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October 3, 2016

Diane L. Egan
Corporate Secretary &
Secretary to the Board
New York Independent System Operator, Inc.
10 Krey Boulevard
Rensselaer, NY 12144

Re: Proposed NYISO Installed Capacity Demand Curves

Dear Secretary Egan:

Attached please find the Comments of the New York State Department of Public Service and New York State Energy Research and Development Authority (collectively, the State Entities) on New York Independent System Operator, Inc. Staff Recommendations Regarding ICAP Demand Curve Parameters.

STATE OF NEW YORK
DEPARTMENT OF PUBLIC SERVICE

COMMENTS OF THE STATE ENTITIES ON NYISO STAFF RECOMMENDATIONS REGARDING ICAP DEMAND CURVE PARAMETERS

Dated: October 3, 2016
Albany, New York

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Comments Of The State Entities
On NYISO Staff Recommendations Regarding
ICAP Demand Curve Parameters

INTRODUCTION

The New York State Department of Public Service (DPS) Staff) and New York State Energy Research and Development Authority (collectively, the State Entities)[1] hereby submit these comments on the New York Independent System Operator, Inc. (NYISO) Staff Final Recommendations (NYISO Staff Recommendations) regarding the proposed Installed Capacity (ICAP) Demand Curves for Capability Year (CY) 2017/2018, and the methodology and inputs for CY 2018/2019, 2019/2020, and 2020/2021. The NYISO Staff Recommendations address recommendations advanced by Analysis Group, Inc. and Lummus Consultants International, Inc. (collectively, the Consultants) in their Study to Establish New York Electricity Market ICAP Demand Curve Parameters (DCR Report), which was issued to stakeholders on August 31, 2016.

The NYISO's Market Administration and Control Area Services Tariff (Services Tariff) states that the ICAP Demand Curve reset (DCR) process should determine the "**current**

[1] DPS Staff and NYSERDA previously submitted joint comments with other entities as a group called the "Concerned Stakeholders." For purposes of these comments, the State Entities affirm their support for each position previously advanced by the Concerned Stakeholders that is referenced in this brief.

localized levelized embedded cost of a peaking plant" with the "lowest fixed costs and highest variable costs among all" generation technologies examined that are "economically viable."[2] That is, the Services Tariff requires that the ICAP Demand Curves reflect the actual cost to build a hypothetical proxy peaking plant today, based on current market conditions.

The Demand Curves are not intended to anticipate and promote potential market or regulatory changes that might (or might not) happen in the future, and the DCR process is not the appropriate vehicle to pursue market or regulatory changes. The Demand Curves are updated periodically in part to ensure that capacity prices set by the Demand Curves reflect market and regulatory changes that are completed after the updated Curves are implemented. The Federal Energy Regulatory Commission (FERC) explicitly has affirmed this point, stating that "[a] demand curve reset process takes place every three years so that changed circumstances, such as new regulations[,] can be taken into account."[3]

The positions advanced herein adopt this Services Tariff-prescribed perspective, and advocate Demand Curve parameters reflecting unit design decisions that a developer

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[2] Services Tariff §§5.14.1.2.1-.2 (emphasis added).

[3] Docket ER14-500-000, New York Independent System Operator, Inc., 146 FERC ¶61,043 (issued January 28, 2014) at ¶74 (2014 DCR Order).

likely would make today based on current market conditions. Demand Curve design parameters that anticipate potential future market or regulatory rule changes increase incumbent generator revenues, increase customer capacity costs, and present the peaking unit developer with an economic arbitrage opportunity to maximize revenues by avoiding the optional investment assumed in the Demand Curves.

As detailed below, dual fuel capability is one specific example of this issue. NYISO Staff and certain parties advocated that the proxy peaking unit should include dual fuel capability in zones where such technology is not required by law or rule. If adopted, this recommendation would increase project capital costs by approximately 7%-8%. Those parties argue, in part, that dual fuel capability should be assumed because it would provide a reliability benefit that accrues to the system (not the developer) and the NYISO might adopt a fuel assurance program or dual fuel requirement at some indeterminate future time.

However, reflecting the incremental cost of dual fuel capability does not guarantee that a peaking unit developer will assume a cost that is optional. In fact, a peaking unit developer is equally or more likely to maximize revenues by avoiding this optional cost while earning capacity revenues that assume the investment was made. Assuming dual fuel capability

where such investment is optional also violates the Services Tariff requirement that the proxy peaking unit result in "the lowest fixed costs" of all technologies deemed economically viable. As FERC has held, the Demand Curves should not speculate as to future market changes that could occur.

As to the NYISO Staff Recommendations, the State Entities respectfully urge the NYISO Board to decline or modify certain recommendations. First, NYISO Staff recommended that the proxy peaking unit located in Zone G should include dual fuel capability. This capability would increase the Zone G proxy peaking unit capital costs by approximately $18 million (8%), but the investment is optional for units that interconnect with an interstate pipeline. NYISO Staff did not provide a quantitative economic analysis demonstrating that a developer would elect to increase project costs by this magnitude. Information that was provided by NYISO Staff and the Consultants, however, strongly suggests that the optional investment for dual fuel capability in Zone G would not be cost-justified. Non-economic considerations proffered by NYISO Staff in support of this recommendation are unpersuasive and unlikely to induce a developer to make an optional, uneconomic capital investment.

Second, NYISO Staff recommends that all proxy peaking units include Selective Catalytic Reduction (SCR) technology to

reduce emissions of nitrogen oxides (NO_x), including in ICAP zones where such controls would not be required. This optional investment would increase proxy peaking unit capital costs by approximately $26.4 million (12.5%) in Zone C, $25.0 million (13.9%) in Zone F, and $26.4 million (12.6%) in Zone G (Dutchess). NYISO Staff again failed to provide a quantitative economic analysis demonstrating that a developer would elect to increase project costs by this magnitude. As detailed below, the State Entities estimate that installing SCR in zones where the technology is optional would enable developers to save approximately $13,000 per year in avoided NO_x emissions costs. A developer is unlikely to invest $25 million to save $13,000 per year. NYISO Staff advances several non-economic considerations to bolster its recommendation, but none of those factors are likely to overcome the fact that the optional investment in SCR would be uneconomic for a peaking unit developer.

Third, NYISO Staff adopted the gas trading hubs that the Consultants recommend be selected for modeling purposes for each proxy peaking unit. At the request of the Concerned Stakeholders and Transmission Owners, NYISO Staff performed certain sensitivity analyses to estimate the reference price that would result from indexing the proxy peaking units to alternative gas trading hubs. NYISO Staff did not complete the analysis, however, and should be directed to provide additional

information for the NYISO Board of Directors (Board) and stakeholders to evaluate before the gas indices for NYCA and Zone G are selected.

The Consultants recommended certain financial parameters that NYISO Staff adopted. The Concerned Stakeholders had raised concerns regarding the return on equity (ROE), debt-to-equity ratio, and cost of debt recommended by the Consultants. The recommended parameters were based on outdated information and questionable assumptions. NYISO Staff, however, dismissed these concerns without explaining why the indicated financial parameters are appropriate despite their deficiencies. NYISO Staff should be directed to respond more fully to the issues identified by the Concerned Stakeholders, and re-examine the recommended ROE, debt-to-equity ratio, and cost of debt.

NYISO Staff similarly failed to address issues that the Concerned Stakeholders identified regarding a dramatic increase in engineering, procurement, and construction (EPC) cost estimates for the simple cycle F Frame unit from the last DCR period to the current reset period. The State Entities respectfully request that the NYISO Board direct its Staff to re-examine these estimates and provide a full response to the comments provided previously.

The Concerned Stakeholders advocated that the GE 7HA.01 (H Frame unit) gas turbine is economically viable and

should be considered for selection as a proxy peaking unit technology. NYISO Staff concluded that the H Frame unit is not economically viable because simple cycle turbines are being sited in many locations, but none have commenced commercial operations. The H Frame unit may be emerging as the most efficient turbine available, and the incomplete financial and performance data for the H Frame unit provided by NYISO Staff and the Consultants suggests that the technology may be preferable to the Siemens SGT6-5000F(5) (F Frame) unit that they recommend instead. The State Entities respectfully request that the NYISO Board direct its Staff to complete its examination of the H Frame unit as a potential proxy peaking unit, and evaluate it on an equal footing with the F Frame unit and other technologies evaluated.

Finally, the State Entities respectfully request time to present certain of these positions to the NYISO Board at its October 17, 2016 meeting. The State Entities further request that they be accorded time independent of that provided to other parties, to ensure that the key positions of the State Entities are communicated to the NYISO Board.

COMMENTS

I. THE NYISO STAFF FAILED TO ADEQUATELY JUSTIFY THE INCLUSION OF DUAL FUEL CAPABILITY FOR PROXY PEAKING UNITS LOCATED IN ZONES WHERE SUCH CAPABILITY IS NOT REQUIRED

The Consultants recommended that all proxy peaking units include dual fuel capability.[4] The Concerned Stakeholders objected to the inclusion of dual fuel capability where it is not required, explaining that proxy peaking units located in Zones C, F, and G should not include dual fuel capability because such technology is not required in those zones. The NYISO Staff agreed in part with the Concerned Stakeholders, concluding that the material, incremental cost of dual fuel capability was not justified for proxy peaking units located in Zones C and F.[5] NYISO Staff appropriately recognized that the incremental cost to add dual fuel capability in these regions was not economically-justified, and no law, rule, or regulation would require the proxy peaking unit in Zones C and F to include such capability.[6]

NYISO Staff, however, adopted the Consultants' recommendation that the proxy peaking unit located in Zone G

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[4] DCR Report at 32.

[5] NYISO Staff Recommendations at 5.

[6] Id.

should include dual fuel capability.[7] NYISO Staff generally adopted the Consultants' rationale for this recommendation, assuming that a unit located in Zone G would interconnect with the local distribution company's (LDC) gas system and thus become subject to LDC tariff requirements for alternative fuels.[8] This means the NYISO Staff accepts the assumptions that (i) a developer constructing a peaking plant in Zone G would assume the incremental cost of including such technology despite the fact that the investment is not required if connecting to an interstate gas pipeline, and (ii) including the cost of dual fuel capability in the reference price for a proxy peaking unit would lead to the development of a dual fuel peaking unit. NYISO Staff accepts the Consultants' rationale for these findings, and its explanation focuses on an evaluation of the "economic tradeoffs" between incremental net energy and ancillary services (EAS) revenues potentially realized from operation on the alternate fuel and the incremental cost to install and maintain dual fuel capability, as well as the unquantified benefit of increased siting flexibility.[9] NYISO Staff further assumed that dual fuel capability would provide reliability benefits and act as a financial hedge if future

[7] NYISO Staff Recommendations at 5.

[8] Id. at 4-5.

[9] Id. at 4.

constraints in gas supply result from increasing reliance on gas-fired generation in New York.[10]

None of these arguments withstand scrutiny. Although NYISO Staff failed to present a quantitative economic analysis demonstrating whether dual-fuel capability would be cost-justified in zones where it is not required, information provided during the stakeholder process indicates that the investment would be uneconomic, and a rational developer would not assume the material, incremental capital costs to add such capability. The non-economic considerations recited by NYISO Staff are inadequate to overcome the poor economics of dual fuel capability.

A. NYISO Staff Did Not Demonstrate That It Would Be Economic For A Developer To Include Dual Fuel Capability In Zone G (Dutchess)

The Consultants estimated that dual fuel capability would increase the F Frame unit capital cost by approximately $16 million in Zones C (7.4%) and F (7.7%), and by approximately $18.5 million in Zone G (8.0%).[11] To date, however, neither the

[10] NYISO Staff Recommendations at 4-5.

[11] DCR Report at 112 and 126 (comparing the total capital costs for the F Frame unit with SCR and with or without dual fuel capability). Including dual fuel capability would increase the reference price by approximately 5.2% in Zones F and G, and by approximately 7.7% in Zone C. (Id. at Table 41A, p. 96 [comparing the reference prices for the F Frame unit with SCR and dual fuel capability and the gas-only F Frame unit with SCR]).

Consultants nor NYISO Staff have presented a quantitative economic analysis that justifies the incremental cost to include dual fuel capability in proxy peaking units located where such capability is not required. They similarly have failed to demonstrate that customers would realize a net benefit from such capability.[12]

Using data presented in the DCR Report, the Concerned Stakeholders compared revenues from the three-year historic period for a dual fuel and gas-only F Frame unit with SCR located in Zone G. A summary of this analysis is attached. Net energy revenues in Capability Year (CY) 2013-2014 include historic prices affected by the Polar Vortex. Incremental revenues attributable to oil-fired operation during this period were approximately $6.47/kW-yr. Importantly, in subsequent years when the historic prices used to project net energy revenues do not include prices impacted by the Polar Vortex, incremental revenues earned from dual fuel capability shrink to approximately $0.52/kW-yr in CY 2014-2015, and were non-existent in CY 2015-2016. These paltry incremental revenues earned from dual fuel capability do not appear to justify the material

[12] There has been no analysis evaluating the total costs and benefits of dual fuel capability from the customer perspective.

incremental capital investment needed to achieve such capability in Zone G, where it is not required by law or regulation.

Data provided by NYISO Staff and issued by the NYISO's Market Monitoring Unit (MMU) reinforces this conclusion. NYISO Staff completed a Consumer Impact Analysis of the ICAP Demand Curves that included a historic study of revenues earned by dual fuel peaking units over the last five years.[13] NYISO Staff concluded that the incremental revenues associated with dual fuel capability exceeded the incremental cost of same in Zones F and G only during the year of August 2013-July 2014.[14] This period included the Polar Vortex, an extreme weather event that caused extremely high gas prices.[15] Aside from the impact of an extreme weather event that is unlikely to recur during the DCR period, the incremental cost of dual fuel capability **exceeded** the incremental revenues from that capability during all other historic periods examined.[16] Significantly, NYISO Staff also found that the incremental cost of dual fuel capability exceeded the incremental revenues of same in Zone C at all times during

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[13] Consumer Impact Analysis: 2015/2016 ICAP Demand Curve Reset – Additional Analysis, Presentation to Installed Capacity Working Group (dated September 28, 2016) (Dual Fuel Impact Analysis).

[14] Dual Fuel Impact Analysis at 15.

[15] Id.

[16] Id. at 16.

the historic five-year period, including the Polar Vortex.[17] This finding indicates that there remained sufficient gas supply throughout the Polar Vortex for generation to continue running on natural gas, and that the incremental cost of dual fuel capability was uneconomic in Zone C even during a historic period of extreme winter weather.[18]

NYISO Staff implicitly adopted the Consultants' speculative assertion that incremental revenues from oil-fired generation could be substantial if certain events occur in the future. Neither the Consultants nor NYISO Staff, however, fully discussed the likelihood of such events or explain adequately why a developer would assume the risk of material incremental costs to chase indeterminate and uncertain incremental profits in the future. Such events, if they occur in the future, may be considered in a future DCR process.

NYISO Staff asserted that dual fuel capability might enable developers to avoid derates and the associated reduction in capacity payments by burning oil when gas becomes physically unavailable.[19] This assertion is purely speculative, however, insofar as NYISO Staff does not specify the number of days that

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[17] Dual Fuel Impact Analysis at 16.

[18] NYISO Staff concluded that "there is no clear correlation between cold days and high gas prices." (Dual Fuel Impact Analysis at 13.)

[19] NYISO Staff Recommendations at 4.

gas physically was unavailable over the past three years, or quantify the number of hours during the same period that a dual fuel unit would have run while gas was physically unavailable. The benefit of preserving capacity payments during periods of gas unavailability also is speculative, given that those periods may be infrequent and/or limited in duration and, therefore, incapable of providing a material financial benefit to the developer.

The information provided by NYISO Staff and the Consultants falls short of the data and analysis that a developer (and its financiers) would likely rely on for investment decisions. It similarly is inadequate to justify inflating the reference price in Zone G by including incremental costs in the proxy peaking unit that are purely optional for the developer, and have not been demonstrated to be cost-justified.

Moreover, the NYISO Staff considered the incremental investment in dual fuel capability in a vacuum without also considering this investment decision in combination with its recommendation that the proxy peaking unit also include SCR. As discussed below, adding SCR technology to the F Frame unit would increase capital costs by approximately $26.4 million (12.6%) in

Zone G (Dutchess),[20] where such technology is not required for a unit that interconnects with an interstate gas pipeline.

B. Non-Economic Considerations Identified By Staff Do Not Overcome The Poor Economics Of Dual Fuel Capability

As noted above, NYISO Staff asserted that including dual fuel capability would provide the developer with increased siting flexibility and "a financial hedge ... in market and regulatory conditions which could" increase gas demand "without supporting additional infrastructure to increase gas supply availability."[21] NYISO Staff also asserted that dual fuel capability would provide "a form of fuel assurance."[22] Individually and collectively, these factors are unpersuasive and do not outweigh the dubious economics of including dual fuel capability where it is not required.

The claim that the optional, material cost of dual fuel capability is justified in part by increased siting flexibility is based on the assumption that a developer would interconnect its plant with the LDC system rather than an interstate pipeline. According to NYISO Staff, this decision potentially would minimize the costs to obtain natural gas and electrical interconnection. Neither NYISO Staff nor the

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[20] DCR Report at 126.

[21] Staff Recommendations at 4.

[22] Id.

Consultants, however, estimate the cost of electrical interconnection for a proxy peaking plant interconnected with an interstate gas pipeline, or compare those costs to a proxy peaking unit that interconnects with an LDC system. They similarly failed to quantify and compare the cost of electrical interconnections. More broadly, NIYSO Staff failed to present a quantitative analysis that evaluates the potential costs and benefits of a proxy unit that interconnects with an LDC system rather than an interstate pipeline. This incomplete analysis thus failed to provide any compelling data that could lead a developer to choose an LDC interconnection over an interstate pipeline interconnection.

The choice of interconnection is significant in regards to the optional dual fuel capability investment because a plant interconnected with the LDC system in Zone G would be subject to a utility tariff that likely would require the ability to run on an alternative fuel. An interstate gas pipeline interconnection, in contrast, would not require an alternative fuel and dual fuel capability. There has been no claim that a peaking unit connected to an interstate pipeline could not be developed in Zone G. To the contrary, there is compelling evidence that an interstate pipeline interconnection may be preferred to an interconnection with the LDC system.

In a recent analysis of the CPV Valley Energy Center (CPV Valley) generation project, the MMU concluded in relevant part that CPV Valley "will be situated in a location where it will likely enjoy significant fuel cost advantages over other generators in the same wholesale electric market zone."[23] Significantly, the MMU also concluded that "[p]rice spreads between natural gas trading hubs have increased considerably since 2010, and this is likely to drive future generation investment towards locations that are upstream of gas pipeline congestion while being downstream of electricity market congestion."[24] That is, the MMU anticipated that future generation developers would seek comparable fuel cost advantages by interconnecting with an interstate pipeline and exploiting price spreads between natural gas trading hubs to the extent practicable.

NYISO Staff, however, apparently did not consider this economic incentive to interconnect a gas-only plant with an interstate pipeline. In addition to the cost advantage a developer might obtain by this strategy, it would avoid additional tariff-based costs that otherwise would be incurred

[23] Assessment of the Buyer-side Mitigation Exemption Test for the CPV Valley Energy Center Project, Potomac Economics, Ltd. (dated March 7, 2011) (CPV Assessment).

[24] Id. at 26-27.

to pay for LDC service. NIYSO Staff and the Consultants claimed that interconnecting with an LDC system would enable the proxy peaking unit to be located at a site that would "minimize the costs to obtain both natural gas and electrical interconnection."[25] However, they do not quantify and compare the costs to obtain both natural gas and electrical interconnection, or demonstrate that the incremental, tariff-based cost of receiving gas delivered by an LDC would be less than the cost of obtaining the commodity directly from an interstate pipeline.

C. The Reliability Benefits And Potential Financial Hedge That Dual Fuel Capability Might Provide Are Not Sufficient To Justify The Optional, Material Cost Of Such Capability

NYISO Staff argued that increasing reliance on natural gas for power generation in the New York Control Area (NYCA) could stress the ability of the gas distribution system to satisfy demand on high peak days.[26] Dual fuel capability, NYISO Staff continues, would "provide[] a form of fuel assurance...."[27] NYISO Staff also claims that dual fuel capability would provide a financial hedge against future market and regulatory

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[25] NYISO Staff Recommendations at 5 (citing Consultants' Recommendations).

[26] Id. at 4.

[27] Id.

conditions in which gas demand equals or exceeds the available gas supply.[28]

To the extent that NYISO Staff favors dual fuel capability for the potential reliability benefits, those benefits accrue to the system. A developer is not compensated for providing this benefit and, therefore, is unlikely to assume an optional, incremental investment to provide it. For this reason, the potential reliability benefits are not relevant to the design parameters for a hypothetical proxy peaking unit. NYISO Staff considered a project to evaluate "performance assurance and dual fuel requirements for" ICAP Suppliers in the NYCA.[29] However, only two out of 57 stakeholders voted to implement this project,[30] and the NYISO decided not to move forward with it in 2017 or include the project as a proposed expenditure in its 2017 budget.[31] Even if a project to consider this issue were to commence during the reset period, the timing and substance of its outcome are unknown at this time. The ICAP Demand Curve parameters must be based on current rules and

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[28] NYISO Staff Recommendations at 4.

[29] Id. at 5.

[30] 2017 Stakeholder Priority Scores, Budget and Priorities Working Group (dated July 27, 2016) at 2 (see column labeled "Fuel Assurance – Dual Fuel Requirements for Gas-Fired").

[31] 2017 Project Prioritization & Budgeting Process, Budget and Priorities Working Group (dated August 31, 2016) at 8.

regulations. If this project results in FERC approval of tariff amendments that implement a performance assurance and/or dual fuel requirement in the future, those changes, when final and known, may be reflected in a future DCR.[32] It is inappropriate to guess what the outcome of that project might be, and to embed that guess in the ICAP Demand Curve parameters.

Regardless, a recent analysis of preparedness for the 2015-2016 winter suggests that the potential reliability benefits associated with dual fuel capability may be speculative or illusory. In that analysis, NYISO Staff stated that NO_x emissions restrictions, decreasing refinery capability in the Northeast, and upcoming carbon reduction targets under the Clean Power Plan are making it "more challenging for generation to burn oil."[33] These considerations undermine the claim that reliability benefits potentially associated with dual fuel capability weigh in favor of developing peaking units with that capability. Moreover, NYISO Staff's argument that the potential reliability benefits would be important to balance a supply portfolio with increasing reliance on gas reflects in part the

[32] 2014 DCR Order at ¶74 (stating that a "demand curve reset process takes place every three years so that changed circumstances, such as new regulations can be taken into account. A future reset process would be a more appropriate forum to consider any future developments").

[33] Winter 2015-2016 Preparedness, FERC Commission Meeting (dated September 17, 2015) at 11.

Consultants' assumption that certain nuclear generation and other facilities will retire. It now appears, however, that those nuclear units will not retire.

Finally, NYISO Staff neither explained nor estimated the potential value of dual fuel capability as a financial hedge. Independent power producers are sophisticated market participants that are fully capable of hedging their risks in a variety of financial instruments. NYISO Staff has not provided any data or analysis to support its claim that the optional capital cost of adding dual fuel capability in Zone G would be effective as a financial hedge, or could serve as an economic means of reducing risks pertaining to commodity supply.

For all the foregoing reasons, the State Entities respectfully urge the NYISO Board to modify the NYISO Staff's recommendations by finding that the proxy peaking unit located in Zone G should not include dual fuel capability. Such technology is not required for peaking units interconnected with an interstate pipeline, and the foregoing discussion explains why a developer would likely choose to build a gas-only plant on the interstate system.

II. NYISO STAFF FAILED TO JUSTIFY ITS RECOMMENDATION THAT ALL PROXY PEAKING UNITS SHOULD INCLUDE SCR

The Services Tariff provides that this DCR must define a proxy peaking unit "that results in the lowest fixed costs and

highest variable costs among all other units' technology that are economically viable...."[34] This requirement extends only to the potential development of a single peaking unit during the DCR period. The evaluation should be grounded in objective fact and quantitative analysis rather than speculation to the greatest extent practicable. Certain issues may require subjective evaluation, but those evaluations should be examined in the context of potential costs and benefits whenever possible. The recommendation to include SCR in the proxy peaking unit (i) assumes that a developer voluntarily would increase project costs by approximately $25 million (13.9%) in Zone F, approximately $24.5 million (12.5%) in Zone C, and approximately $26.4 million (12.6%) in Zone G (Dutchess),[35] and (ii) is based on speculation as to how a developer would anticipate events that may or may not occur in the future.

The State Entities respectfully urge the NYISO Board to decline the recommendation that proxy peaking units include optional SCR technology. Initially, it must be emphasized that the State Entities view this issue in the context of the DCR process in which it is being considered. That is, the process should focus on examination of the costs and revenues of a

[34] Services Tariff at §15.4.1.2.2.

[35] DCR Report at 126.

hypothetical peaking unit that could be built once during the reset period. NYISO Staff, however, repeatedly stated during the DCR stakeholder process that the design features assumed for the proxy peaking unit should yield a facility that can be sited, permitted, and constructed multiple times during the reset period. This is inconsistent with the Services Tariff, which defines the proxy peaking plant as a single facility that potentially includes multiple units.[36]

Generation plant owners incur costs to buy allowances and offsets for the NO_x emissions released by their facilities. The Consultants did not present a comparison of these costs for an F Frame unit with and without SCR technology.[37] The cost of allowances that must be purchased for each ton of NO_x actually emitted were not specified in the DCR Report or the NYISO Staff Recommendations. It is the State Entities' understanding that this data is embedded in the Consultants' model but includes proprietary data that cannot be included in public documents. As a result, the stakeholders have not been presented with any data as to the annual emissions costs savings that a developer might realize by including SCR technology in its facility.

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[36] Services Tariff at §5.14.1.2.2.

[37] Plants located in NO_x attainment zones (e.g., Zones C, F, and G [Dutchess]) do not incur the one-time cost to procure emission reduction credits (ERCs).

At a minimum, a benefit-cost analysis of the SCR investment is needed to support the recommendation that the proxy peaking plant should include this technology. The optional investment in SCR technology may increase project costs by 12%-13%, as noted above. The magnitude of this optional cost is large enough that the peaking plant developer (and, likely, its financiers) would require an economic analysis of the incremental investment, and would not rely solely on speculation as to future regulatory outcomes.

It appears likely that a quantitative economic analysis would demonstrate that including SCR technology for proxy peaking units located in Zones C, F, and G (Dutchess) would not be cost-effective. A simple analysis illustrates this point. Based on data presented in the DCR Report for the period May 2015 through April 2016, the F Frame Unit with SCR located in Zone G (Dutchess) would emit approximately 8.1 tons of NO_x annually, whereas the same unit without SCR would emit approximately 34.5 tons of NO_x annually.[38] DPS Staff examined

[38] These estimates are based on data culled from the DCR Report. The DCR Report states that the controlled F Frame Unit would run approximately 771 hours if located in Zone G (Dutchess), with a NO_x emissions rate of 20.9 lbs/hr. Annual emissions were estimated as follows: (1) 771 hrs/yr * 20.9 lbs/hr = 16,113.9 lbs/yr; (2) 16,113.9 lbs/yr ÷ 2,000 lbs/ton = 8.06 tons/yr. The same process was used to estimate NO_x emissions for the uncontrolled F Frame unit, based on an estimated emissions rate of 78 lbs/hr and 882 run-time hours.

projected NO_x emission allowance prices embedded in the Congestion Assessment and Resource Integration Study (CARIS) database, and inflated the highest price observed by a substantial margin to derive $500/ton as a very conservative estimate of the proxy peaking unit developer's cost to procure allowances.

Based on the foregoing estimates, SCR technology would enable a proxy peaking unit developer to avoid emitting 27.3 tons of NO_x annually, for an annual allowance cost savings of approximately $13,650. Over the course of 20 years, the developer's cumulative savings would be approximately $273,000. This estimate ignores additional costs that would be avoided by not having to operate and maintain the SCR.[39] The State Entities submit that a proxy peaking unit developer would not invest $26.4 million to save $273,000 ($13,650 annually) unless there is an affirmative regulatory or legal obligation to make that investment.

Moreover, NYISO Staff estimated that including SCR in the proxy peaking unit would increase annual capacity costs throughout New York by approximately $231 million when the reset Demand Curves are implemented (as compared to Demand Curves that

[39] See, e.g., DCR Report at 133 (specifying the fixed and variable operation and maintenance costs for an F Frame unit with and without SCR).

reflect an uncontrolled proxy peaking unit).[40] The State Entities submit that customers should not be burdened with such a massive increase when there is no demonstrable requirement for the incremental cost of SCR in Zones C, F, and G (Dutchess), and no quantified customer benefit from its inclusion.

NYISO Staff speculated, based on a conclusory assertion by the Consultants, that the cost to retrofit a peaking unit with SCR technology would be cost-prohibitive if required in the future.[41] NYISO Staff did not present any estimate of the retrofit costs – or any other proof – to corroborate this claim. NYISO Staff instead provided a footnote that the cost to retrofit a plant "that did not contemplate including an SCR at the time of construction" would increase the SCR cost by approximately 40%.[42] The footnote acknowledged that the Consultants performed at least a rudimentary analysis of the cost to retrofit a peaking unit with SCR, and the State Entities and other stakeholders had requested the data underlying this estimate on numerous occasions throughout the stakeholder process. However, although NYISO Staff repeatedly assured stakeholders that this analysis would be reported, they instead

[40] Consumer Impact Analysis: 2015/2016 ICAP Demand Curve Reset, Tariq Niazi, ICAP Working Group (dated August 2, 2016) at 5.

[41] NYISO Staff Recommendations at 9-10.

[42] Id. at 10, n.11.

provided only the conclusory footnote quoted above. It thus is impossible to examine the assumptions underlying the Consultants' estimate, given that NYISO Staff has refused to share relevant data with stakeholders. Regardless, any future change in regulations would include a determination of how the new rules should apply to existing facilities. It cannot be assumed that stricter NO_x emissions standards in the future, if promulgated, necessarily would require existing facilities to retrofit with SCR.

Importantly, the footnote acknowledged that a developer can "contemplate" a future retrofit to add SCR and design and build its facility in a manner that would reduce future retrofit costs. A developer confronted with the choice of an optional and uneconomic up-front investment in SCR, or the potential risk of a higher capital cost in the future to retrofit SCR, could hedge its risk by designing the peaking unit with a footprint that "contemplates" the future addition of SCR. This strategy would enable the developer to avoid the full, up-front optional cost of SCR technology while reducing the future cost of a potential retrofit that might never be required.

The substantial SCR costs are optional in Zones C, F, and G (Dutchess) because there is no legal requirement for a generating unit located in those zones to include SCR. NYISO Staff acknowledged this point but nevertheless concluded that

the proxy peaking unit should include SCR based on "development and permitting risks and the potential for significant additional cost of" retrofitting SCR in the future, if needed.[43] The preceding discussion explains why this claim is not compelling.

NYISO Staff ultimately concluded that the Board on Electric Generation Siting and the Environment (Siting Board) would not issue a Certificate of Environmental Compatibility and Public Need (Certificate) pursuant to Public Service Law (PSL) Article 10 to construct a generation facility without SCR. According to NYISO Staff, Article 10 requires the Siting Board to determine that the facility will minimize or avoid adverse environmental impacts to the maximum extent practicable, considering the nature and cost of reasonable alternatives.[44] NYISO Staff argues that this finding cannot be made if a proposed facility does not include SCR technology.[45]

This argument is inapposite. PSL §172(1) acknowledges that the New York State Department of Environmental Conservation (DEC) has exclusive authority to issue emissions permits pursuant to its delegated authority under the federal Clean Air Act. The Siting Board does not have clear statutory authority

[43] NYISO Staff Recommendations at 9.

[44] Id. at 6.

[45] Id.

to impose emissions standards stricter than those specified in the DEC-approved air permit by requiring SCR technology that is not required by the air permit. Further, the DEC is a member of the Siting Board, and the State Entities are not aware of any instance in which the Siting Board rejected a permit issued by one of its member agencies, and imposed standards stricter than those embedded in the rejected permit.

NYISO Staff's recommendation is also based in part on tighter emissions controls that might be adopted in the future. It would be premature to assume the implementation of regulations that have not been adopted, and could change significantly if they are implemented. The proxy peaking unit should not include incremental costs that anticipate future regulatory actions that may or may not occur, or may not occur as anticipated. If stricter emissions regulations are adopted during the upcoming DCR period, any increased costs resulting from those regulations will be reflected when the Demand Curves are reset next. This would be consistent with FERC precedent, which affirmed the recommendation to exclude SCR from the NYCA proxy peaking unit in the current ICAP Demand Curves despite potential future regulatory action.[46]

[46] 2014 DCR Order at ¶74 (stating that "[w]hile there always is a risk that regulations will change in the future, we cannot base the finding of viability on speculation that the EPA or New York State regulators will act at some point in the

For all the foregoing reasons, the State Entities respectfully urge the NYISO Board to decline NYISO Staff's recommendation and find that SCR technology should not be included in the proxy peaking unit unless there is an affirmative obligation to do so.

III. PROXY PEAKING UNITS LOCATED IN ZONES C AND G SHOULD BE MODELED USING BLENDED GAS TRADING HUBS OR, ALTERNATIVELY, DIFFERENT GAS TRADING HUBS THAN RECOMMENDED BY NYISO STAFF

The DCR Report presents modeling data that relies on the Texas Eastern Zone M-3 (TETCO M3) and Iroquois Zone 2 gas hub prices for proxy peaking units located in Zones C and G (Rockland), respectively. Although as a general matter indexing to a single hub may be appropriate and simplify administration of the Demand Curves, there may be instances – such as Zones G (Rockland) and C – where choosing a more accurate gas index may be appropriate. NYISO Staff should be directed to index the proxy peaking unit located in Zones C and F using a blend of gas hubs that includes Dominion North Point for modeling purposes. NYISO Staff also should be directed to index the proxy peaking unit located in Zone G (Rockland) to a blend of gas hubs that includes the "Millennium, East Deliveries" (Millennium East)

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future. A demand curve reset process takes place every three years so that changed circumstances, such as new regulations can be taken into account. A future reset process would be a more appropriate forum to consider any future developments.")

hub. The resulting reference prices should be compared and, if one of the alternative gas hub indices would yield a lower reference price, the proxy peaking unit should be located where necessary to realize that cost advantage. Alternatively, if the proposed blending of hubs for modeling purposes is not adopted as recommended, then NYISO Staff should (i) calculate the reference price of proxy peaking units located in Zone F using the Dominion North Point gas hub for modeling purposes, and proxy peaking units located in Zone G (Rockland) using the Millennium East hub, and (ii) re-examine the full dataset to select a gas trading hub for modeling purposes.

A. Additional Information Is Needed Before The Gas Trading Hub Is Selected To Model Peaking Unit Reference Prices In Zone G

NYISO Staff adopted the Consultants' recommendation that the Iroquois Zone 2 gas hub be selected for purposes of modeling EAS revenues for a proxy peaking unit located in Zone G.[47] NYISO Staff thus dismissed concerns advanced by the Concerned Stakeholders and other entities that Iroquois Zone 2 should not be selected as the gas trading hub for a Zone G proxy peaking unit because a developer could obtain gas from a less expensive pipeline than Iroquois Zone 2, thereby realizing an arbitrage opportunity between gas and electricity markets.

[47] Staff Recommendations at 23-24.

Specifically, the Concerned Stakeholders recommended that NYISO Staff and the Consultants examine two potential proxy peaking units located in Dutchess and Rockland Counties in Zone G in order to acknowledge the inherent differences between the two locations that impact generation costs, including the sources of gas for each unit. A comparison of the reference prices associated with those geographically-distinct units is necessary to reach an informed decision on where in Zone G the proxy peaking unit should be located, and which gas trading hub should be selected to model the unit's net EAS revenues.

To reflect the different gas supply options available to a proxy peaking unit located in Zone G (Rockland), gas costs should be indexed to a blend of hubs. This approach would approximate proxy peaking unit gas supply costs more accurately, and would also reflect the reality of how generators and LDCs procure gas. Notably, the MMU also recommended that NYISO Staff switch to a blend of gas hubs for modeling purposes in Zone G because the Iroquois Zone 2 index "will tend to cause under-estimates of net revenues."[48] The use of a blended gas hub also would be consistent with the MMU's methodology to estimate net

[48] NYISO Staff Recommendations at 75-76.

EAS revenue for the Zone G (Rockland) proxy peaking unit.[49] For that analysis, the MMU blends the cost of gas on the east (Iroquois Zone 2) and west (TETCO M3) sides of the Hudson River in equal proportions.[50]

The use of a single gas pipeline for modeling purposes in Zone G (Rockland) is not consistent with how LDCs and many generators actually procure supply. A generator interconnected with the LDC system may buy gas from the LDC, or pay the LDC to transport gas bought from a third party. LDCs procure natural gas from multiple sources that may be transported via multiple pipelines. For instance, Consolidated Edison Company of New York, Inc. and Orange and Rockland Utilities, Inc. (collectively, Con Edison) hold a joint gas supply and capacity portfolio that includes suppliers on eight pipelines and contracted supplies from the Marcellus Shale in the Northeast and the Gulf Coast, among others.[51] Con Edison also holds firm pipeline contracts with fourteen different interstate pipeline transportation companies.[52] The cost charged

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[49] David B. Patton et al., 2015 State of the Market Report for the New York ISO Markets (2015 SOM Report) (dated May 2016) at A-23, A-2.

[50] Id.

[51] Case 16-G-0061, Con Edison – Gas Rates, Pre-Filed Direct Testimony of Ivan Kimball at 8 (explaining that "[o]ne of the cornerstones of a reliable gas portfolio is diversity").

[52] Id.

to full-service LDC customers reflects a blend of these supply costs, and not the price of gas from a single pipeline. When Con Edison does not need all of its assets, it releases them through capacity release markets, and many generators benefit from the use of these released assets as the generators do not generally have their own firm pipeline capacity.

Generators interconnected with the LDC system can instead pay the utility to transport supply that the generator procured from a commodity marketer. Like LDCs, commodity marketers typically purchase gas from multiple sources and offer customers a price that reflects a blend of those costs. Commodity marketers will also use released assets from LDCs and other firm pipeline capacity holders to create the bundled products, including pipeline capacity and commodity, that most generators rely on to meet their fuel needs.

Consequently, the supply cost for a proxy peaking unit connected to the LDC system should not be indexed to a single gas pipeline. The model instead should be updated to reflect a blend of the relevant locational gas prices from multiple pipelines in the region that a peaking unit may use to procure gas supply. It is imperative that locational differences relating to the proximity and availability of gas be reflected in the gas forecast for proxy peaking units located in Zone G (Dutchess) and Zone G (Rockland).

The State Entities respectfully urge the NYISO Board to direct NYISO Staff to estimate the monthly reference price of a proxy peaking unit located in Zone G (Rockland) indexed to a blend of gas hubs. When that data is available, the full collection of monthly reference prices should be evaluated, and the location and gas trading hub that yields the lowest-cost monthly reference price for the proxy peaking unit should be adopted for the Zone G-J Locality ICAP Demand Curve.

If, however, the NYISO Board declines to consider adopting a blended gas hub for modeling purposes in Zone G, then it should decline the NYISO Staff's recommendation that the proxy peaking unit for the G-J Locality ICAP Demand Curve be located in Zone G (Dutchess County). A developer would increase annual average net EAS revenues from $39.42/kW-year to $114.51/kW-year by locating its facility in Rockland County and procuring gas from the Millennium East pipeline.[53] The State Entities submit that a rational developer would take advantage of this opportunity if it would be economic to do so.

NYISO Staff dismissed this "short-run arbitrage opportunity" because it assumes that the opportunity will not persist over the proxy unit's economic life.[54] NYISO Staff

[53] Staff Recommendations at 53.

[54] Id. at 77-78.

assumes that commodity costs will equilibrate as the cost of gas from the Millennium East pipeline increases to converge with supply costs from other pipelines. However, the converse also will happen – supply costs from other pipelines will decrease to converge with the Millennium East gas price. NYISO Staff did not explain or justify its conclusion that the Millennium East price will equilibrate at a price point sufficiently high to limit the arbitrage opportunity to a short period. A developer instead could determine that the arbitrage opportunity would justify an interconnection with Millennium East, even if gas prices gradually increase over time.

The MMU affirmed this possibility in its mitigation analysis of the CPV Project. There, the MMU explained there may be opportunities for a developer to secure a competitive advantage by exploiting price spreads between natural gas trading hubs by siting at locations that are upstream of gas pipeline congestion and downstream of electricity market congestion.[55] The MMU explained that the price spreads have increased considerably since 2010, and it expects that this price spread "is likely to drive future generation investment

[55] CPV Assessment at 26-27.

towards" similar locations.[56] This indicates that CPV Valley entering the market will not eliminate the price spread.

For this reason and the reasons stated in comments previously filed by the Concerned Stakeholders, other stakeholders, and various transmission owners, if the blended gas index recommended above is not adopted, then the NYISO Board should direct NYISO Staff to use the Millennium East pipeline to model the proxy peaking unit located in Zone G (Rockland). NYISO Staff estimated that substituting the Millennium East hub for Iroquois Zone 2 in Zone G (Rockland) would reduce the monthly reference price of a gas-only F Frame Unit with SCR from $14.30/kW-month to $5.60/kW-month.[57]

Finally, if NYISO Staff determines that there is insufficient data to rely on Millennium East notwithstanding the foregoing discussion, then it should change the gas hub for Zone G (Rockland) from Iroquois Zone 2 to TETCO M3. NYISO Staff estimates that this change would reduce the monthly reference price from $14.30/kW-month to $9.09/kW-month, or approximately 36.4%.[58] The substitution would be reasonable. TETCO M3 is used in the current Demand Curves to index gas prices in Zone G (Rockland). It was selected because it reflects an observed

[56] CPV Assessment at 26-27.

[57] Staff Recommendations at 54.

[58] Id.

difference in natural gas prices between Zone G (Rockland) and Zone G (Dutchess). TETCO M3 also is used by the MMU in its quarterly State of the Market report to represent the G-J Locality.

B. Additional Information Is Needed Before The Gas Trading Hub Is Selected To Model Peaking Unit Reference Prices For The NYCA ICAP Demand Curve

NYISO Staff adopted the Consultants' recommendations that the Zone C proxy peaking unit be indexed to the TETCO M3 gas trading hub, and the Zone F unit be indexed to the Iroquois Zone 2 gas trading hub.[59] For the same reasons detailed above for the Zone G proxy peaking unit, the NYISO Board should decline these recommendations and direct NYISO Staff to estimate the monthly reference price for Zone C and F proxy peaking units when indexed to a blend of gas hubs that includes Dominion North Point. A blended gas price would better reflect a developer's procurement practices and more accurately predict its commodity costs.

If, however, the NYISO Board declines to adopt a blended gas trading hub index for modeling purposes for the proxy peaking unit underlying the NYCA ICAP Demand Curve, then additional information is needed. The Consultants estimated that a gas-only proxy peaking unit with SCR would have a monthly

[59] Id. at 23.

reference price of $10.72/kW-month whether it is located in Zone C or Zone F.[60] NYISO Staff recommended that the proxy peaking unit for the NYCA ICAP Demand Curve be located in Zone F because that location would yield the lowest annual reference price and be consistent with the location selected in prior resets.[61]

At the request of the Concerned Stakeholders and other entities, NYISO Staff prepared gas hub sensitivities that estimate the monthly reference price of a Zone C proxy peaking unit that is indexed to the Dominion North Point gas trading hub rather than TETCO M3. NYISO Staff estimated that this change would reduce the monthly reference price from $10.72/kW-month (indexed to Iroquois Zone 2) to $6.75/kW-month, a decrease of approximately 37%.[62] NYISO Staff did not estimate the monthly reference price for a proxy peaking unit located in Zone F that is indexed to Dominion North Point, although that pipeline may serve generators in Zone F. This value should be calculated. The NYISO Board then should review the collection of estimated reference prices and select the zonal location and gas trading hub that yields the lowest monthly reference price.

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[60] Staff Recommendations at 54.

[61] Id. at 40-41.

[62] Id. at 54.

IV. NYISO STAFF RECOMMENDS CERTAIN FINANCIAL PARAMETERS WITHOUT PROVIDING SUFFICIENT INFORMATION TO JUSTIFY THEIR USE

During the stakeholder process, the Concerned Stakeholders argued that the Consultants had failed to justify the use of the following financial parameters: (a) a proxy peaking unit Return on Equity (ROE) of 13.4%; (b) a Debt/Equity ratio of 55%/45%; and (c) a 7.75% cost of debt. The Concerned Stakeholders requested additional information to clarify the basis for these recommendations, and explained why the Consultants' recommendations should be modified. NYISO Staff, however, summarily adopted the Consultants' recommendations without addressing the issues identified by the Concerned Stakeholders. The following discussion, therefore, focuses on deficiencies regarding the ROE, Debt/Equity ratio, and cost of debt recommended by the Consultants.

A. ROE

The DCR Report recommended the use of a 13.4% ROE for the proxy peaking unit. Although broadly consistent with the ROE derived using the methodology approved by FERC in the last reset process, the DCR Report did not provide sufficient explanation of how the proposed ROE was derived to enable stakeholders (or the NYISO) to evaluate the recommendation.

The DCR Report explained that the ROE recommendation was based on data from three sources: (a) the estimated ROE for

a proxy group of publicly-traded Independent Power Producers (IPP) based on the Capital Asset Pricing Model (CAPM); (b) independent estimates of ROE for new power plants; and, (c) ROE estimates for project finance. The IPP proxy group consists of only four companies and yields a range of ROEs from 9.22% to 12.45%, depending on the source of certain data inputs. Significantly, whereas the proxy group betas range from 0.89 to 1.35, the recommended 13.4% ROE implies a beta of 1.49. This is considerably higher than the betas of individual proxy group members and suggests the inclusion of a much higher risk expectation. The DCR Report does not explain why the proxy peaking unit warrants such increased risk expectation, and provides little rationale for recommending a return that exceeds the proxy peaking unit ROE by more than 230 basis points.

The DCR Report next cited studies conducted by the California Energy Commission (CEC) and the National Energy Technology Laboratory (NETL). According to the DCR Report, the CEC and NETL studies present IPP ROEs of 15.5% and 14.47%, respectively. The CEC report was published in January 2010 (i.e., six and a half years ago), but the data underlying its conclusions were based on facilities located in California and 2008 data that was updated to reflect 2009 circumstances. The ROEs presented in the NETL report appear to reflect an average of capital structure data from 2006, 2007, and 2008 for a

diverse group of technologies that include nuclear and renewables. The CEC and NETL studies, therefore, are outdated and based on economic and regulatory circumstances that likely have changed significantly during the many years since their publication.

Finally, the DCR Report explained that the ROE recommendation also reflects information gleaned from "independent sources" that estimated "the ROE for project finance." Similar to the CEC and NETL studies, the referenced sources of project finance data were issued in 2003 and 2008. These sources, therefore, are also stale and reflect economic and regulatory circumstances that likely have changed significantly during the intervening years.

In light of the foregoing deficiencies, the recommended ROE should be lowered to reflect a beta and return that aligns with other IPPs. At a minimum, regardless of whether the recommended ROE is changed, the DCR Report should detail how the recommended ROE was derived and why the Consultants did not use methodologies such as the CAPM in determining the ROE.

B. D/E Ratio

The DCR Report recommended that the proxy peaking unit reflect a D/E ratio of 55%/45%. According to the DCR Report, the recommended D/E ratio balances current IPP leverage that is

higher than previous years, and the "limited fixed revenues streams for a merchant peaking plant in NYISO would limit debt level." The DCR Report also cited the CEC and NETL studies for support of the proposed D/E ratio.

The justification provided for the recommended D/E ratio is inadequate. Companies in the IPP proxy group presented in the DCR Report have a much higher debt share that ranges from 68.8% to 75.6%. Although IPP D/E ratios currently may be higher than in previous years, as the Consultants note, the data identifies a trend that started approximately one year ago and appears to be continuing. The DCR Report did not claim that the trend is likely to moderate or reverse before the ICAP Demand Curves are reset. As to the sources supporting a lower D/E ratio, the CEC and NETL reports are outdated and reflect economic and regulatory circumstances that likely have changed significantly since they were published. For the foregoing reasons, the recommended D/E ratio should be increased (i.e., debt increased relative to equity) to reflect current market conditions and recent data relative to IPP capital structure.

C. Cost of Debt

The DCR Report recommended imputing a 7.75% cost of debt to the proxy peaking unit. This recommendation apparently was based on data from issuances by Calpine, NRG Energy, and Dynegy. During the ICAP Working Group meetings, however, the

Consultants presented information showing that the average of all securities with a given investment grade rating of "B" as of June 7, 2016 was 7.42%. The recommended cost of debt should be reduced to align with recent data on investment-grade, B-rated securities. The cost of debt should also be adjusted to account for the likelihood that a project would be more likely to utilize secured debt than unsecured debt, as assumed in the DCR Report.

V. NYISO STAFF FAILED TO INVESTIGATE THE DRAMATIC INCREASE IN ENGINEERING, PROCUREMENT, AND CONSTRUCTION COST ESTIMATES SINCE THE LAST DEMAND CURVE RESET

In comments addressing the DCR Report that were provided to NYISO Staff during the DCR stakeholder process, the Concerned Stakeholders expressed concern that EPC cost estimates for the F Frame unit had increased dramatically since the last reset process. Previously, the NYISO's consultant estimated that total capital costs for the gas-only, simple cycle F Frame unit without SCR would be approximately $148 million and $146 million in Zone C and Zone F, respectively. Accounting for an estimated 2.2% annual escalation across three years, or a total escalation of 6.6% between Demand Curve resets from 2013 to 2016, capital costs for an F Frame unit located in Zone C would be expected to increase from $148 million to $158 million, and

Zone F capital costs to increase from $146 million to $156 million.

Capital cost estimates for the F Frame unit presented in the DCR Report wildly exceed these estimates. According to the DCR Report, an F Frame unit without SCR constructed in Zone C is now estimated to cost approximately $195.9 million, which is $47.9 million, or 32.3%, more than prior estimates. The DCR Report estimates that it would cost approximately $183.5 million to construct the same unit in Zone F, which exceeds earlier projections by $37.5 million, or 25.7%. It appears that dramatic increases in EPC costs account for much of this difference, as shown on the following table:

Capital Cost Components ($M)	**Zone C**			**Zone F**		
	2013	**2016**	**Increase**	**2013**	**2016**	**Increase**
Equipment	$55.4	$62.8	13%	$55.4	$62.8	13%
Construction Labor/Materials	$34.0	$41.6	22%	$35.4	$43.5	23%
Electrical Interconn't & Deliverability	$9.5	$21.7	128%	$9.5	$10.9	15%
Gas Interconn't & Reinforcement	$5.3	$15.6	194%	$5.3	$15.6	194%
Startup/Training	$0.85	$2.0	135%	$0.85	$2.0	133%

Although the State Entities acknowledge that cost estimates are inherently uncertain, the dramatic increase in capital cost estimates from 2013 to 2016 is shocking, to say the least, and far exceeds the level of variation that reasonably would be expected to arise in cost estimates separated by three years. The DCR Report fails to explain this dramatic increase

in capital cost estimates. NYISO Staff accepts the estimates without addressing the dramatic increase. A full explanation is imperative to justify the cost estimates, and for stakeholders, NYISO Staff, and the NYISO Board to understand the data presented. The State Entities thus ask that the NYISO Board direct its Staff to explain the dramatic increases in estimated F Frame unit capital costs, which should be modified if necessary to reflect more reasonable estimates.

VI. DATA UNDERLYING THE RECOMMENDED DEMAND CURVE PARAMETERS SHOULD BE MODIFIED TO ACCOUNT FOR INCREASED ENERGY REVENUES FROM SHORTAGE PRICING

In 2014, the NYISO and stakeholders developed a comprehensive shortage pricing mechanism as part of the NYISO's Fuel Assurance Initiative. Cost impacts were examined during this stakeholder process. The NYISO estimated that the shortage pricing proposal, if implemented, would increase annual energy costs by approximately $221 million, but reduce capacity costs by an equivalent amount.[63] In its filing with FERC on the shortage pricing proposal, the NYISO stated that one benefit of the proposal would be to reduce the "missing money" covered by capacity payments.[64] Significantly, however, this offset would

[63] See, e.g., Market Issues Working Group, Consumer Impact Analysis: Comprehensive Shortage Pricing (October 30, 2014) at 5, 10-11 (MIWG Presentation).

[64] Docket ER15-1641, New York Independent System Operator, Inc., Tariff Filing (dated February 18, 2015) at 6.

be realized only if 56% of additional energy revenues are reflected in the Net Cost-Of-New-Entry (CONE) calculation.[65] The shortage pricing rules were implemented on November 1, 2015.

NYISO Staff and the Consultants did not act on this proposal by explicitly accounting for additional revenue increases attributable to increased revenue requirements and shortage pricing in the Net CONE calculation. The issue is not addressed in either the DCR Report or the NYISO Staff Recommendations. Instead, the Consultants dismissed the concern during the stakeholder process, stating that the existing "net EAS revenues model appropriately captures potential net EAS revenue...."[66]

If this omission is not corrected, customers would bear the full cost impact of shortage pricing, which was not intended, and the resulting capacity prices would be unjust and unreasonable. The DCR Report should address this proposal by explicitly accounting for additional revenue increases attributable to increased reserve requirements and shortage pricing in the Net CONE calculation.

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[65] Id. at 13.

[66] NYISO 2015/2016 ICAP Demand Curve Reset: Review of Stakeholder Comments and Anticipated Updates to Final Report, Analysis Group (dated August 10, 2016) at 6.

VII. NYISO STAFF SHOULD BE DIRECTED TO RECONSIDER ITS SELECTION OF PROXY PEAKING UNIT TECHNOLOGY

The NYISO Staff evaluated several generation technologies for selection as the proxy peaking unit. Responding to requests from the Concerned Stakeholders, NYISO Staff directed the Consultants to include the H Frame unit in this evaluation. NYISO Staff, however, concluded that the H Frame unit is not reasonably capable of being constructed because there currently are no units operating in simple cycle configuration.[67] For this reason, NYISO Staff directed the Consultants to report limited H Frame unit data for informational purposes only. This typically meant that the information reported for other generation technologies evaluated was more detailed and complete than that provided for the H Frame unit. Stakeholders repeatedly had to request that NYISO Staff and the Consultants fill in the data gaps for this technology so that it may serve as an option for selection as the proxy peaking unit, and evaluated on an equal footing with other generation technologies.

Performance and financial information reported for the H Frame unit indicates that it would be a viable option for selection as the proxy peaking unit. The Consultants estimated the following reference points (in $/kW-month) for the F Frame

[67] NYISO Staff Recommendations at 4.

and H Frame units, as well as the Wartsila 18V50DF (Wartsila) and GE LMS1000PA+ (LMS1000):[68]

		Zone C	Zone F	Zone G (Rockland)	Zone G (Dutchess)	Zone J	Zone K
Dual Fuel	H Frame	$9.91	$9.89	$13.52	$13.42	N/A	$21.42
	F Frame	$11.56	$11.22	$15.09	$14.84	$18.61	$12.72
	Wartsila	$20.94	$19.40	$25.65	$25.31	$32.31	$26.33
	LMS1000	$16.40	$15.05	$19.48	$19.30	$24.28	$19.07
Gas Only	H Frame	$8.55	$8.70	$12.24	$12.14	N/A	N/A
	F Frame	$10.72	$10.72	$14.30	$14.11	N/A	N/A
	Wartsila	$17.62	$16.73	$22.23	$21.97	N/A	N/A
	LMS1000	$15.73	$14.59	$19.11	$18.93	N/A	N/A

The Consultants' analysis indicated that selection of the H Frame unit would yield lower monthly reference points in each zone except Zone K, as compared to the F Frame unit and all other technologies examined. The H Frame unit also would yield the lowest Annual Reference Value (Net CONE; $/kW-yr) of all technologies examined:[69]

		Zone C	Zone F	Zone G (Rockland)	Zone G (Dutchess)	Zone J	Zone K
Dual Fuel	H Frame	$97.23	$96.47	$114.32	$112.60	N/A	$127.48
	F Frame	$116.60	$112.61	$136.39	$134.41	$153.85	$90.77
	Wartsila	$202.46	$187.58	$225.01	$222.09	$259.99	$188.02
	LMS1000	$171.88	$157.12	$185.37	$183.21	$210.85	$147.82
Gas Only	H Frame	$83.87	$84.83	$103.51	$101.84	N/A	N/A
	F Frame	$108.12	$107.58	$129.20	$127.76	N/A	N/A
	Wartsila	$169.27	$160.75	$192.37	$190.11	N/A	N/A
	LMS1000	$164.81	$152.28	$181.84	$179.72	N/A	N/A

[68] Data presented is from Tables 17 and 18 of the NYISO Staff Recommendations.

[69] Data presented is from Tables 17 and 18 of the NYISO Staff Recommendations.

The Consultants' analysis again indicated that the H Frame unit would yield the lowest Net CONE in all zones other than Zone K, as compared to all other technologies examined.

These data indicate that the H Frame unit would be competitive with other generation technologies considered for selection as the proxy peaking unit. NYISO Staff included financial and performance data for the H Frame unit on an information basis only, however, and did not consider it for this selection based on its conclusion that the H Frame unit would not be reasonably capable of being constructed.

A sufficient volume of information is available to conclude that the H Frame unit may be constructed and could be a viable proxy peaking unit technology. The H Frame unit is a cutting-edge, highly-efficient gas turbine that has been deployed successfully and is operating outside of the United States. Although the operating units are combined cycle, the operating success of the combined cycle H Frame units demonstrates the technical and economic viability of the less complicated simple cycle configuration. It also provides an adequate operations record to justify considering the H Frame as the proxy peaking unit.

Further evidence of this technology's viability is provided by current market trends. Within the United States, Exelon has ordered four H Frame turbines for its Texas projects

at Wolf Hollow and Colorado Bend, and operations should commence in 2017. NRG's Canal 3 project in Massachusetts recently cleared the ISO-NE forward capacity auction for 2019-2020, as acknowledged in the DCR Report. In addition, 23 H Frame units are on order and 78 H Frame units have been technically selected by customers around the world. These projects and orders demonstrate market confidence in the H Frame unit technology.

Importantly, the Services Tariff does not require a generation technology to have a minimum volume of operating hours before it may be selected as the proxy peaking unit for setting the ICAP Demand Curves. There is ample operating data and other indicia of reliability to support a finding that the H Frame unit reasonably could be constructed and represents a viable choice for the proxy peaking unit. Moreover, generation technologies that lack comprehensive operating history previously have been selected as viable technologies to serve as the proxy unit for ICAP Demand Curves (e.g., LMS100, 1x0 Siemens SCT6-5000F5 [F Frame] with SCR).

Based on the foregoing, the H Frame unit would yield the lowest Net CONE and reference point among all technologies examined, except in Zone K, and there is a sufficient basis for this technology to be deemed a viable option for selection as the proxy peaking unit. The NYISO Board, therefore, should direct the NYISO Staff to reconsider its selection of the proxy

peaking unit based on a dataset that includes the H Frame unit on an equal footing with all other technologies examined.

VIII. THE STATE ENTITIES REQUEST TIME TO ADDRESS THE NYISO BOARD AT ITS OCTOBER 17, 2016 MEETING

The State Entities respectfully request time to present certain of these positions to the NYISO Board at its October 17, 2016 meeting. The State Entities further request that they be accorded time independent of that provided to other parties, to ensure that the key positions of the State Entities are communicated to the NYISO Board.

The State Entities understand that the NYISO Board often divides parties into two groups based on whether the positions they advocate would increase or decrease the reference point of the ICAP Demand Curves. Although the State Entities largely agree with the positions advanced throughout this process by customer interests such as the City of New York and Multiple Intervenors, the State Entities have a unique position in this process as political subdivisions of New York State. Separate time is necessary to ensure that the State has a full opportunity to communicate its positions regarding proposed ICAP Demand Curve parameters to the NYISO Board.

CONCLUSION

For all the foregoing reasons, the State Entities respectfully urge the NYISO Board to address the NYISO Staff

recommendations on proposed ICAP Demand Curves for CY 2017/2018, and inputs for CY 2018/2019, 2019/2020, 2020/2021, as recommended herein. The State Entities also request time to address the NYISO Board at its October 17, 2016 meeting, and further request that the time allocated be incremental to the time accorded to other parties.

ATTACHMENT A

	Gas Only w/ SCR			$/kW-year
	2013-14	2014-15	2015-16	3 year average
Dutchess	$ 30.22	$ 17.06	$ 14.41	$ 20.56
Rockland	$ 30.17	$ 17.01	$ 14.29	$ 20.49

	Dual Fuel w/ SCR			$/kW-year
2013-14	2014-15	2015-16	3 year average	
$ 36.69	$ 17.58	$ 14.41	$ 22.89	
$ 36.64	$ 17.53	$ 14.29	$ 22.82	

Please do not hesitate to contact me with any questions.

Respectfully submitted,

/s/ S. Jay Goodman

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Attachment
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