NYDEC exclusive authority to issue emissions permits and that the Siting Board does not have authority to require SCR if the NYDEC issues a permit that does not require it. These parties ignore that Article 10 states that the issuance of permits by NYDEC "shall in no way interfere with the required review by the board of the anticipated environmental and health impacts relating to the construction and operation of the facility as proposed, or its authority to deny an application for certification and, in the event of such a denial, any such permits shall be deemed null and void."[70] This provision, which is a new source of authority that was not granted to the Siting Board under the prior

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[67] *Id.* at 6–7.

[68] *Id.* at 8.

[69] *Id.*

[70] N.Y. Pub. Serv. Law § 172(1).

Article X siting statute, gives the Siting Board authority to perform its own environmental review of NOx emissions and determine that a project should not be built because it does not minimize NOx emissions to the maximum extent practicable.

Even if a developer can obtain an Article 10 Certificate without installing SCR by accepting an operating hour limit, it faces the substantial risk that increasingly stringent emissions caps will require it to retrofit its facility with SCR later at a cost significantly higher than the cost would have been to install it initially. "In short, the decision to construct a facility anywhere in New York State without SCR technology introduces development risks and the potential for significant additional future SCR retrofitting cost (relative to the cost of an SCR included in the original plant design)."[71] The developer would also face significant outages to install the equipment. These additional risks would need to be captured in the calculation either in the form of a significantly shorter amortization period than the 20-year period currently embedded in the NYISO Staff Final Recommendations or an increased required return if the proxy peaking plant is not assumed to have SCR. Once the additional risks are appropriately represented, it is likely that the annualized cost of the uncontrolled unit would be no lower than the cost of a unit equipped with SCR technology from the outset.

As the NYISO Staff correctly found in its final recommendations, the environmental regulatory framework is a significant factor in determining capital costs that must be accurately captured to ensure the proposed proxy unit is economically viable as mandated by the NYISO's Services Tariff.[72] Given the significant changes to this framework since the last DCR process, it

[71] Consultants' Final Report at 28.

[72] NYISO Staff Final Recommendations at 6.

is critical that the Commission accept the NYISO's proposal to equip proxy units in all locations with SCR technology.

B. The Commission Should Accept the Natural Gas Pricing Hubs Proposed by the NYISO without Modification.

To calculate net EAS revenues, the NYISO must identify a natural gas hub to obtain representative gas pricing for each zone. To determine the natural gas hub for each zone that best represents the expected long-run equilibrium between gas and electricity markets, the Consultants developed a multi-pronged framework which applied four criteria to designate gas hubs: (1) market dynamics – the correlation of the gas hub to a zone's locational based marginal prices ("LBMPs") and whether the hub price reflects long term prices and not simply short term arbitrage opportunities in the zone; (2) liquidity – the depth of historical data at that gas hub which reflects sufficient trading volumes over time; (3) precedent/continuity – the use of the gas hub for similar purposes in previous NYISO planning and market studies; and (4) geography – the geographic relationship to potential peaking plant locations and whether there is a logical nexus at relevant delivery points.[73]

The selection of natural gas hubs was the focal point of two presentations and was otherwise addressed multiple times at ICAP meetings. Relying on SNL Financial data that is based on actual price and volume data submitted by market participants for daily and forward transactions, the Consultants determined that the Iroquois Zone 2 pipeline and the TETCO M3 pipeline should be designated as the natural gas hubs for Zone G and Zone C, respectively. Upon review of the Consultants' Final Report and written comments submitted by market

[73] Consultants' Final Report at 74.

participants, including proposals to "weight" the Zone G and Zone C natural gas hub, which would price gas in these zones based on the fiction of a combined pipeline gas price that would not be available to any facility operating therein, NYISO Staff endorsed, and the Board adopted, the Consultants' recommendation.[74] As discussed below and in the attached affidavit of Dr. Kelli Joseph of NRG Energy, Inc.,[75] the Commission should accept the NYISO's recommended gas hubs.

As reflected in the NYISO Filing, selection of the natural gas pricing hub is a decision with profound effects.[76] The Consultants' selection of TETCO M3 gas hub for ZONE C is appropriate because it best meets the Consultants' four criteria. First, it satisfies the market dynamics criterion because it correlates with the Day Ahead Market ("DAM") LBMP in Load Zone C, unlike the Dominion North gas hub.[77] Second, TETCO M3 satisfies the liquidity criterion because it has significantly higher trading volumes than Dominion North.[78] Third, TETCO M3 satisfies the precedent/continuity criterion because it has been used in past DCRs and in important NYISO planning studies.[79]

Fourth, the Consultants correctly determined that, in considering the geography criterion, it is important to ensure a logical nexus between the gas hub selected and relevant delivery points rather than simply relying on the locational aspect of geography. The Consultants determined a

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[74] *See* NYISO Filing at 29–30.

[75] Joseph Aff. (attached hereto as Exhibit II).

[76] NYISO Filing at 26 & n.122 (citing to sensitivity analyses determining a 40% reduction in the reference point price for the NYCA Demand Curve if the Dominion North hub is used, and an even more debilitating 60% reduction in the reference point price for the G-J Demand Curve if the Millennium hub is used).

[77] Joseph Aff. ¶ 10.

[78] *Id.* ¶ 11.

[79] *Id.* ¶ 12.

logical nexus between the TETCO M3 and the relevant delivery points. As Dr. Joseph establishes in her affidavit, there is not a logical nexus between the Dominion North gas hub and the relevant delivery points because Dominion North is a receipt pool in which pricing reflects the price of gas entering the Dominion pipeline from various supply points.[80] Dr. Joseph states that "unless generators have firm transportation contracts associated with the supply injection at these receipt points, the price at Dominion North, which reflects the price of gas from various supply aggregations entering the Dominion pipeline system, is not reflective of what a peaking unit would pay for actual delivered gas."[81]

The Consultants' selection of the Iroquois Zone 2 gas hub for ZONE G is likewise appropriate because it also meets the Consultants' four criteria. First, it satisfies the market dynamics criterion because it correlates with the DAM LBMP in Load Zone G, unlike the Millennium East gas hub.[82] Second, Iroquois Zone 2 satisfies the liquidity criterion because it has significantly higher trading volumes than the Millennium East gas hub, which also has very limited historical data.[83] Third, Iroquois Zone 2 satisfies the precedent/continuity criterion because it has been used in past DCRs.[84]

Fourth, the Consultants determined a logical nexus between Iroquois Zone 2 and the relevant delivery points. As Dr. Joseph demonstrates in her affidavit, Millennium East, like Dominion North, is a receipt pool which reflects the price of Marcellus gas entering the

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[80] *Id.* ¶¶ 14–16.

[81] *Id.* ¶ 19.

[82] *Id.* ¶ 22.

[83] *Id.* ¶ 23.

[84] *Id.* ¶ 24.

Millennium pipeline in Corning, New York.[85] Further, the Millennium East gas hub may not reflect prices at the eastern end of the Millennium pipeline system, where gas injected into the Millennium pipeline is most likely being shipped to the Algonquin pipeline to serve customers in New England.[86] Pricing at the eastern end of the Millennium pipeline is increasingly likely to be governed by pricing in New England because a key interconnect with the Algonquin pipeline system, one of the pipelines that ships gas from Marcellus into New England, is located at the eastern end of the Millennium system.[87] Thus, the pricing at the Millennium East gas hub is not reflective of the cost to deliver gas to generators in Zone G and is increasingly unlikely to correlate with LBMPs in Zone G.[88]

The Commission should also reject arguments that the prices used to calculate the net EAS revenues should be a blend of gas hub prices. As Dr. Joseph demonstrates, blended prices are not published in any gas indices.[89] To develop a blended rate, an assessment of which gas hubs to select and the respective weightings of the chosen hubs would be necessary.[90] There was no discussion in the stakeholder process regarding which pipelines should be considered for blending purposes or the weighting to be used assuming pipelines could be chosen—neither of which is a trivial undertaking.[91] As the NYISO established in its Filing, it is not in a position to

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[85] *Id.* ¶ 26.

[86] *Id.* ¶ 29.

[87] *Id.*

[88] *Id.* ¶ 31.

[89] *Id.* ¶ 32.

[90] *Id.*

[91] *Id.* ¶ 33.

be able to "create" blended prices.[92] The NYISO did not support the "blending" concept because it has no "principled rationale" for developing what the appropriate blend would be for any given location or ensuring that its blending methodology was either appropriate or sustainable for the four-year reset period.[93] Indeed, blended prices would be wholly inconsistent with the very reason the NYISO adopted an annual update process—to wit, to increase transparency to allow market participants to estimate future Demand Curves using readily available data.

C. The Commission Should Accept the NYISO's Proposal That the F Class Frame Unit Be Used as the Proxy Peaking Plant for All Zones.

Some market participants argued to the Board that the NYISO should use the GE simple cycle H class frame unit, instead of the F class frame unit, as the proxy unit. The NYISO and the Consultants correctly determined that the H class frame technology is not economically viable because there has never been any simple cycle H frame unit in operation, and, thus, there is a complete lack of any proven operating experience.[94] While some H class simple cycle frame units have been proposed, none of these projects have received permits or begun construction.[95] In addition, the only H class frame units in operation are outside of the United States and are all operating as combined cycle units. These combined cycle facilities perform differently than peaking plants and cannot be used as evidence of economic viability for peaking plants in New York.[96] The proposed simple cycle H class frame project in Massachusetts which recently cleared the ISO-New England's ("ISO-NE") forward capacity auction for 2019–2020 is not

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[92] NYISO Filing at 30.

[93] *Id.*

[94] *See id.* at 7–9; *see also* NYISO Staff Final Recommendations at 41.

[95] NYISO Filing at 8–9.

[96] *Id.*

sufficient evidence of economic viability under the NYISO's Services Tariff because under ISO-NE's rules, the developer can buy out of its commitment or designate a different unit.[97]

The ISO-NE consultants' draft recommendation that the simple cycle H frame unit should be used as the reference plant is not a basis to adopt this technology for the New York market. As the NYISO states, the draft recommendation is irrelevant to the NYISO's DCR because ISO-NE does not require a similar "economic viability" determination when selecting proxy technologies used to establish values for ISO-NE's demand curves.[98]

All the technology types approved in the past for the New York market have had a demonstrated operating history.[99] While changes in technology were approved in the last two DCRs, emphasis was placed on the fact that there was one facility in operation using the technology proposed with some operational experience.[100] The NYISO switched from the GE LM6000 to the LMS100 in 2007 for NYC and LI in 2007, and from the GE LMS100 to the Siemens F class frame unit with SCR for NYC, LI, and G-J in 2013.[101] There was 600 hours of operating experience over nine months for the LMS100 and 500 hours of operating experience over seven months for the F class frame with SCR.[102] While the Commission has not required a minimum number of hours to demonstrate viability, some evidence of viability is required, which would be sorely lacking in the context of the H class frame unit.

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[97] *Id.*

[98] *Id.* at 8–9 (noting that it will not be known until at least mid-2019 whether a Frame H unit will become commercially operational and available to determine if the technology is proven and reliable in simple cycle mode).

[99] *Id.* at 8.

[100] *Id.*

[101] *Id.*

[102] *Id.*

D. The Commission Should Accept the NYISO's Proposed Weighted Average Cost of Capital for the Proxy Peaking Units.

The Consultants recommended a nominal after tax weighted average cost of capital ("ATWACC") of 8.60% in Zones outside of NYC and 8.36% in NYC.[103] The Consultants' applied their professional judgment to recommend financial parameters which balance their analysis of a number of independent assessments of financial metrics of publicly traded companies with unregulated independent power producers ("IPPs") and the project-specific risks associated with the development of a new peaking plant by a merchant developer within the NYCA. The Consultants determined the WACC for the peaking plant should be somewhere between the WACCs typical of established IPPs and the WACCs that are more representative of project-financed developments. They emphasized that the appropriate cost of capital for a specific project should reflect the particular risks faced by that project, not the risks associated with the company or investors that are considering the development of that project. The Consultants stated that their proposed ATWACC is slightly higher than the current ATWACC approved during the NYISO's 2013 DCR process and in neighboring RTOs to reflect increased risk in the NYISO relative to its neighboring RTOs.[104]

The final ATWACC is similar to the ATWACC assumed in ISO-NE and PJM, despite the report's recognition that "relative to other RTOs, developers within the NYISO region may face greater project-specific risk."[105] The Consultants conclude that the ATWACC is consistent

[103] Consultants' Final Report at 9, 62.

[104] *Id.* at 62.

[105] *Id.*

with "fairness opinions" that evaluated the NRG/GenOn merger.[106] There, the cost of capital for NRG ranged from 7% to 8.5% and GenOn from 8.5% to 9.5%.[107] Despite the fact that the Consultants stressed that the appropriate WACC should be somewhere between that of an established IPP and a project-financed project, the ultimate ATWACC is closer to an established IPP.

Two driving factors have changed since the last DCR process that warrant a higher ATWACC and, thus, support the levels developed by the Consultants. First, the NYISO is now projecting flat load growth for at least the next ten years.[108] Thus, the ability for load growth to ameliorate deficiencies in past studies that inaccurately lowered the Net CONE of the proxy peaking plants has disappeared. Second, the Consultants recognized that failing to account for Real Time Commitment ("RTC") pricing resulted in inflated net EAS revenues but ultimately elected to retain Real Time Dispatch ("RTD")-based pricing.[109] Issues were also acknowledged with the intra-day fuel premium that was utilized in the model (*e.g.*, its inability to accurately represent operational flow order conditions), but the Consultants ultimately determined that a measurably better approach had not been identified.[110]

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[106] *Id.* at 63.

[107] *Id.*

[108] *See 2016 Load & Capacity Data*, NYISO (Apr. 2016), at 1, http://www.nyiso.com/public/webdocs/markets_operations/services/planning/Documents_and_Resources/Planning_Data_and_Reference_Docs/Data_and_Reference_Docs/2016_Load__Capacity_Data_Report.pdf.

[109] *See* NYISO Filing at 31.

[110] IPPNY addressed the flaws in the Consultants' modeling with respect to the RTC/RTD pricing and intra-day fuel premium in its comments on the Consultants' draft report and incorporates such comments herein by reference. *See Comments on Proposed Installed Capacity Demand Curves*, IPPNY (July 8, 2016), http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_icapwg/meeting_materials/2016-06-27/2016-07-08_IPPNY%20Comments%20on%20Draft%20DCR%20Report.pdf.

A higher ATWACC ameliorates the acknowledged shortcomings in fully addressing these two issues. Relying on studies conducted in 2003 and 2008, the Consultants concluded that the cost of equity for project financed projects range from 15–20%. Given the concerns raised in the report about the risks faced by developers in the New York market, uncertainty over the exit of nuclear units, as well as the significant amount of contracted capacity likely to enter the New York market in support of the State's clean energy goals,[111] the cash flow risk to project-finance projects is likely to be much higher than the 15% assumed for projects developed in 2003 or 2008. The upper bound of the cost of equity should be increased, and the assumed cost of equity for the peaking plant should be increased. Additionally, the assumed amortization period should be shortened, given the uncertainty about the amount of capacity in the New York market. The NYISO's adoption of the Consultants' ATWACC is necessary to account for these risk factors and the lack of long-term contracts, uncertainty over changes in regional markets and energy policies, flat load growth, and more challenging siting and development opportunities in New York.

E. The Commission Should Accept the NYISO's Proposed Assumed Property Tax Rate outside of New York City.

In the NYISO Filing, the NYISO agrees with the Consultants' recommendation that the assumed property tax rate for proxy peaking units outside of New York City should be 0.75%.[112] The Consultants' recommendation was based on their review of 11 Payment in Lieu of Taxes

[111] While the initial procurement mechanism for meeting the Clean Energy Standard target is a renewable energy credit obligation on load-serving entities, the NYPSC CES Order leaves open the possibility that the procurement mechanism could change if the State is not meeting its renewable targets. For a unit with an assumed 20-year amortization, this is a significant risk.

[112] NYISO Filing at 22.

("PILOT") agreements for gas-fired plants in New York, a proposal that was already 0.08% less than the median effective tax rate.[113] Some market participants advocated for a reduced tax rate for peaking plants outside of New York City because it did not account for the value of the costs of the plants in 2014 dollars. While the NYISO Staff found that the analysis conducted by the Consultants was reasonable, the NYISO performed the additional analysis requested by adjusting the capital expenditure values for each plant to 2014 dollar terms using actual, historic inflation. Using the dataset developed by the Consultants, NYISO Staff found that "the effective tax rates for units that are more similarly situated to the peaking plant (*i.e.*, units outside NYC that are less than 300 MW) range from 0.25% to 2.01%, with a median value of 1%."[114] NYISO Staff found that the median value of the tax rates is 0.77% if the underlying capital expenditure of the units analyzed by the Consultants is adjusted to 2014 dollar terms.[115] NYISO Staff also determined that some PILOT agreements understate the effective tax rate because payment may be based on plant net revenues or number of jobs produced. Based on these results, NYISO Staff determined that the Consultants' 0.75% rate "is within the range of tax rates that a generator similar in size to the peaking plant would be likely to incur."[116]

If any adjustment is made to the property tax rate outside of New York City, it should be raised because the 0.75% rate is based on PILOT agreements that were executed many years ago and therefore does not reflect the more recent pressures on municipalities to require higher tax rates from new gas-fired generators. There are two recent circumstances that are likely to

[113] Consultants' Final Report at 45–46.

[114] NYISO Staff Final Recommendations at 49.

[115] *Id.*

[116] *Id.*

pressure municipalities to require higher tax rates from gas-fired plants. The first circumstance is the change in public attitude regarding gas-fired generation. Opposition to gas-fired generation is much greater than it was only a few years ago.

As discussed above, the change in attitude is demonstrated by the State's recent adoption of the Clean Energy Standard, which strongly discourages the development of new non-renewable generation, and the significantly increased involvement of highly organized groups opposed to fossil fuels and fossil generation in the State. Groups opposed to hydraulic fracturing have been successful in blocking developments of new gas pipelines in New York.[117] Other groups opposed to new gas-fired generation being developed in New York have staged demonstrations blocking access to the construction site of gas-fired generation facilities.[118] In the western part of the State, well-organized environmental groups opposed the conversion of a coal plant to natural gas firing in favor of transmission upgrades.[119] It is likely that developers of new gas-fired generation in New York will face significantly more local opposition than they have faced in the past and will be pressured into providing greater community benefits, in the form of higher PILOT payments, to facilitate the permitting process.

The second recent circumstance that is likely to influence municipalities to require higher tax rates for gas-fired plants is New York's real property tax cap, which prohibits local governments and school districts from raising taxes more than two percent or the rate of inflation

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[117] *See, e.g.*, Scott Waldman, *Cuomo Administration Rejects Constitution Pipeline*, Politico (Apr. 22, 2016), http://www.politico.com/states/new-york/albany/story/2016/04/cuomo-administration-rejects-constitution-pipeline-101005.

[118] *See, e.g.*, Michael Randall, *Six Protesters Taken into Custody in Anti-CPV Power Plant Demonstration*, Times-Herald Record (Dec. 18, 2015), http://www.recordonline.com/article/20151218/NEWS/151219398.

[119] *See, e.g.*, NYPSC Case 12-E-0136, *Dunkirk Power, LLC*, Comments of Sierra Club, Earthjustice, and Pace Climate and Energy Center (Sept. 20, 2012).

per year, whichever is less, unless overridden by a local law or resolution approved by at least a 60% vote.[120] The tax cap, which was enacted in 2011, has greatly reduced local governments' flexibility to raise taxes assessed to the general public and has stimulated local citizens to more closely monitor their elected officials with respect to tax matters. According to the Governor's report on the first year of the tax cap's operation, the cap "succeeded in curbing the average rate of property tax levy growth to 2 percent—less than 40 percent of the previous 10-year average" and it "increased voter participation and communication between school boards and the voters."[121] Local governments will likely be under a great deal of pressure to negotiate higher tax rates for new gas-fired generators to offset lost tax revenues due to the tax cap and to placate local citizens' demands to shift more of the tax burden to new, disfavored developments, such as gas-fired generators.

The Consultants reviewed Industrial Development Agency data of 11 natural gas plant PILOT agreements in making their determination of the appropriate tax rate to assume for the upstate proxy unit.[122] While the median value was 0.83%, plants in more recent years (1999–2004) typically had values much higher than the median value (ranging from 0.2% to 2.01%, with a median value closer to 1.0%).[123] Indeed, the only simple cycle gas turbine in the sample data had an effective tax rate of 2.01%, which provides a strong indication that the tax rate assumed by the Consultants and the NYISO might be too low. At a minimum, the assumed tax

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[120] N.Y. Gen. Mun. Law § 3-c.

[121] *Reducing Property Taxes for New Yorkers: The New York State Property Tax Cap's Successful First Year*, N.Y. Governor's Office (Sept. 27, 2012), at 1, https://www.governor ny.gov/sites/governor.ny.gov/files/archive/assets/documents/CappingPropertyTaxReport.pdf.

[122] Consultants' Final Report at 46 n.31.

[123] *Id.*

rate outside of NYC should remain at 0.75%. Thus, if any adjustment is made to the property tax rate proposed by the NYISO, it should be raised, not lowered as requested by some stakeholders.

IV. CONCLUSION

For the foregoing reasons, IPPNY respectfully requests that the Commission order the NYISO to adopt the recommendation of the MMU and the Consultants to use dual fuel technology, rather than gas-only technology, for the NYCA proxy peaking unit. In addition, IPPNY requests that the Commission accept all other aspects of the NYISO Filing, including the NYISO's proposals that:

- the F class frame turbine continue to be used as the proxy peaking units for the NYC, LI, G-J, and NYCA;
- the proxy peaking unit for the NYC, LI, and G-J continue to be configured with dual fuel technology;
- the proxy peaking units for the NYC, LI, G-J, and NYCA be configured with SCR;
- TETCO M3 be designated as the natural gas hub for Zone C;
- Iroquois Zone 2 be designated as the natural gas hub for Zone G; and
- the assumed property tax rate for the proxy peaking units outside of New York City be 0.75%.

Dated: December 9, 2016

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that the foregoing Protest and Supporting Comments of Independent Power Producers of New York, Inc. has been served upon each person designated on the official service list compiled by the Secretary in this proceeding in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure.

Dated at Albany, New York, this 9th day of December, 2016.

David B. Johnson
David B. Johnson

EXHIBIT I

Position Paper – Revised September 28, 2016
NYISO Demand Curve Reset Peaking Unit

Introduction

The New York Independent System Operator (NYISO) is currently preparing the Demand Curve Reset (DCR) study. As part of the study, electric generation peaking unit designs are being evaluated to serve potential peak power requirements. The peaking unit design study includes consideration of emission controls required to successfully obtain an air permit for a peaking unit in New York State. The Independent Power Producers of New York (IPPNY) requested that Ecology and Environment, Inc. (E & E) evaluate relevant aspects of the *Study to Establish New York Electricity Market ICAP Demand Curve Parameters (Values for the 2017/18 ICAP Demand Curves)* prepared by the Analysis Group ("Analysis Group Study") and provide an independent opinion on the control technology selection and ability to successfully permit peaking units in New York State.

E & E provides innovative, multidisciplinary solutions to complex environmental issues. Employing experts in 85 engineering and scientific disciplines, E & E has offices in 42 cities across the United States and in 17 locations around the globe. Beginning with the Trans-Alaska Pipeline project in the early 1970s, E & E has a long history of supporting complex energy projects representing the full array of emerging and evolving technologies. E & E has collectively worked on more than 200 energy projects in 34 states. Our resources, qualifications, and experience provide effective strategic consulting services to the energy industry. E & E's power generation permitting experience includes siting, permitting, and development of Natural Gas Combined-Cycle (NGCC), Simple Cycle Peakers ("peakers"), and syngas power (IGCC). We assist with every stage of planning and implementation, from the early stages of site selection through construction support, facility startup and operation, and post-construction monitoring and compliance. Two of E & E's permitting and air quality specialists, Ms. Janine Whitken and Mr. Bruce Wattle, performed the review of control technology selection and review of peaking units successfully permitted in New York State.

Ms. Whitken has 32 years' experience in shaping and implementing environmental standards and practices for government and industry. She has provided strategic planning and management of complex projects involving a wide range of technical and regulatory issues, successfully obtaining environmental approvals for numerous energy projects throughout the United States, and has developed pioneering solutions for impact mitigation and avoidance, emission offsets, and regulatory challenges. She also has provided expert witness testimony before the New York State Public Service Commission on environmental permitting and the power plant certification process. Ms. Whitken obtained her Bachelor of Engineering degree from Stevens Institute of Technology in Civil/Environmental Engineering.

Mr. Wattle has 36 years' experience in mobile, stationary, and fugitive source air emission projects; air quality regulatory compliance evaluations; preparation of air permit applications; and meteorological and dispersion modeling studies. He has written over 75 climate, air quality, and cumulative climate/air quality sections for environmental impact studies, prepared air permit applications and air dispersion modeling studies for energy projects throughout the United States. Mr. Wattle received his Bachelor of Science in Atmospheric Science from the University of Michigan.

Summary

The peaking unit proposed in the Analysis Group Study includes gas turbines with selective catalytic reduction (SCR) to reduce oxides of nitrogen (NO_X). It is the opinion of E & E's permit and air quality specialists that this peaking unit configuration is consistent with (1) meeting regulatory requirements designed to reduce emissions of NOx and reduce the formation of ozone in the Northeast, (2) a facility design more likely to successfully meet ambient air quality modeling demonstration requirements, and (3) similar units permitted recently in the Northeast. In addition, the New York State Article 10 process requires a project to minimize adverse environmental impacts and implement a rigorous public involvement process that may result in a Certificate with conditions at least equal to and potentially more stringent than federal or state regulatory requirements.

This opinion reflects the challenge of meeting ambient air quality standards, including the lowering of the ozone National Ambient Air Quality Standard (NAAQS) in 2015 and a new 1-hour nitrogen dioxide (NO_2) NAAQS in 2010. Other factors beyond the scope of this review may also affect the ability to obtain an air permit in New York State, such as site-specific conditions, community input, and other environmental impacts.

This document provides background information on the air quality regulations and conditions driving the need for NO_X emission controls and discusses recent permits issued in New York, New Jersey, and Connecticut for simple-cycle power generation facilities. The choice of the peaking unit emission controls is related to existing air quality conditions, control technology requirements dictated by air permitting regulations, and recent permits issued for similar facilities in New York and in the New York, New Jersey, Connecticut (NY-NJ-CT) Air Quality Control Region (AQCR).

I. Background air quality and air permitting requirements drive the need for post-combustion controls such as selective catalytic reduction (SCR).

A. Concentrations of ozone in New York City exceed federal and state air quality standards for ozone, and all of New York State is within the ozone transport region (OTR); thus, its precursor pollutants—nitrogen oxides and volatile organic compounds—are a key consideration for obtaining a permit for an emission source.

Ozone forms from the reaction of NO_2 (a component of NO_X) and volatile organic compounds (VOCs) in the presence of sunlight. In this context, NO_2 and VOCs are referred to as ozone precursor compounds. Combustion sources such as power plants emit NO_2 and VOCs from burning fuel.

Ozone has been regulated for several decades. The timeline for the ozone NAAQS is as follows:

- Established in 1979 as a 1-hour standard at 0.12 parts per million (ppm);
- Revised in 1997, changing from a 1-hour to 8-hour standard at 0.08 ppm;

- Revised in 2008, lowering to 0.075 ppm; and
- Revised in 2015, lowering to 0.070 ppm.

Ozone levels measured in the New York City metropolitan area exceed the 2008 NAAQS for ozone. Although measured ozone concentrations elsewhere in New York State are below the NAAQS, all of New York State is within an ozone transport region (OTR). Certain counties in New York State have not met previous ozone NAAQS, do not meet the current 2008 NAAQS, and may not meet the 2015 NAAQS. Areas that do not meet the ozone NAAQS are designated as "nonattainment."

The revisions to the ozone NAAQS since 1979 have made the standard more stringent, driving the need for greater control of ozone precursor compounds. In the New York City metropolitan area, ambient ozone concentrations exceeded the ozone standard dating back to the 1979 NAAQS. The area continued in nonattainment for the revised ozone standards in 1997 and 2008. Ambient ozone concentrations also exceeded the 1979 NAAQS in Essex County, Jefferson County, and the counties in the Buffalo-Niagara Falls area and Albany-Schenectady-Troy area. The 1997 revision brought additional upstate counties into nonattainment, including several counties in the Rochester area and Chautauqua County (Jamestown). The 2008 NAAQS lowered the concentration value of the standard, and all upstate New York counties except Chautauqua were shown as attaining the standard.

In 2017, the USEPA will officially issue attainment/nonattainment designations for the 2015 NAAQS based on 2014–2016 monitoring data. Preliminary monitoring data collected by the New York State Department of Environmental Conservation (NYSDEC) in 2012–2014 indicate that the following counties in New York State may be nonattainment (USEPA 2016a):

- In the New York City metropolitan area – Rockland, Westchester, Bronx, Queens, Richmond, and Suffolk; and
- Erie and Chautauqua.

Layered on top of the county-by-county assessment of compliance with the ozone NAAQS is regional control of ozone. In the Northeast, ozone is considered a regional issue; therefore, regulatory programs designed to control ozone are coordinated with multiple states within the region. To acknowledge the transport of ozone precursors and ozone in the Northeast and to accomplish regional control of ozone precursor compounds, the Ozone Transport Commission (OTC) coordinates the activity of member states. The OTC and OTR were established as part of the Clean Air Act of 1990. The OTR defines the area within which enhanced control of ozone precursors from emission sources is needed. The OTR is a multi-state area in the northeastern United States; all of New York State is in the OTR.

B. Emission sources in the OTR must meet the same stringent emission limits for areas designated nonattainment for ozone in order to obtain an air permit.

The U.S. Environmental Protection Agency's (USEPA's) New Source Review (NSR) regulations pursuant to the Clean Air Act require a company planning to build a new plant that will result in air pollutant emissions that meet or exceed the major source threshold amount to obtain an NSR permit. The NSR permit is a construction permit that requires the company to minimize air pollution emissions to meet emission levels of facilities of similar type and size. This is usually accomplished by installing air pollution control equipment.

In nonattainment areas, the NSR rules require installation of the most stringent level of control or Lowest Achievable Emission Rate (LAER). Emission sources in the OTR are required to essentially meet the same limits (LAER) as if the area were designated nonattainment.

Table 1 shows the major emission source size definition for air permitting purposes with respect to location in ozone attainment/nonattainment areas and the OTR. The annual emissions from an emission source reflect its "potential to emit" defined as:

> "The maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of fuel combusted, stored or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable". (40 CFR Sections 52.21(b) (4))

Therefore, whether a source is above or below the ozone related major source thresholds reflects use of emission controls, hours of operation, and fuel use. A source may use any combination of these to stay below the major source threshold, if desired. After design limits for emissions, a source may decrease annual emissions by limiting hours of operation and avoid the associated emission control requirements.

Table 1 New York State Locations and Ozone-Related Major Source Thresholds

Location	Load Zone	Ozone Status	NO_X Major Source (tons per year)	VOC Major Source (tons per year)
New York City Metropolitan Area and portions of Orange County	Part of G, all of H, I, J, K	Moderate Nonattainment[1]	25	25
Rest of State	A through F and part of G	Ozone Transport Region	100	50

[1] Nonattainment designations for the 2008 NAAQS include Extreme, Severe, Serious, Moderate, and Marginal, depending on the ambient ozone concentrations. Although the New York City Metropolitan Area and portions of Orange County are designated moderate ozone nonattainment for the 2008 NAAQS (https://www3.epa.gov/airquality/greenbook/hnca html#Ozone_8-hr.2008.New_York), NYSDEC continues to regulate the New York City Metropolitan area with major source thresholds comparable to a severe ozone nonattainment area to prevent "backsliding," previous gains in attaining the previous 1-hour ozone NAAQS.

To reflect a recently permitted Siemens SGT6 5000F unit in New York State, we reviewed the CPV Valley Energy Center Draft Environmental Impact Statement and Air Permit Application (CPV Valley Energy 2009). Table 2 illustrates the relationship between potential to emit, hours of operation, and use of SCR on a Siemens SGT6 5000F. As shown in Table 2, the SGT6 5000F unit could operate a full year when firing natural gas and operating at the SCR controlled NO_x emission rate. Based on an estimated NO_X control level from SCR of 80% to estimate uncontrolled NO_X emission rates, we estimated the hours of operation on natural gas and oil without SCR. As shown in Table 2, the proposed unit could operate 2,633 hours when firing exclusively natural gas and 872 hours when firing exclusively ultra-low sulfur distillate fuel and stay below the major source threshold and the requirement for SCR.

Table 2 Estimated Annual NO_X Potential to Emit (PTE) With and Without SCR Compared to Major Source Thresholds[1]

Fuel	Emission Control	Operating Hours	NO_X PTE (tons per year)	Exceeds NO_X Major Source Threshold
Natural Gas	With SCR	8,760	66	No
	Without SCR	2,633	99	No
Distillate Oil	With SCR	4,358	99	No
	Without SCR	872	99	No

[1] Based on the recently permitted CPV Valley Energy Project Draft Environmental Impact Statement, Appendix 9-B, and assuming 80% reduction in NO_X emissions with SCR.

The operating hours on natural gas without SCR we calculated is similar to the Analysis Group Study estimate of "approximately 2,500 hours" (AG 2016). We also concur with the Analysis Group Study conclusion that the SGT6 5000F unit with SCR could operate for a full year when firing natural gas and remain below the major source threshold.

C. In addition, SCR may be necessary to demonstrate compliance with the 1-hour NO_2 NAAQS adopted in 2010.

Ambient air quality modeling required as part of the air permitting process also drives emission control requirements. The air quality modeling must show compliance with all NAAQS. Typically for power generation facilities, the 1-hour NO_2 NAAQS can be problematic.

Demonstrating compliance of conventional peaking units without SCR through modeling is difficult because of the statistical form and concentration value of the 1-hour NO_2 NAAQS. Modeling of NO_X emissions from relatively simple, minor emission sources often show noncompliance with the standard. Locating emission sources close to property boundaries or fence lines and short exhaust stack heights can also contribute to a modeled NO_2 NAAQS noncompliance. Using SCR to reduce the NO_X emission rate may be necessary to model compliance with the 1-hour NO_2 NAAQS.

II. Permits issued for projects in New York similar to the Analysis Group Study peaking unit in both a dual-fuel and natural gas only configuration incorporate SCR.

A. The USEPA and New York State Department of Environmental Conservation (NYSDEC) databases on permits issued for emission sources identify the types of controls and key data pertinent to design and operation.

The USEPA maintains a database of specific information provided by state and local permitting agencies on the Reasonably Available Control Technology (RACT), Best Available Control Technology (BACT), and Lowest Achievable Emission Rate technologies required to reduce the emission of air pollutants from stationary sources, including power plants. The USEPA established the RACT /BACT /LAER Clearinghouse (RBLC) to provide a central database of air pollution technology information to promote the sharing of information among permitting agencies and to aid in future case-by-case determinations (USEPA 2016b). LAER is required on major new or modified sources in nonattainment areas. As discussed above, the OTR, of which New York State is a part, is treated as an ozone nonattainment area.

Data in the RBLC includes sources subject to RACT, BACT, and LAER requirements. The RBLC permit database contains over 5,000 determinations of permitted technologies to mitigate most air pollutant emission streams (USEPA 2016).

The NYSDEC database of facilities that emit contaminants to the air in New York State includes facilities required to obtain a Title V permit, a state facility permit, or a registration certificate. The NYSDEC website posting of permits is intended to enable interested parties to view and print the language of draft and issued Title V facility permits (NYSDEC 2016).

Table 3 summarizes key information on turbines used for peak generation in the NY-NJ-CT AQCR. The results of the search were limited to facilities permitted after 1990 to reflect historical and current trends in emission control technology. Although these databases do not include every permitted power generating facility, they provide a reliable insight into the regulatory process for determining required emission controls and the most likely emission control requirements.

Table 3 Selected Turbines Identified from the USEPA RBLC and NY-NJ-CT AQCR Permit Databases that Have Been Permitted Since 1990[1]

Facility Name and Location	State	Zone	Turbines	SCR for NO_x Control
Allegany Alliance NYGT, LLC Allegany County	NY	B	GE LM6000 plus HRSG	YES
Ravenswood Generating Station Queens	NY	J	GE 7FA (peaking)	YES
Edgewood Energy LLC Suffolk County	NY	K	GE LM6000	YES

Table 3 Selected Turbines Identified from the USEPA RBLC and NY-NJ-CT AQCR Permit Databases that Have Been Permitted Since 1990[1]

Facility Name and Location	State	Zone	Turbines	SCR for NO_X Control
Equus Freeport Power Nassau County	NY	K	GE LM6000	YES
Glenwood Landing Nassau County	NY	K	GE LM6000	YES
Harlem River Yards Plant Bronx	NY	J	GE LM6000	YES
Hell Gate Bronx	NY	J	GE LM6000	YES
Vernon Boulevard Plant Queens	NY	J	GE LM6000	YES
Pouch Terminal Staten Island	NY	J	GE LM6000	YES
N 1st Street Plant Brooklyn	NY	J	GE LM6000	YES
NYPA Joseph J Seymour Brooklyn	NY	J	GE LM6000	YES
Consolidated Edison Development (Ocean Peaking Power)[2] Lakewood	NJ	NA	GE 7FA	NO
Bayonne Energy Center Hudson	NJ	NA	Rolls Royce Trent 60WLE	YES
PSEG Fossil LLC Kearny Station Hudson	NJ	NA	GE LM6000	YES
Howard Down Station Cumberland	NJ	NA	Rolls Royce Trent 60WLE	YES
PPL Wallingford Energy New Haven	CT	NA	GE LM6000	YES
PSEG Power Connecticut, LLC[3] (New Haven Harbor) New Haven	CT	NA	GE LM6000	YES

[1] Although these databases do not include every permitted power generating facility, they provide a reliable insight into the regulatory process for determining required emission controls and the most likely emission control requirements.
[2] Title V Permit Modification Facility PI No 78896 Activity No BOP010001 and permit issued October 2002.
[3] The PSEG Power Connecticut New Haven Peaking project was not listed in the USEPA RBLC but is included here for completeness.

B. In New York State, permits issued include SCR for NO_X control.

As shown in Table 3, all peaking units identified in the database searches and permitted in New York since 1990 include SCR for NO_X control. This includes frame and aero-derivative turbines. Although LAER is by definition an emission rate, it is achieved in practice by selected

control technologies. As the achievable emission rate decreases due to advances in design and operation of technology, only SCR can achieve the LAER of 2 to 3 ppm for simple and combined-cycle gas turbines, which is reflected in recent permits.

C. Results of the search for the NY-NJ-CT AQCR of the Ozone Transport Region identified SCR as the predominant method of NO_X control on peaking units.

As shown in Table 3 for New Jersey and Connecticut, peaking units, except one in New Jersey, include SCR for NO_X control. This includes frame and aero-derivative turbines.

The Consolidated Edison Development project in Lakewood, New Jersey, also known as Ocean Peaking, is the exception and includes dry-low NO_X control and a limit on operation of 1,050 hours per year. The New Jersey Department of Environmental Protection issued the permit with a LAER emission limit of 9 ppm, although USEPA disagreed with this determination. USEPA disagreed that the frequent start and shutdown events and the hot exhaust gas temperature made the application of SCR infeasible (USEPA 2001). The peaking facilities identified in Table 3 permitted after Consolidated Edison Development/Ocean Peaking include SCR for NO_X control.

III. USEPA Greenhouse gas limits affect the choice of fuel and use of distillate oil.

The USEPA finalized the "Standards of Performance for Greenhouse Gas Emissions from New, Modified and Reconstructed Stationary Sources: Electric Utility Generating Units" on October 23, 2015. The standard for non-base-load natural gas-fired combustion turbines is a heat-input-based standard set at an average of 120 pounds (lb) of carbon dioxide (CO_2) per million British thermal units (MMBtu) combined with the use of clean fuels as the best system of emission reduction (BSER). Clean fuels are defined as natural gas with a small allowance for distillate oil. The USEPA states this standard will apply to the "vast majority" of simple-cycle combustion turbines, or peaking units.

In determining this standard, the USEPA stated that this standard is readily achievable using "business-as-usual" fuels. The USEPA based this conclusion on (a) a natural gas emission rate of 117 lb CO_2/MMBtu, (b) use of distillate oil (the most common backup fuel) at an emission rate of 163 lb CO_2/MMBtu, and (c) the fact that a non-base-load turbine burning 9 percent distillate oil and 91 percent natural gas has an emission rate of 121 lb CO_2/MMBtu, which the USEPA stated, "rounds to 120 lb/MMBtu using two significant digits." The "small allowance for distillate oil" equates to 9 percent (Federal Register 2015).

Thus, the standard of performance for greenhouse gas emissions defines the type of fuel mix that is expected to result in compliance with GHG standards in a simple-cycle combustion turbine.

IV. The New York State Article 10 process requires a project to minimize adverse environmental impacts and implement rigorous public involvement that may result in a Certificate with conditions at least equal to and potentially more stringent than federal or state regulatory requirements.

Any new electric generating facility that will generate 25 MW or more is subject to Article 10 and must obtain a Certificate of Environmental Compatibility and Public Need. The Article 10 Certificate is issued by the New York State Board on Electric Generation Siting and the Environment (the "Siting Board"). The Siting Board is comprised of the heads of five state agencies (Department of Public Service, Department of Environmental Conservation, Department of Health, Energy Research and Development Agency, and Empire State Development) and two citizens from the locale of a proposed project appointed to the Siting Board by the Governor. In addition to verifying compliance with laws and regulations, the Siting Board, in order to issue an Article 10 Certificate, must find, among other requirements, that the project:

> Minimizes adverse environmental impacts, considering the state of available technology, the nature and economics of reasonable alternatives as are required to be considered, the interests of the State with respect to aesthetics, preservation of historic sites, forests and parks, fish and wildlife and other pertinent considerations.

The Siting Board is also responsible for overseeing the public decision making process that consists of a required public participation program, the opportunity for public statements and comment, and a trial-type hearing process in which qualifying municipalities and citizens can participate using funds provided by an Applicant. The Article 10 process allows for significant public involvement, as well as consideration of factors other than minimum regulatory requirements.

In addition, the Article 10 process relies on input from NYSDEC with respect to required federal or state air permits. The NYSDEC reviews a proposed generating facility design with regard to applicable emission regulations, emission limits, control technology requirements, and ambient air quality standards. Thus, a proposed unit that does not include control technology required by the air permitting process, such as SCR, would not meet the Article 10 requirement to comply with laws and regulations and the requirement to minimize adverse environmental impacts. Similarly, the combination of site-specific factors, public involvement, and a desire to minimize adverse impacts may result in a Certificate with conditions more stringent than federal or state regulatory requirements and may include control technology beyond minimum regulatory requirements.

V. The recent update to the Cross State Air Pollution Rule (CSAPR) requires further NOx reductions beginning May 2017 by reducing available allowances, which also influences the decision to install SCR.

The air quality goal of CSAPR is to reduce summertime emissions of NOx that contribute to ozone formation in the 22 CSAPR states (USEPA 2016c). A reduction in summertime NOx emissions under CSAPR will also contribute to reducing summertime ozone formation in the northeast ozone transport region (NOTR). Peaking units would likely run during the summer to meet peak load demand, and SCR provides the summertime NOx reduction necessary to contribute to meeting the goal of CSAPR. Due to the need to reduce NOx, CSAPR reinforces the need for SCR for the proxy peaking plant.

CSAPR is also a market-based and allowance-based program. Beginning in May 2017, CSAPR reduces the quantity of summertime NOx allowances available (USEPA 2016c). A tighter allowance market will likely increase allowance prices. Although cost of compliance with CSAPR would be the primary driver for evaluating whether to install SCR, we believe CSAPR would add to the reasons for installing SCR.

VI. Conclusion

Based on the information examined for this analysis, it is the opinion of E & E's air quality specialists that control of NO_X emissions with SCR is required in New York State in order to (1) address ozone NAAQS nonattainment in the New York City Metropolitan Area and the requirement for NO_X control in New York State as part of the OTR and (2) comply with federal and state requirements under the Clean Air Act. This level of NO_X control also contributes to the successful modeling demonstration of compliance with the 1-hour NO_2 NAAQS. In our opinion, the peaking unit design described in the Analysis Group Study that includes use of SCR for NO_X control addresses both of these requirements, complies with the letter and spirit of Article 10 and contributes to the air quality goals of CSAPR. This design is also consistent with recently permitted units in New York, New Jersey, and Connecticut.

Although an operating hour limit of approximately 2,500 hours would cap emissions from the peaking unit design described in the Analysis Group Study below the major source threshold, other factors in the air permit process drive the need to include an SCR for successful air permitting. The Analysis Group Study acknowledges that a project without SCR may receive significant local and environmental opposition, and heightens risk and costs of the future need to install SCR to meet future NOx control requirements (AG 2016). Based on our experience, the local and environmental opposition can be significant for a unit that does not propose installation of controls considered meeting BACT or LAER control requirements, particularly given the mandatory public involvement in the Article 10 process. Modeling compliance with the 1-hour nitrogen dioxide NAAQS may also require additional stack height, property acquisition and other considerations in order to model NAAQS compliance. Therefore we concur with the conclusions in the Analysis Group Study that SCR should be incorporated into the initial design.

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EXHIBIT II

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

New York Independent System Operator, Inc.	**)**	**Docket No. ER17-386-000**

AFFIDAVIT OF KELLI JOSEPH

1. My name is Kelli Joseph. I am employed as the Director of New York Regulatory and Market Affairs for NRG Energy, Inc. ("NRG"). My business address is 801 Carnegie Center, Princeton, NJ, 08540.

2. I participate in the New York Independent System Operator, Inc. ("NYISO") stakeholder process to ensure that NYISO rules and procedures create stable and effective markets and advocate positions at the NYISO, the New York Public Service Commission ("NYPSC"), and the Federal Energy Regulatory Commission ("Commission") regarding NYISO market issues. My responsibilities include covering all energy and capacity market design issues at the NYISO. Prior to my employment with NRG, I was a Senior Gas Electric Analyst with the NYISO, where I led efforts related to gas and electric market interdependency, represented the NYISO in industry related events, and provided expertise in various natural gas and electric market issues.

3. I actively participated in the NYISO stakeholder discussions throughout the past 15 months regarding the NYISO's development of proposed tariff revisions to its Market Administration and Control Area Services Tariff ("Services Tariff") that define new installed capacity ("ICAP") Demand Curves applicable for the 2017/2018 Capability

Year and establish the parameters for conducting the annual updates to determine the ICAP Demand Curves for the 2018/2019, 2019/2020, and 2020/2021 Capability Years, which the NYISO filed with the Commission in the above-captioned docket on November 18, 2016.[1] Specifically, I provided comments to the NYISO's independent Demand Curve consultants and the NYISO on the selection of natural gas hubs to calculate expected net energy and ancillary services revenues for the proxy peaking unit. My resume is attached as Exhibit KJ-1.

4. I write this affidavit in support of the Limited Protest and Comments of Independent Power Producers of New York, Inc. ("IPPNY") on the NYISO Filing. IPPNY has asked me to address the NYISO's proposed selection of natural gas pricing hubs to calculate net energy and ancillary services revenues for the proxy peaking plant. For the reasons I explain below, the NYISO's proposed natural gas hubs are appropriate and should be accepted by the Commission.

5. The selection of appropriate natural gas pricing hubs is a key part of the NYISO Demand Curve Reset, since natural gas prices play a significant role in the determination of the expected net energy and ancillary services revenues for the proxy peaking unit. Artificially depressing market signals with the use of natural gas prices that do not reflect what generators actually pay for delivered natural gas, or with natural gas prices that are not likely to persist over the peaking unit's assumed 20-year amortization period, will underestimate the value of capacity in the NYISO and damage investor confidence in the signals sent by the NYISO capacity market.

[1] Docket No. ER17-386-000, *New York Independent System Operator, Inc.*, Proposed ICAP Demand Curves for the 2017/2018 Capability Year and Parameters for Annual Updates for Capability Years 2018/2019, 2019/2020 and 2020/2021 (Nov. 18, 2016) ("NYISO Filing").

6. As both the NYISO and its independent consultant, the Analysis Group, Inc. ("Analysis Group"), point out, there are multiple natural gas pricing hubs in and around New York that could serve as the gas pricing point for the peaking unit in a given load zone. Gas hubs are points where natural gas is traded and typically develop at points where multiple interstate pipelines connect. A gas hub reflects the price of gas over a particular geographic area, which can sometimes be quite large.

7. Given that there are multiple gas hubs that could serve as the pricing point for each load zone, the Analysis Group considered four main criteria to designate the appropriate gas hub for each Zone: (1) market dynamics – i.e. how well the gas hub correlates to locational based marginal prices ("LBMPs") and whether the hub price reflects a long-term equilibrium, and not simply short-term arbitrage opportunities; (2) liquidity – i.e. whether there is consistent depth of historical data at that gas hub, reflective of sufficient trading volumes over time; (3) precedent/continuity – i.e. whether the gas hub has been used for similar purposes in previous NYISO planning and market studies; and (4) geography – i.e. whether there is a geographic relationship to potential peaking plant locations going forward and whether there is a logical nexus at relevant delivery points.

8. The Analysis Group selected TETCO M3 for Zone C, Iroquois Zone 2 for Zones F and G, and Transco Zone 6 NY for Zones J and K. Following the criteria outlined above, the gas hubs selected by the Analysis Group are appropriate and should be adopted.

Zone C Selection of TETCO M3 as the proxy gas hub is appropriate.

9. While TETCO M3 is not geographically located in Zone C, geography was not the only criteria for the selection of a gas hub. In fact, the Analysis Group considered the four main criteria listed above in making their selection of TETCO M3.

10. First, market dynamics demonstrate that TETCO M3 correlates with the Day Ahead Market ("DAM") LBMP in Load Zone C, whereas Dominion North, another gas hub considered by the Analysis Group, does not. This was especially important when considering zonal LBMPs in winter months. Only TETCO M3 correlated with the higher LBMPs, suggesting that marginal supply from resources in Zone C are not purchasing natural gas that reflects the price at Dominion North.

11. Second, the Analysis Group assessed the liquidity of TETCO M3 and Dominion North, finding that TETCO M3 has significantly higher trading volumes.

12. Third, the Analysis Group found strong precedent for selecting TETCO M3 as the proxy gas pricing hub in Zone C, since it has been used in past Demand Curve Resets, as well as in key NYISO planning studies.

13. Finally, while geography is a factor, relying solely on geography is inconsistent with the reasoning used by the Analysis Group when selecting a gas hub. In fact, the Analysis Group identified two aspects of the geographic criteria that are relevant. While physical location is a component of geography, focusing solely on the locational aspect of geography ignores the importance of ensuring that there is a logical nexus between the gas hub selected and relevant delivery points.

14. As the Analysis Group points out, the larger the geographic area covered by a particular gas hub, the less likely that electric price variations between zones are reflective of pricing at that gas hub. Dominion North reflects a receipt pool in Southwest Pennsylvania on the Dominion interstate pipeline for points north of Valley Gate in Alleghany County.

15. Since Dominion North is a receipt pool, pricing at the Dominion North gas hub reflects the price of gas entering the Dominion pipeline system from various supply points.

16. Dominion has had two "Supply Aggregation Points" on its system, Dominion North and Dominion South, where customers aggregate gas supplies from multiple receipt points. In 2012, Dominion completed a key upgrade and expansion project, called the Appalachian Gateway Project. The Appalachian Gateway Project is located at the nexus of the Dominion North and Dominion South gas hubs and expanded the physical receipt points available on the Dominion pipeline system. In addition, this project is designed to connect gas supply in West Virginia and southwest Pennsylvania to the Texas Eastern pipeline via the Dominion pipeline.

17. This is important because, in addition to several of its own storage locations connected to the Dominion pipeline, Dominion also connects to the Leidy storage facility—a key storage location for Northeast gas markets—located at the interconnection of Transco, Dominion, and Texas Eastern.

18. A recent study completed for the NYISO by Levitan & Associates[2] explains that Dominion does not report all of its receipts and deliveries on its Electronic Bulletin Board. So, even though this is a liquid trading point, there may be insufficient historical data at that hub. The Levitan & Associates report also explains that much of the gas flowing through the Dominion pipeline system is bound for the storage facilities linked to its pipeline system,[3] and that during the winter months, much of the transportation on the

[2] NYCA Pipeline Congestion and Infrastructure Adequacy Assessment, Levitan & Assocs. (Sept. 2013) http://www nyiso.com/public/webdocs/markets_operations/committees/bic_egcwg/meeting_materials/2013-10-23/Levitan%20Pipeline%20Congestion%20and%20Adequacy%20Report%20Sep13%20-%20Final%20CEII%20Redacted.pdf.
[3] *Id.* at 110.

Dominion pipeline system is used to ship this stored gas. While generators might have access to this gas via a marketer, the vast majority of the gas stored and later shipped through the Dominion pipeline system in the winter is likely used to meet residential heating demand on a natural gas Local Distribution Company ("LDC") system, not generator demand.

19. In fact, the modeling assumptions used to estimate the net energy and ancillary services revenues for the proxy peaking unit assume that the proxy unit does not hold firm transportation from a liquid sourcing point, like Dominion North, to the generator delivery point. Instead, the model assumes that generators purchase gas and shipping transportation in the secondary capacity release markets. Unless generators have firm transportation contracts associated with the supply injection at these receipt points, the price at Dominion North, which reflects the price of gas from various supply aggregations sent into the Dominion pipeline system, is not reflective of what a peaking unit would pay for actual delivered gas.

20. Thus, it is not surprising that the receipt pool price at Dominion North does not correlate well with LBMPs, since the price at Dominion North is not reflective of the price of delivered gas to generators in New York.

The Zone G selection of Iroquois Zone 2 as the proxy gas hub is appropriate.

21. The same reasoning explained above applies to the selection of the gas hub for Load Zone G.

22. First, market dynamics demonstrate that Iroquois Zone 2 correlates with the DAM LBMP in Load Zone G, whereas Millennium East, another gas hub considered by the Analysis Group, does not. This was especially important when considering zonal LBMPs in

winter months. Only Iroquois Zone 2 and TGP Zone 6 correlated with the higher LBMPs, suggesting that marginal supply from resources in Zone G are not purchasing natural gas that reflects the price at Millennium East.

23. Second, the Analysis Group assessed the liquidity of Millennium East, finding that Iroquois Zone 2 has higher trading volumes. In addition, the Millennium East gas hub has only a few years of historical data, another reason the Analysis Group decided against choosing Millennium East.

24. Third, the Analysis Group found precedent for selecting Iroquois Zone 2 as the proxy gas pricing hub in Zone G, since it has been used in past Demand Curve Resets.

25. Finally, as explained above, while geography is a factor, relying solely on physical geography is inconsistent with the reasoning used by the Analysis Group when selecting a gas hub. Although, in this case, the Iroquois pipeline is located in Zone G.

26. Millennium East, like Dominion North, is a receipt pool on the Millennium pipeline. The price at Millennium East reflects the price of Marcellus gas entering the Millennium pipeline east of Corning, New York. However, downstream of the Corning receipt points, the Millennium pipeline is connected to two important gathering systems—Laser and Bluestone. Gathering systems transport gas from the producing wells into the pipeline system. As will be explained in more detail, the pricing dynamics at Millennium East, a gas hub that covers a large geographic area, may not be reflective of pricing dynamics at the eastern part of the Millennium pipeline system, where these gathering systems are located.

27. As a peaking unit is not assumed to hold firm transportation rights to gas entering the pipeline system at a receipt pool, the price at Millennium East is not reflective of what a

peaking unit would pay for delivered gas. Further, ongoing market dynamics in both the gas and electric markets suggest that the pricing at Millennium East is even more unlikely to be reflective of Zone G pricing over time.

28. There are two reasons that Millennium East pricing is unlikely to reflect either Zone G electric market conditions or delivered gas prices for generators in Zone G going forward. First, a 650 MW natural gas fired unit is expected to directly interconnect to the Millennium pipeline system, which will likely increase congestion on the Millennium system. Second, much of the gas at the eastern end of the Millennium system is sent into the Algonquin pipeline system. The combination of these two factors is likely to increase the congestion on the eastern end of the Millennium pipeline system.

29. The Millennium pipeline interconnects with Algonquin, a key pipeline serving customers in New England, at the Ramapo interconnection. The Levitan & Associates study referenced above demonstrates that gas from Marcellus fed into the Millennium pipeline system via the Laser and Bluestone gathering systems have resulted in higher flows at the Ramapo interconnect, with higher utilization of the Algonquin pipeline system at points south of this interconnect.[4] This means that the price of gas at Millennium East—mostly reflecting price of Marcellus gas entering the Millennium system in Corning, New York—may not be capturing the pricing dynamics at the eastern end of the Millennium pipeline system, where gas entering the Millennium pipeline system is most likely being shipped through Algonquin to serve customers in New England.

[4] *Id.* at 44.

30. This is important because, while TGP Z6 also correlates with Zone G LBMPs, the Analysis Group stated that liquefied natural gas ("LNG") fed into the eastern part of the Tennessee pipeline system had a direct impact on the price of gas at the TGP Z6 hub. Therefore, the price reflected at the TGP Z6 gas hub, a point on the Tennessee pipeline system, reflected the dynamics of the gas market in New England, rather than in New York. The more LNG coming into the eastern part of the Tennessee pipeline, the less LDCs need to rely solely on gas shipped from the western part of the Tennessee system to meet peak heating demand. This dynamic directly impacts the amount of Tennessee capacity available for purchase in the secondary markets.

31. The same logic governing the decision for not selecting TGP Z6 should apply for not selecting Millennium. That is, the eastern part of the Millennium pipeline system is increasingly likely to be governed by the New England pricing dynamics that caused the Analysis Group to reject TGP Z6 for Zone G. Just like Tennessee, Algonquin pricing dynamics also reflect the amount of LNG available at the eastern end of the Algonquin pipeline system. Moreover, since the pricing at Millennium East may not reflect both the receipt pool pricing at Corning, New York, and the market dynamics at the eastern end of the Millennium pipeline, the pricing at the Millennium East gas hub is unlikely to correlate with LBMPs in Zone G.

A blended gas price should not be adopted.

32. There are no published blended prices on any published gas indices. In order to determine an appropriate blended price, there would need to be an assessment of which gas hubs to select and a discussion on the respective weightings of the hubs chosen to develop the blended rate. Even the NYISO points out that it would be challenging to

come up with a blend, as the NYISO currently has no "principled rationale" for developing what the appropriate blend would be for any given location.[5]

33. One of the reasons for moving to an annual update and making changes to the net energy and ancillary services model was to increase transparency and allow Market Participants to estimate future Demand Curves using readily available data. Not only are there no readily available blended gas prices, but there was no discussion in any of the NYISO ICAP Working Groups on which pipelines should be considered for blending purposes, nor any discussion on appropriate weightings.

34. This concludes my affidavit.

[5] NYISO Filing at 30.

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

New York Independent System Operator, Inc.	**)**	**Docket No. ER17-386-000**

I declare under penalty of perjury under the laws of the United States of America that the forgoing is true and correct.

Executed on December 9, 2016

Kelli Joseph
Kelli Joseph

Kelli Joseph

EDUCATION

Ph.D., Political Science, University of Virginia, 2008
Conducted original research on the politics of restructuring electricity markets in India, including econometric modeling and process tracing case study analysis. Awarded First Place, Social Sciences, University of Virginia Huskey Research Competition; U.S. Department of State Critical Language Scholarship; and Foreign Language Area Studies Fellowship in Hindi/Urdu.
Publication: "The Politics of Power: Electricity Reform in India." (2010) *Energy Policy*

International MBA, IE Business School, Spain, 2009, U.S. Fulbright Scholar
M.A., Sociology, University of Virginia, 2003
B.A., Spanish and Mathematics, *magna cum laude,* Houghton College, 1998

PROFESSIONAL EXPERIENCE

Director, Market and Regulatory Affairs, NRG (2014-Present)
Represent NRG at the NY Independent System Operator (NYISO), the NY Public Service Commission (PSC), and the Federal Energy Regulatory Commission (FERC) to ensure that rules and procedures for wholesale and retail electricity markets are stable and effective.

Senior Gas and Electric Analyst, NYISO (2011-2014)
Focused on gas and electric market interdependency, including electricity market design, system planning, and operational impact of increased natural gas usage in electricity markets. Analyzed natural gas markets and pipeline development throughout the Northeast. Invited white paper at MIT Energy Initiative Symposium, "*Gas and Electric Coordination Issues in New York*." Represented the ISO/RTO Council at the U.S. DOE Quadrennial Energy Review on Gas Electric Interdependencies.

Director, **Distributed Waste Energy Project, Ze-gen** (2010-2011)
Oversaw community outreach, marketing, public relations, strategy implementation, and by-product collaboration for venture-backed gasification project. Completed market segment analysis of proprietary technology, expected uses of syngas, commercial stage, and strategic partnerships for waste-to-energy/fuels companies in North America and Europe.

Managing Director, Energy Markets Advisory, LLC (2010)
Conducted financial and regulatory analysis for waste gasification, solar PV, and microgrid projects in India and Latin America.

Energy and Environment Management Consultant, OnLocation (2008)
Used the National Energy Modeling System (NEMS), an energy-economic model of U.S. energy markets, to assess National Renewable Energy Lab programs, energy efficiency and renewable energy programs, and develop Energy Information Administration Annual Outlook.

Energy Environment Intern, United Nations Development Program (2007)
Assessment of financial and market impact of the UNDP Biomass Energy for Rural India (BERI) project, including carbon emissions for clean development mechanism (CDM) credits, and analysis of renewable energy incentives.

STATA Consultant, University of Virginia (2006-2008)
Designed and developed specifications for data collection, selection of data sources, and advised and applied advanced statistical analysis.

International Market Analyst, CARDONE Industries (1998-2001)
Advised automotive aftermarket program to be sold in European markets.