Attachment I

NYISO Responses to Commission Staff's February 9 Letter

(Footnotes from the February 9 Letter Are Omitted)

Question 1a:

1. In your filing, you propose to determine a resource's Unforced Capacity (UCAP) as the product of its ICAP, its Capacity Accreditation Factor, and its performance or availability derating factor. You propose Tariff revisions that define Capacity Accreditation Factor as:

> The factors, set annually by the ISO in accordance with Section 5.12.14.3 and ISO Procedures, that reflect the marginal reliability contribution of the ICAP Suppliers within each Capacity Accreditation Resource Class toward meeting [New York State Reliability Council (NYSRC)] resource adequacy requirements for the upcoming Capability Year. Capacity Accreditation Factors for each Capacity Accreditation Resource Class will be determined by the ISO for Rest of State, G-J Locality (excluding Load Zone J), NYC Locality, and Long Island Locality, in accordance with Section 5.12.14.3 and ISO Procedures. Capacity Accreditation Factors are applicable to all Resources and/or Aggregations within each Capacity Accreditation Resource Class that has been established in accordance with ISO Procedures.

You also propose Tariff revisions that specify how Capacity Accreditation Factors will be reviewed and updated annually. Specifically, Proposed Services Tariff section 5.12.14.3 states:

> The annual review shall: (i) use the Installed Reserve Margin/Locational Minimum Installed Capacity Requirement study model that is approved by the NYSRC for the upcoming Capability Year as a starting database, (ii) be performed at the conditions that reflect the expected NYCA system that meets the resource adequacy criterion, (iii) develop Capacity Accreditation Factors for all Capacity Accreditation Resource Classes that reflect the marginal reliability contributions toward meeting NYSRC resource adequacy requirements, and (iv) be performed for Rest of

> State, G-J Locality (excluding Load Zone J), NYC Locality, and Long Island Locality to the extent there exists an ICAP Supplier or projected ICAP Supplier in the given Capacity Accreditation Resource Classes in the applicable location, as specified in ISO Procedures.

In your transmittal, you explain that "Capacity Accreditation Factors will be calculated using a system 'Effective Load Carrying Capability' ('ELCC') or equivalent methodology," and note that:

> During market design discussions with stakeholders, the [Market Monitoring Unit (MMU)] proposed a methodology referred to as Marginal Reliability Improvement ("MRI"). The NYISO intends to work with stakeholders during the 'Phase II' process … to compare the ELCC and MRI methodologies as it develops the tools to perform the annual review of Capacity Accreditation Factors.

a. Please define "marginal reliability contribution." In your answer, please provide citations, if applicable, to the relevant proposed tariff language that contains this definition.

<u>NYISO Response</u>:

"Marginal reliability contribution" is the measurement of the resource adequacy value of an incremental resource addition to (or removal from) a system, in this case the New York Control Area ("NYCA")[1] bulk transmission system.

The role of marginal reliability contributions under the NYISO Proposal, and the potential technique for determining Capacity Accreditation Factors, were extensively discussed in the stakeholder process that preceded the January 5 Filing. The record in this proceeding also demonstrates, contrary to what a few entities have wrongly claimed,[2] that the "marginal reliability contribution" concept is very well understood by NYISO stakeholders.

For example, the MMU Answer observed that "the economic concept of marginal value is well known and there is existing literature on how marginal capacity accreditation differs from other accreditation approaches . . . ."[3] The MMU also emphasized that marginal valuation

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[1] Capitalized terms that are not otherwise defined herein shall have the meaning specified in the NYISO's Market Administration and Control Area Services Tariff ("Services Tariff").

[2] *See Comments of Clean Energy* Advocates, Docket No. ER22-772-000 (Jan. 26, 2022) ("CEA") at 54-56.

[3] *Motion for Leave to Answer and Answer of the NYISO Market Monitoring* Unit, Docket No. ER22-772-000 (Feb. 11, 2022) ("MMU Answer") at 4.

concepts in general are universally understood because they are the basis of all competitive markets, including Commission-jurisdictional capacity markets.[4] The MMU Comments included an Appendix with clear illustrations of what marginal capacity value means. The MMU further emphasized that "[t]here is a large difference between NYISO's proposed marginal approach and alternatives such as retaining status quo rules or adopting an average accreditation approach. Even if specific capacity values are not yet known, ruling out these alternatives in favor of a marginal approach considerably reduces the range of likely outcomes for developers."[5]

Similarly, IPPNY's comments noted that "[m]arginal Capacity Accreditation would determine the reliability value of each resource type consistent with the structure of NYISO's markets. Marginal Capacity Accreditation measures the reliability value gained from adding a small amount more of a type of resource, call it Resource X, and designating the amount of capacity that could be sold by a resource based on that value. Using the methodology also produces the equivalent of measuring the effect of losing a small amount of that resource."[6]

Indeed, even parties to this proceeding that have asserted that the marginal reliability contribution concept should be detailed in the Services Tariff demonstrate a clear understanding of what marginal reliability contribution means in their filings.[7] The Commission itself is familiar with the core features of marginal capacity accreditation designs from its review of the

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[4] *See* MMU Answer at 13 ("In competitive markets, the debate between total/average value and marginal value never arises because competitive markets always value products at their marginal value.") ; *see also* MMU Answer at 14 ("Furthermore, the principle that payments to capacity suppliers should be differentiated based on marginal value is already applied on a locational basis. NYISO sets marginal capacity prices for its four capacity zones using its demand curves. All suppliers in a zone are paid the marginal price for each MW of UCAP. When a zone has a large amount of surplus capacity and the marginal value of capacity is low, suppliers receive low capacity payments even though the aggregate reliability benefit they provide is very high.")

[5] *Motion to Intervene and Comments of the NYISO Market Monitoring Unit*, Docket No. ER22-772-000 (Jan. 26, 2022) ("MMU Comments") at 15-16.

[6] *See Supporting Comments of the Independent Power Producers of New York, Inc.*, Exhibit 1: Affidavit of Mark D. Younger, Docket No. ER22-772-000 (Jan. 26, 2022) ("Younger Aff.") at P 9.

[7] *See, e.g.*, MMU Answer at 6 ("The economic concept of marginal value is well known and there is existing literature on how marginal capacity accreditation differs from other accreditation approaches, including studies cited by CEA."); *see also id*. at n. 6 ("For example, CEA includes appendices to studies by the consulting firms Astrape Consulting and Energy + Environmental Economics, both of which extensively discuss the concept of marginal ELCC as a particular methodology and include quantitative simulations of it.")

debate over the relative merits of marginal and adjusted class average accreditation methodologies in PJM[8] and from earlier proceedings that explored similar questions.[9]

The January 5 Filing also makes it clear how marginal reliability contributions will fit into the overall marginal capacity accreditation design. As the MMU noted, "NYISO's proposal specifies the key features of the marginal accreditation calculation. It will be performed every year, will be applied to all resource types, and will produce a separate set of accreditation factors for each of NYISO's four capacity zones. It will use the same resource adequacy model database that is used to establish the Installed Reserve Margin and Locational Capacity Requirements annually."[10]

Marginal reliability contribution determinations will be made using well-known and proven mechanisms that are already familiar parts of the NYISO's resource adequacy

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[8] *See, e.g., PJM Interconnection, L.L.C.*, 176 FERC ¶ 61,056 at P 37 (2021) ("As PJM notes, PJM and its stakeholders closely considered both the marginal and average ELCC approaches, but ultimately decided in favor of the average approach. While a marginal approach may also be designed in such a way that it is just and reasonable and not unduly discriminatory, that fact does not render PJM's proposed average approach unjust and unreasonable;"); *id*. Christie, Comm'r dissenting at P 9 ("Dr. Patton agrees with what is to me a fundamental point made by the PJM IMM: only a marginal valuation – not average – will accurately produce capacity accreditations for compensation and will deliver the reliability value relied upon by the RTO."); *id.* Danly, Comm'r, concurring at P 1 ("Commissioner Christie may well be—in fact, probably is—correct that a marginal approach to allocating capacity to individual resources would be preferable to PJM's proposed resource-class based averaging mechanism."); *See also PJM Interconnection, L.L.C.*, 175 FERC ¶ 61,084 (2021) at PP 35, 54-55 (describing the independent market monitor's arguments supporting a marginal capacity accreditation methodology over a class average based approach.).

[9] For example, the characteristics and benefits of marginal capacity accreditation design were discussed at length in a technical conference. *See, e.g., PJM Interconnection, L.L.C.*, 176 FERC ¶ 61,056, Christie, Comm'r dissenting at n.12, citing *Transcript Technical May 25, 2021 Conference regarding Resource Adequacy in the Evolving Electricity Sector* (AD21-10-000), Tr. 170:1-9 ("I will say one thing though that's *very important is that for all technology types we have to accredit them based on their marginal value, their marginal contribution to reliability* even though like for a lot of resources that we're talking about here their value goes down as the penetration increases, but *the market can't perform efficiently unless we recognize what the next megawatt is going to give you in terms of reliability*.") (emphasis added) (Patton); *id*. at 181:15-21 ("So this is the same sort of marginal versus average issue that arises in a lot of areas going all the way back to should locational marginal prices be marginal. Should they reflect the value of the next increment of energy. *All well-functioning markets are priced and compensate participants based on the marginal value they provide*.") (emphasis added) (Patton); *id*. at 144:1-6 (If the objective of the market is to provide reliability, then the quantification of the amount of capacity that resources can sell *has to reflect the marginal reliability value of those resources*, and in all of these markets we over accredit certain resource types.") (emphasis added) (Patton). Moreover, Dr. Patton made clear that marginal valuations can be made. In response to a question of whether "it's feasible to design the ELCC based on marginal values, or is it just too hard to do" Dr. Patton stated "*I think it's definitely possible. . . . in fact I think you can simulate for what different levels of penetration would give you." Id.* at 182:21-25 (emphasis added).

[10] MMU Answer at 6.

processes.[11] The industry standard for measuring resource adequacy value is through probabilistic reliability modeling and utilizes reliability metrics based on Loss of Load Probability ("LOLP"). LOLP is the probability of system daily peak or hourly demand exceeding the available resource capacity during a given period. Other resource adequacy measures, such as Loss of Load Hours ("LOLH") and Loss of Load Expectation ("LOLE") are also based on LOLP. LOLH is the sum of all hourly LOLPs in a year and represented in terms of hours per year. LOLE is the sum of daily max LOLPs in a year and represented in terms of days per year, however, this metric is usually represented in terms of the 1-day-in-10-year standard.

Various reliability metrics could be utilized to calculate resource adequacy values, and research indicates that resource adequacy value in most cases is comparable regardless of which reliability metric is chosen.[12] As the MMU Answer stated, "[w]hile there are multiple techniques for quantifying the marginal reliability value of different types of units, the specific details would be beyond what would ordinarily or reasonably be included in a tariff."[13]

For the purposes of determining marginal reliability contributions in the NYCA system, the NYISO proposes to focus on the incremental changes in LOLE resulting from the addition of (or removal from) the NYCA system of small resource increments. The NYISO will work with stakeholders to explore alternative reliability metrics (*e.g.*, LOLH) to measure marginal reliability contributions as requested. The NYISO also plans to utilize General Electric's Multi-Area Reliability Simulation ("GE MARS") tool to perform the probabilistic reliability modeling necessary to compute marginal reliability contributions. The New York State Reliability Council ("NYSRC") and NYISO use the GE MARS[14] to establish the Installed Reserve Margin ("IRM") and Locational Minimum Installed Capacity Requirements ("LCRs"), which are key components of the ICAP Demand Curves. By utilizing GE MARS and the same model base case used for determining the IRM and LCRs, the NYISO will ensure capacity accreditation is in alignment with how resources contribute to reliability as modeled in the IRM and LCR setting process.

Consistent with the Commission's "rule of reason policy," which is discussed further in the NYISO's response to Question 1f below, the NYISO did not include a definition of "marginal reliability contribution" in its proposed tariff revisions. The term need not be included

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[11] *See infra* NYISO Response to Question 2a.

[12] E. Ibanez and M. Milligan, "Comparing Resource Adequacy Metrics," Preprint at 6, Prepared for the 13th International Workshop on Large-Scale Integration of Wind Power into Power Systems as Well as on Transmission Networks for Offshore Wind Power Plants, November 11–13, 2014, Berlin, Germany; NREL/CP-5D00-62847. https://www.nrel.gov/docs/fy14osti/62847.pdf.

[13] MMU Answer at 4.

[14] The GE MARS engine is a proven and well known tool for accurately assessing "the ability of a power system, comprised of a number of interconnected areas, to adequately satisfy customer load requirements. Based on a full sequential Monte Carlo simulation, GE MARS performs a chronological hourly simulation of the system, comparing the hourly load demand in each area to the total available generation in the area, which has been adjusted to account for planned maintenance and randomly occurring forced outages. Areas with excess capacity will provide emergency assistance to deficient areas, subject to transfer limits between the areas." *See* https://www.geenergyconsulting.com/practice-area/software-products/mars.

in the Services Tariff because the core concept is broadly understood, the related implementation techniques are not reasonably susceptible to specification, and to the extent that they could be specified, including them in the tariff would unreasonably limit the NYISO's flexibility in implementing a marginal capacity accreditation design. As the MMU has said, "NYISO's proposal provides sufficient information for stakeholders to anticipate its likely impacts on different classes of resources."[15]

Question 1b:

b. Please explain in detail how NYISO would calculate the marginal reliability contribution of a Capacity Accreditation Resource Class using a "system [ELCC] methodology."

NYISO Response:

The NYISO is considering using Effective Load Carrying Capacity ("ELCC") as an accreditation technique for determining marginal capacity accreditation values. This is a different approach than the Commission has accepted for PJM where an "adjusted class average" accreditation construct is used for variable, limited duration, and "combination" resources.[16] PJM must determine which average to calculate since there can be many variations on determining an average, how to calculate it, and then make various other adjustments. The NYISO's use of an ELCC technique under a marginal accreditation design, unlike a class average methodology, would not involve any additional calculations or steps to determine the Capacity Accreditation Factor for each Capacity Accreditation Resource Class.

In fact, basing accreditation on the marginal reliability contribution of a resource class based on a known system is unambiguous and should produce similar or the same results regardless of the technique or methodology used. This is unlike the many potential variations of determining an average accreditation, which could include averaging across resource types, time, or some other construct each of which could lead to substantially different results. As discussed below, the NYISO's prompt capacity market construct, where all resources participating in the capacity market are, with rare exception, already existing and interconnected at the time of auction and therefore represented in the reliability model used to determine accreditation, means that NYISO's accreditation analysis will be performed on a known system.

ELCC calculations are a standard, decades-old, industry technique for measuring resource adequacy values. The ELCC of a resource or resource group is traditionally defined as the incremental load a system can support with the addition of a resource while maintaining the

[15] MMU Answer at 4.

[16] *See, e.g.*, *PJM Interconnection, L.L.C.*, 175 FERC ¶ 61,084 (2021) at P 5 (describing PJM ELCC construct). By contrast, NYISO's marginal capacity accreditation design would apply to all resources.

same reliability metric (*e.g.*, LOLH, or LOLE).[17] However, an ELCC can also be calculated in terms of the equivalent "perfect capacity" of a resource.[18] "Perfect capacity" is generally understood for ELCC purposes as capacity that is dispatchable and always available for whatever duration a reliability event requires.

Using a system ELCC technique, the NYISO would add an incremental unit of a Capacity Accreditation Resource Class to the final LCR database in a given capacity location and record the NYCA LOLE. Through an iterative process requiring numerous GE MARS reliability model runs, the NYISO would then remove perfect capacity in the same location until the system returns to the starting LOLE of the LCR database. This technique would be repeated for each Capacity Accreditation Resource Class and each capacity location, to the extent there exists an ICAP Supplier or projected ICAP Supplier in the given Capacity Accreditation Resource Classes in the applicable location.

The marginal reliability contribution is the direct output of the ELCC technique, as described above. More specifically, the Capacity Accreditation Factor would be calculated as the ratio of the MW size of perfect capacity removed to the MW size of the incremental unit added. Similarly, if an ELCC is calculated as the incremental load that can be supported by the system with the addition of the incremental unit, the Capacity Accreditation Factor would be the ratio of incremental load in MWs to incremental unit size in MWs. Because the incremental unit cannot be more reliable than perfect capacity of the same size or support more incremental load than the unit's total capacity, the ELCC technique will produce a value less than or equal to 100 percent.

<u>Question 1c</u>:

c. Please explain in detail how NYISO would calculate the marginal reliability contribution of a Capacity Accreditation Resource Class using the MMU's MRI methodology. In your answer, please highlight any differences between this methodology and the system ELCC methodology described above.

<u>NYISO Response</u>:

The Marginal Reliability Improvement ("MRI") technique was recommended by the MMU as an alternative to ELCC for evaluating marginal reliability contributions that is expected to be less computationally complex and time consuming. They are fundamentally similar

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[17] L. L. Garver, "Effective load carrying capability of generating units," IEEE Trans. Power App. Syst., vol. PAS-85, no. 8, at. 910–919, Aug. 1966; A.Keane et al., "Capacity value of wind power," IEEE Trans. Power Syst., vol. 26, no. 2, at. 564–572, May 2011; S.Madaeni, R. Sioshansi, and P. Denholm, "Comparisons of capacity value methods for photovoltaics in the Western United States," Nat. Renewable Energy Lab., Golden, CO, USA, Tech. Rep. NREL/TP-6A20-54704, Jul. 2012.

[18] NERC, Methods to Model and Calculate Capacity Contributions of Variable Generation for Resource Adequacy Planning, March 2011.; Perez, R., R. Margolis, M. Kmiecik, M. Schwab, and M. Perez (2006). "Update: Effective Load-Carrying Capability of Photovoltaics in the United States." National Renewable Energy Laboratory. June. http://www.nrel.gov/docs/fy06osti/40068.pdf.

applications of the same method for determining the marginal reliability contributions of resource classes. The MMU described ELCC and MRI as "simply alternative techniques to quantify the same marginal contribution to system reliability."[19] As discussed below, the principal advantage of the MRI technique is that it is a simplified approach that may be a better fit than the ELCC technique within the NYISO's compressed time window for determining annually Capacity Accreditation Factors for all classes of resources just prior to the Capability Year.

Using the MMU's MRI technique, the NYISO would add an incremental unit of a Capacity Accreditation Resource Class to the final LCR database, with a starting LOLE of $LOLE_i$, and record the resulting LOLE ($LOLE_m$). The incremental unit would be removed and replaced with a perfect capacity unit of the same size in the same location. The resulting LOLE would be recorded ($LOLE_p$). The marginal reliability contribution would be calculated as:

$$\frac{LOLE_i - LOLE_m}{LOLE_i - LOLE_p}$$

Because the system with the incremental resource cannot be more reliable than the system with a perfect capacity resource of the same size, the MRI technique will produce a value less than or equal to 100 percent.

The difference between executing the MRI technique and ELCC technique is in the number of GE MARS reliability model runs needed to calculate the final metric. The ELCC technique iterates through numerous runs to arrive at the perfect capacity size that results in a LOLE equal to the resulting LOLE from the addition of the incremental unit. The MRI technique only requires two runs of the reliability model, one with the incremental unit and one with the perfect capacity unit. Therefore, the MRI technique may be a more efficient process to arrive at the marginal reliability contribution of Capacity Accreditation Resource Classes. However, results of the MRI technique have yet to be compared to the ELCC technique. The NYISO would only adopt the MRI technique if it is shown to produce Capacity Accreditation Factors that are consistently comparable to the Capacity Accreditation Factor results of the ELCC technique.

Question 1d:

d. Please identify any additional "equivalent" methodologies NYISO is currently considering. Please explain in detail how NYISO would calculate the marginal reliability contribution of a Capacity Accreditation Resource Class using any of these equivalent methodologies. In your answer, please highlight any differences among these additional equivalent methodologies, the MMU's MRI methodology, and the system ELCC methodology described above.

[19] MMU Answer at 4.

NYISO Response:

The NYISO is unaware of any other "equivalent" techniques and is currently only considering ELCC and MRI techniques. The January 5 Filing contained a single sentence suggesting that the Capacity Accreditation Factors would "be calculated using a system 'Effective Load Carrying Capability' ('ELCC') or equivalent methodology."[20] It is clear from the context of the filing letter that the only "equivalent methodology" contemplated was the MRI technique.[21] As discussed above, notwithstanding the description used in the January 5 Filing, ELCC and MRI are ultimately just different techniques for effectuating a marginal capacity accreditation design and not distinct methodologies.

Question 1e:

e. Please explain the extent to which the selection of one of the methodologies discussed above would affect the measured marginal reliability contribution of Capacity Accreditation Resource Classes. What factors is NYISO considering during Phase II to evaluate and select one of the methodologies described above?

NYISO Response:

The selection of either the ELCC or MRI technique will be made as part of the Phase II process and will not affect the marginal reliability contribution of Capacity Accreditation Resource Classes. The marginal reliability contribution will be measured as the change in reliability metric of a system due to a small incremental resource addition to (or removal from) a system regardless of which technique is employed to translate the marginal reliability contribution into a Capacity Accreditation Factor. The ELCC technique is the benchmark for translating marginal reliability contribution into a percentage-based capacity value. As noted above, the MRI technique would only be selected if it is shown to produce consistently comparable results to the ELCC technique.

Question 1f:

f. In your transmittal letter, you explain that Phase 2 of NYISO's marginal capacity accreditation design "will involve the development of non-tariff implementation details and related procedures." You further state that "[i]t is consistent with the Commission's 'rule of reason' policy for the additional implementation details and technical specifications to be developed in Phase 2 to be added to the NYISO manuals and ISO Procedures instead of the tariff." Please provide additional support for your contention that the methodology associated with the calculation of the marginal reliability contribution of Capacity Accreditation Resource

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[20] *See* January 5 Filing at 34.

[21] *See* id. at n. 109 ("During market design discussions with stakeholders, the MMU proposed a methodology referred to as Marginal Reliability Improvement ('MRI'). The NYISO intends to work with stakeholders during the 'Phase II' process described in Section VII below to compare the ELCC and MRI methodologies as it develops the tools to perform the annual review of Capacity Accreditation Factors.").

> Classes — and the associated Capacity Accreditation Factors — is an implementation detail that is not required to be part of the filed rate.

<u>NYISO Response</u>:

The NYISO respectfully submits that the specific procedures and rules it will follow to calculate the marginal reliability contribution of Capacity Accreditation Resource Classes — and the associated Capacity Accreditation Factors — are implementation details that are not required to be part of the filed rate. The NYISO Proposal emulates other NYISO tariff provisions that describe major market design provisions at a high level and leave technical details outside of the Services Tariff. For example, the Services Tariff specifies that the NYISO will use its Security Constrained Unit Commitment and Real-Time Scheduling software to minimize as-bid production costs. But the details of the mathematical and software techniques employed to do so, *e.g.*, the use of the Mixed Integer Programming method to perform the optimization, is appropriately not addressed by the Services Tariff. The mathematical details of ELCC and MRI techniques are comparably technical and detailed and likewise do not belong in the Services Tariff.

As demonstrated below, the distinctions that the NYISO Proposal has drawn between what is and is not included in the Services Tariff are consistent with prior proposals accepted by the Commission, including cases that involved disputes over the Commission's rule of reason. The NYISO's proposed tariff provisions provide sufficient notice of the manner in which the NYISO will calculate these values and satisfies the statutory requirement of FPA Section 205. The methodology for calculating marginal reliability contributions will use a probabilistic reliability modeling approach that is generally well understood by Market Participants. An effective implementation of such a modeling approach requires that the NYISO be given sufficient flexibility to reflect evolving market characteristics in its calculations – a degree of flexibility that the Commission has repeatedly granted to other ISOs/RTOs under the rule of reason. Thus, the modeling technique used to calculate reliability contribution is the type of "implementation detail" that the Commission has not required to be included in filed tariffs, and that the Commission has routinely allowed ISOs and RTOs to include in their manuals.

The rule of reason is based on the D.C. Circuit's holding in *City of Cleveland v. FERC*,[22] that "there is an infinitude of practices affecting rates and service" that are potentially subject to the section 205(c) filing requirement, and that Section 205(c) therefore "must reasonably be read to require the recitation of only those practices that affect rates and service *significantly*, that are realistically susceptible of specification, and that are not so generally understood in any contractual arrangement as to render recitation superfluous."[23] The Commission's implementation of the rule of reason seek "balances the 'real benefits' of notice and full disclosure against any potential burden to the public utility of filing terms that do not

[22] 773 F.2d 1368 (D.C. Cir. 1985).

[23] *City of Cleveland*, 773 F.2d at 1376 (emphasis added).

[substantially] affect rates and services."[24] In conducting this balancing analysis, the Commission has emphasized repeatedly, particularly in the context of Independent System Operators and Regional Transmission Organizations managing complex processes, that "it is not 'appropriate to deprive utilities of the flexibility to manage their operations by introducing delay and layered decision-making.'"[25]

For these reasons, "it is not necessary for every detail to be included in the tariff, particularly those details that the [ISO/RTO] may need to change frequently . . . ."[26] The "Commission has long understood that 'study assumptions and parameters are likely to change over time as planners gain experience in implementing the new planning procedures. Thus, rigid specifications or formulas set out in the Tariff would likely lead to less reliable assessments due to the inability of planners to adapt to changing circumstances.'"[27] Accordingly, technical specifications and other "implementation details need not be included in the tariff."[28] What matters is that tariffs contain enough specificity to give reasonable notice of the core features of the rules and procedures they establish.

The January 5 Filing's approach in this proceeding is consistent with various earlier rulings on ISO/RTO tariffs. For example, in 2018, the NYISO filed proposed revisions to the methodology used to determine LCRs for LSEs in each Locality in the NYCA. LCRs reflect the fact that certain areas of the NYCA are transmission-constrained, and represent the minimum amount of capacity resources acquired by an LSE that must be electrically located within the Locality where the applicable load is located. The NYISO's Alternative LCR Methodology was intended to replace the then-existing methodology, which had been developed prior to the establishment of the NYISO, and which did not address the fact that certain Localities are nested within other Localities in the NYCA.

The Alternative LCR Methodology uses an economic optimization algorithm to determine the optimal LCR level for each Locality, while keeping prices as low as possible. The tariff revisions filed by the NYISO stated that LCRs would be calculated in accordance with the NYISO business practice manuals, while following a set of higher level parameters set forth in the tariff. These parameters, as defined by the NYISO's proposed addition to Section 5.11.4 of the Services Tariff, were: (1) "to minimize the total cost of capacity at the prescribed level of excess"; (2) "to maintain the loss of load expectation of no more than 0.1 days per year"; and (3) calculation of LCRs "so that the transmission security limits determined by the ISO in accordance with this paragraph and ISO Procedures, are respected." The NYISO subsequently provided additional detail in response to a Commission staff letter seeking more information on

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[24] *ISO New England, Inc.*, 154 FERC ¶ 61,008, at P 32 (2016) (citing *Midwest Indep. Sys. Operator, Inc.*, 152 FERC ¶ 61,073, at P 22 (2015) (quoting *PacifiCorp*, 127 FERC ¶ 61,144, at P 11 (2009))).

[25] *Id.* (quoting *PacifiCorp*, 127 FERC ¶ 61,144 at P 11 (citing *Town of Easton, Maryland v. Delmarva Power & Light Co.*, 24 FERC ¶ 61,251 at 61,531 (1983)).

[26] *Cal. Ind. Sys. Operator, Inc.*, 123 FERC ¶ 61,283 at P 85 (2008).

[27] *PJM Interconnection, L.L.C.*, 175 FERC ¶ 61,084 at P 65 (2021).

[28] *Hecate Energy Greene County 3 LLC v. N.Y. Ind. Sys. Operator, Inc.*, 177 FERC ¶ 61,121 at P 46 (2021).

how the optimization would be conducted, as well as on its arrangements for the development of the software changes necessary to implement the new algorithm.

The Commission rejected "arguments that NYISO improperly omit[ted] material elements regarding the Alternative LCR Methodology from the Services Tariff."[29] The Commission stated that it found "NYISO's Services Tariff revisions to be consistent with the Commission's 'rule of reason.'"[30]

Similarly, in *PJM Interconnection, L.L.C.*,[31] PJM proposed tariff language to modify the calculation of the energy and ancillary services revenue offset to be used in the PJM Reliability Pricing Model capacity market. PJM's proposal set forth a mechanism under which the offset would be calculated by estimating "forward-looking electricity and fuel prices at liquid trading hubs for the subject delivery year."[32] Although the tariff language described generally how PJM would calculate the offset, it left out certain details, including the identification of the trading hubs that would be used for the calculations. Echoing some of the claims raised in this proceeding regarding the calculation of the marginal reliability contribution, PJM's Independent Market Monitor challenged PJM's proposal on the ground that "it would not be possible to calculate the forward capacity prices based on the Tariff language."[33] In support of this argument, the IMM noted that the tariff proposal did not identify the relevant hubs or provide other "hub-related details."[34] Instead, PJM proposed to include those specifications in its manuals.

Rejecting the PJM IMM's argument, the Commission stated that PJM's responsibility was "to describe adequately the methodology for calculating the forward-looking [energy and ancillary services offset] in the Tariff" but that "[t]his need not include every implementation detail to be just and reasonable."[35] Citing to the precedent referenced above that "study assumptions and parameters are likely to change over time as planners gain experience in implementing the new planning procedures" and that "rigid specifications or formulas set out in the Tariff would likely lead to less reliable assessments due to the inability of planners to adapt to changing circumstances," FERC concluded that because "details such as the liquidity of electricity hubs may change over time, it is reasonable for PJM to specify such details in PJM Manuals."[36]

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[29] *New York Independent System Operator, Inc.*, 165 FERC ¶ 61,011 at P 53 (2018).

[30] *Id.*

[31] 173 FERC ¶ 61,134 (2020).

[32] 173 FERC ¶ 61,134 at P 89.

[33] *Id.* at P 159.

[34] *Id.*

[35] *Id.*

[36] *Id.* (citing *Sw. Power Pool, Inc.*, 136 FERC ¶ 61,050 at P 37).

In *ISO New England Inc.*,[37] the ISO New England ("ISO-NE") tariff contained general language requiring ISO-NE to calculate annually an Installed Capacity Requirement ("ICR"), but did not detail how the ICR was to be computed. ISO-NE subsequently developed a more detailed methodology – to calculate the ICR but did not file that methodology with the Commission. ISO-NE subsequently incorporated forecasts of the effects of distributed solar generators on load requirements into the calculation. Several suppliers protested this change, arguing that ISO-NE should have made a Section 205 filing to authorize that methodology in advance. The Commission rejected these arguments, emphasizing that it had "not previously required tariff revisions under section 205 each time ISO-NE revised the methodology used to calculate the ICR, and the existing tariff provisions recognize that those revisions may require ISO-NE to have sufficient flexibility to update its assumptions as necessary."[38] Thus, the Commission held that the assumptions and methodology used by ISO-NE to calculate its ICR need not be reflected in the ISO New England tariff.

The NYISO's proposed capacity marginal accreditation design revisions are similar to the tariff provisions in these earlier rule of reason cases. The proposed tariff language provides sufficient advance notice to Market Participants of how the NYISO will accredit capacity resources. The proposal is based "on the well-known economic concept of marginal value and specifies the major parameters of its calculation, including the reliability model database and starting point from which marginal values will be derived."[39] As noted above, the "economic concept of marginal value is well known and there is existing literature on how marginal capacity accreditation differs from other accreditation approaches, ..."[40]

In addition to providing sufficient notice to market participants regarding the manner in which the marginal reliability contribution will be calculated, the NYISO's proposed tariff language is appropriate because it provides the NYISO with necessary flexibility to account for evolving market conditions in the calculation of marginal reliability contributions. Indeed, as a result of these changes in the market, the "[m]arginal capacity value may change from year to year and is not locked in for a project's life."[41] To function as intended under the NYISO's proposal, the marginal reliability contribution will have to change from year-to-year as resources exit and enter the market. As in the cases cited above, it will be imperative that the NYISO have the flexibility to adjust its marginal reliability contribution calculations for each Capacity Accreditation Resource Class in a manner that reflects changes in the supply mix. Thus, it is entirely appropriate that the proposed tariff language not be overly-prescriptive, and that it allow the NYISO reasonable flexibility.

The remaining implementation details and technical specifications do not need to be included in the tariff. As the MMU has stated, it is "common practice for such details" to remain outside of the tariff. "For example, the NYISO Tariff requires the use of a least-cost

[37] 154 FERC ¶ 61,008 (2016).

[38] 154 FERC ¶ 61,008 at P 31.

[39] MMU Answer at 2.

[40] *Id.* at 4.

[41] *Id.* at 11.

optimization to clear the real-time market, but it is silent about the specific methodology or techniques NYISO is to employ."[42] The MMU could "find no compelling practical reason" to require NYISO to document marginal accreditation details in its tariff as long as the techniques employed "accurately capture the marginal contribution of each resource to reliability."[43]

<u>Question 2a</u>:

2. In your filing, you propose to "use the Installed Reserve Margin/Locational Minimum Installed Capacity Requirement study model that is approved by the NYSRC for the upcoming Capability Year as a starting database" for the "marginal reliability contribution" calculations.

    a. Please explain to what extent the resource mix reflected in the NYSRC-approved model reflects the mix of ICAP Suppliers that clear in the NYISO capacity auction.

<u>NYISO Response</u>:

The NYSRC IRM process is a year-long stakeholder vetted process that is designed to study the expected resource mix of ICAP Suppliers that will be in the ICAP Market in the upcoming Capability Year. As a result, the qualifying[44] resource mix reflected in the NYSRC-approved model very closely reflects the mix of ICAP Suppliers that ultimately clear in the NYISO capacity auction. As illustrated below, in recent years the resource mixes that are utilized in the IRM study models and that receive capacity supply obligations have been nearly identical.

The NYISO does not control the NYSRC process, but it plays a significant role in its execution during the year-long development of the IRM model and base case. The NYISO works closely with the NYSRC to develop the GE MARS model and database used by the NYSRC each year in setting the IRM. The NYISO identifies and recommends modeling enhancements as needed. The recommendations are vetted and evaluated through the NYSRC's stakeholder process. The NYISO's experience demonstrates that the NYSRC base case inclusion rules and modeling of scenarios result in an IRM model that ensures that the qualifying

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[42] "The NYISO respectfully submits that the Commission's prior statements that the rule of reason would "likely require" PJM to file its ELCC classes and that those classes likely were reasonably susceptible to specification should not be construed to require the NYISO to file more detailed tariff language concerning Capacity Accreditation Resource Classes. *See PJM Interconnection, L.L.C.*, 175 FERC ¶ 61,084 at P 66 (2021). The NYISO will explain in its answer in this proceeding that the NYISO;s and PJM's approaches to accreditation are distinguishable in significant ways."

[43] *Id.* at 5.

[44] Qualifying resources that are included in the IRM model are those that are in-service or are expected to be in-service for the upcoming Summer Capability Period, and that have obtained Capacity Resource Interconnection Service. The model also includes the level of Special Case Resources based upon the prior July enrollment levels.

resource mix used to set the IRM matches the resources actually providing Installed Capacity in the upcoming Capability Year.

Every year, the NYISO performs the resource adequacy study to determine the IRM for the upcoming Capability Year, following the procedure set out in the NYSRC policy No. 5–15 ("Policy 5").[45] When the IRM is set by the NYSRC,[46] the NYISO then uses the IRM study model to perform the study to determine the Locational Capacity Requirement for Zone J, Zone G-J, and Zone K, with the approved IRM. The LCR report is presented to the NYISO's Operating Committee for action. The IRM that is established by the NYSRC and accepted by the Commission and the LCRs are then converted into the capacity requirements of the NYCA and each of the Localities for the associated Capability Year.

The IRM study model includes all generating units that are expected to participate in the capacity auction for the study Capability Year. According to the NYSRC Policy 5, the IRM model is required to include "all NYCA generating units, including new and planned units, as well as units that are physically outside New York State. The IRM study base case will be updated for generating unit additions and removals consistent with the current Load and Capacity Data Report ("Gold Book")". Policy 5 also requires NYISO to "identify the generating units that are eligible to participate in the NYISO's ICAP market and recommend to the NYSRC the inclusion or removal of such units in the IRM base case". (Section 3.5.2). Due to the time lag between the completion of the IRM and the timing of capacity auction, it is possible that the IRM model may include new generating units that are not able to participate in the capacity auction, or vice versa. However, such scenarios are rare, would be likely to involve only a small number of units, and would typically involve transitional discrepancies that would last for a few months, not an entire year. The discrepancy units will then be "trued up" during the next IRM study cycle, where the process of developing the base case model repeats. In general, the IRM model closely reflects the mix of ICAP Suppliers that are participating in the NYISO capacity auction.

When ICAP Suppliers participate in the NYISO auction, they are not guaranteed to clear. However, due to the prompt auction structure of the NYISO's ICAP Spot Market Auctions, virtually all resources that bid into the auctions are in-service resources and have no incentive to submit price-sensitive bids. For this reason, almost all resources that bid into the NYISO's ICAP Spot Market Auction act as price takers and clear the auction.[47] Therefore, while it is possible

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[45] The NYISO and the NYSRC commence work on the resource adequacy study each January over fourteen months prior to the beginning of a future Capability Year. The NYISO and NYSRC collaborate through the NYSRC's Installed Capacity Subcommittee to develop a preliminary base case and conduct multiple scenario and sensitivity analyses prior to the NYSRC's selection of the final base case in September and October and final IRM value in December.

[46] The IRM process is usually completed with NYSRC approval in December. The NYSRC then submits the IRM value to both the Commission and the NYPSC. After both regulators accept the IRM, the new values are then applied for the Capability Year that starts on the following May 1.

[47] *See* MMU Comments at n. 15 (Noting that the MMU had assumed in an example "that suppliers in NYISO act as price takers in the capacity market. This is consistent with behavior of the vast majority of NYISO market participants historically. Because NYISO operates its capacity market on a prompt basis for the following month – much shorter than the lead time to develop or retire a unit – most

that the ICAP Suppliers that clear the NYISO capacity auction may be a subset of the generators modeled in the NYSRC-approved IRM study, in most cases the supply mix of ICAP Suppliers that clear the auction closely resemble the supply mix in the NYSRC-approved IRM model. The NYISO understands that in other regions that employ forward capacity auctions price sensitive bidding is more common and there might therefore be a more significant discrepancy between resources that participate in the auction and those that are selected in it.

Historical data from the last three Capability Years confirms the nearly exact alignment of the resource mixes utilized in the IRM study models and that receive capacity supply obligations. As shown below 98.8% or more of the ICAP MW from internal generation and demand response resources assumed in the final IRM model for a Capability Year have received capacity supply obligations in July of their respective Capability Year. July is the ideal month of comparison because: (i) the total NYCA ICAP Requirement for each Capability Year is the forecasted peak demand for the Capability Year plus the IRM; and (ii) the annual NYCA peak demand has occurred in the month of July for 7 out of the last 10 years.[48]

Capability Year	ICAP MW in IRM Model	July ICAP MW Obligations	Alignment[i]
2019	40,185	40,030	99.6%
2020	39,316	39,237	99.8%
2021	38,493	38,050	98.8%

In the preceding table, the "ICAP MW in IRM Model" column includes the total ICAP from internal generation and demand response resources assumed in the final IRM base case for each Capability Year. The "July ICAP MW Obligation" column is the total MW of internal generation and demand response resources that received an ICAP Obligation for the month of July in each Capability Year. The "Alignment" column is the ratio of the total July ICAP MW Obligations of internal generation and demand response resources to the total ICAP MW from internal generation and demand response resources included in the IRM base case.

<u>Question 2b</u>:

b. Are there any resources included in NYSRC's model that do not participate in the NYISO capacity market?

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suppliers have no incentive to submit price-sensitive bids. This is different from the forward capacity markets used in PJM and ISO-NE where the use of price-sensitive bidding is widespread.").

[48] See Table I-15 of the NYISO's "2021 Load & Capacity Data Report" available at: https://www.nyiso.com/documents/20142/2226333/2021-Gold-Book-Final-Public.pdf/b08606d7-db88-c04b-b260-ab35c300ed64.

<u>NYISO Response</u>:

As noted in the previous response, the NYSRC-approved model includes the eligible qualifying resources that are expected to be in-service for the Summer Capability Period and possess Capacity Resource Interconnection Service ("CRIS"). Energy only resources are not included in the model. There is a short time lag between the completion of the study in December and the timing of the first capacity auctions held for May. Therefore, unlike a forward capacity market, the NYISO market provides a very brief window for any unexpected developments in the generator mix to occur. The NYSRC process, however, recognizes that there is still some possibility of such changes occurring and mitigates this risk by allowing for modifications to the IRM base case during this brief window if there is a change in the resource mix assumptions that would have a material impact on the IRM and system reliability.

Consequently, while it is possible that the NYSRC-approved IRM model could include a new generating unit or other resource that was expected to participate in the capacity auctions but is that is ultimately unable, or that chose not, to do so, this would be a rare occurrence and will ordinarily only implicate a small number of megawatts with a negligible impact on the model results. Any such discrepancies between expected and actual participation will then quickly be "trued up" during the next IRM study cycle, where the process of developing the base case model is repeated. The Services Tariff works to ensure alignment between the market and IRM process by requiring certain resources to make elections by August 1 preceding the upcoming Capability Year. For example, duration limited resources must elect to participate as either a 2-hour, 4-hour, 6-hour, or 8-hour resource. Finally, the NYISO has a robust and transparent generator deactivation process that provides notice of the timing of potential generator deactivations that are then taken into account during IRM base case development.

<u>Question 2c</u>:

c. If a resource does not clear a NYISO capacity auction, will it be included in the NYSRC-approved model?

<u>NYISO Response</u>:

As noted above in the previous response, the NYSRC-approved model includes all generating units that are expected to participate in the capacity auction for the study Capability Year. The purpose of the IRM study is to identify the NYCA Installed Capacity Requirements for the study Capability Year, and therefore the model is not expected to capture market outcomes. If a resource is expected to participate in the NYISO capacity auction, it will be included in the NYSRC-approved IRM model, regardless of whether it clears the auction. Because the NYISO does not conduct forward capacity auctions it does not face the issue of new projects clearing the market that may actually not be coming into service or otherwise be bought out of their future ICAP obligation.

As also noted above, discrepancies between resources included in the base reliability models and clearing in the auction may be a significant issue in other regions but are not in the NYISO, due to the prompt auction structure of the NYISO's ICAP Spot Market Auctions.

Additionally, the design of the NYISO's prompt ICAP auction regime is based on existing resources and generally does not rely on planned resources. Qualifying resources that do not participate in the ICAP Market risk losing their CRIS and may be in an ICAP Ineligible Forced Outage or some other state of temporary or permanent deactivation, which requires the reliability impacts of deactivation to be studied and that possible reliability solutions, when needed, be put in place before the unit can deactivate. The NYISO has observed that all resources participating in the capacity market are, with rare exception, already existing and interconnected to the system at the time of auction. Therefore, the ICAP market auctions and reliability model are inherently well aligned. This feature of the NYISO design avoids virtually all of the distortion concerns that the Commission appears to have with the use of forward market structures for determining resource class accreditation factors.

<u>Question 3a</u>:

3. In your filing, you propose to define Capacity Accreditation Resource Class as:

> A defined set of Resources and/or Aggregations, as identified in accordance with ISO Procedures, with similar technologies and/or operating characteristics which are expected to have similar marginal reliability contributions toward meeting NYSRC resource adequacy requirements for the upcoming Capability Year. Each Capacity Accreditation Resource Class will be evaluated through the annual review detailed in Section 5.12.14.3. Each Installed Capacity Supplier will be assigned a Capacity Accreditation Resource Class.

   a. Please explain what criteria NYISO would use to determine whether resources have "similar technologies and/or operating characteristics."

The NYISO will establish Capacity Accreditation Resource Classes for Resources and/or Aggregations with similar technologies and/or operating characteristics based on technology and operating characteristic criteria that are expected to influence marginal reliability contributions. Technology and operating characteristic criteria that may influence marginal reliability contributions could include dispatchability, intermittency profiles, energy duration limitations, fuel supply limitations, start-up notification limitations etc. Using such criteria, dispatchable resources would likely be grouped into classes distinct from non-dispatchable resources. Different intermittency profiles would likely result in distinct classes for onshore wind, offshore wind, and solar. Different classes of energy duration limited resources would likely be established for resources with different elected energy duration limitations (*e.g.*, 2-hour, 4-hour, 6-hour or 8-hour). Thermal resources with dual fuel may need to be in a separate class from gas only resources. Resources with very long start-up notification requirements may require a separate class from resources with shorter start-up notification requirements. However, the final criteria will be determined through the NYISO's planned Phase II stakeholder process, allowing the tariff framework to be implemented with the flexibility required to adjust over time to an evolving resource mix and changing system conditions.

<u>Question 3b</u>:

b. Please explain what criteria NYISO would use to determine whether resources "are expected to have similar marginal reliability contributions toward meeting NYSRC resource adequacy requirements for the upcoming Capability Year."

<u>NYISO Response</u>:

The criteria that will be used to determine whether resources have similar technologies and/or operating characteristics (*e.g.*, dispatchability, intermittency profiles, energy duration limitations, fuel supply limitations, start-up notification limitations) are traits that may also influence a resource's marginal reliability contribution and will guide the NYISO in its Phase II testing. These criteria will be used to develop Capacity Accreditation Resource Classes which will be further analyzed using ELCC techniques to understand whether there are meaningful differences in Capacity Accreditation Factors between classes. This will lead to a set of classes that are meaningful and relevant to capacity accreditation factor determinations. These tariff criteria will continue to impact future additions or changes to the set of Capacity Accreditation Resources Classes as the system continues to evolve over time. The NYISO's overarching approach of establishing key rules in the tariff while excluding implementation details allows the NYISO the flexibility to make necessary adjustments in a timely fashion.

<u>Question 3c</u>:

c. Please explain the process NYISO will use to notify resources of their assigned Capacity Accreditation Resource Class and associated Capacity Accreditation Factor. In your answer, please be specific about the timing of NYISO's determinations and notification.

<u>NYISO Response</u>:

The NYISO intends for ICAP Suppliers to be assigned to a Capacity Accreditation Resource Class based on the information ICAP Suppliers are already required to provide to the NYISO and on other information specific to their resources. The required information includes the ICAP Supplier's chosen participation model, required resource characteristics provided upon resource registration, and, if applicable, elected energy duration limitations. Resource characteristics provided upon resource registration cannot be changed after registration without proof of modification. However, an ICAP Supplier can elect to change its participation model and/or energy duration limitation by August 1 prior to the upcoming Capability Year, according to ISO Procedures. Additionally, the resource's location will inform the assignment of Capacity Accreditation Factors for a specified Capacity Accreditation Resource Class. The location will be based on the physical electrical interconnection of the resource and is not subject to change by the ICAP Supplier.

Once Capacity Accreditation Resource Classes are established, the publicly-posted class descriptions will identify what combinations of participation models, elected duration limitations, and resource characteristics fall under each Capacity Accreditation Resource Class.

Therefore, the information ICAP Suppliers already provide to the NYISO will clearly identify the Capacity Accreditation Resource Class to which a Supplier belongs. For example, if a Capacity Accreditation Resource Class is described as only applying to resources that have elected the Energy Storage Resource participation model and a 4-hour energy duration limitation, all resources that have elected the Energy Storage Resource participation model and a 4-hour energy duration limitation would be assigned to that Capacity Accreditation Resource Class.

Additionally, the ICAP Manual requires the NYISO to notify ICAP Suppliers of their derating factors in the ICAP Automated Market System ("ICAP AMS") prior to the deadlines identified in the ICAP Event Calendar. The NYISO makes ICAP Suppliers' derating factors for the start of a new Capability Year available through its season setup processes. These factors are required to be known before the Capability Period Auction for the summer commences, which occurs by April each year. These factors are made available to ICAP Supplier two weeks before the Capability Period Auction. Because an ICAP Supplier's derating factor will depend on the Capacity Accreditation Factors for the Capacity Accreditation Resource Class to which the ICAP Supplier is assigned and the region in which the ICAP Supplier is located, Capacity Accreditation Resource Classes and Capacity Accreditation Factors must be determined prior to the Capability Period Auction, preferably at least two weeks prior, but after the IRM model is approved in December. Once Capacity Accreditation Factors are calculated following the IRM model approval in December, the NYISO will calculate the derating factors of all ICAP Suppliers and notify each ICAP Supplier of its derating factor and Capacity Accreditation Resource Class in the ICAP AMS before the Capability Period Auction identified in the ICAP Event Calendar.

Question 3d:

d. If a resource owner disputes the Capacity Accreditation Resource Class to which NYISO assigns a resource, would the affected resource owner have an opportunity to appeal their class assignment? If so, how would the process for such a review take place?

NYISO Response:

The NYISO intends to leverage existing procedures that are already set forth in the ICAP Manual to address these scenarios. ICAP Suppliers would have an opportunity to object to a class assignment under these procedures. In general, these procedures allow stakeholders to review data relevant to the NYISO's treatment of their resources in the market and to raise any concerns before capacity auctions are run. Similarly, Capacity Accreditation Resource Classes, and the types of resources to be included in each class, will be identified and publicly announced before auctions are run. Resource Owners will thus be able to raise any issues regarding their class assignments in advance of auctions. To the extent that any existing procedures need to be expanded or modified the NYISO will address that during Phase II through its stakeholder governance process. These procedures are not currently part of the tariff under the "rule of reason" and there would be no reason to include them in the tariff simply because a marginal accreditation design is in place.

<u>Question 4a</u>:

4. In Attachment III-A to your filing, Analysis Group, Inc. finds that, in 2032, variable and storage resources would comprise over 50% of ICAP in the New York Control Area (38,608 MW of 75,719 MW) and less than 10% of UCAP (3,192 MW of 37,653 MW).

    a. Recognizing that the NYISO capacity market compensates resources in proportion to their UCAP, please explain the basis for the significant decrease in UCAP relative to ICAP for these resources. Why is it just and reasonable for all resources in a given Capacity Accreditation Resource Class to receive compensation based on the value of the marginal resource in that Capacity Accreditation Resource Class?

<u>NYISO Response</u>:

Marginal accreditation results in the compensation paid to a Resource participating in the ICAP Market being closely tied to the reliability contributions of incremental increases in the quantity of that resource. Marginal accreditation provides the correct market signals to promote market efficiency and guide needed investments to maintain reliability and minimize consumer costs. Marginal accreditation will encourage investments in new flexible resources when and where needed and incentivize inflexible conventional resources that cannot help to support intermittent and duration-limited resources to exit the market. A marginal accreditation should also achieve the necessary level of reliability at the lowest cost.

For intermittent resources such as onshore and offshore wind and solar, marginal accreditation will accurately signal the declining reliability contributions of incremental additions and provide signals when other resource types such as storage may provide more cost-effective incremental reliability contributions. Marginal accreditation will clearly indicate the value of gaining or losing capacity of a resource type, given all the other resources in the system. It therefore accurately signals: (a) diminishing returns of resources with correlated availability, and (b) the value of adding capacity of a type that complements other resources in the system and provides a greater marginal reliability contribution. This was illustrated by Analysis Group, Inc in the hypothetical scenario referenced above in which variable resource penetration is high but storage resources are at relatively low levels.

In such a scenario, the difference between UCAP and ICAP values noted by Question 4a will send an efficient price signal to reflect the fact that variable resources would have limited actual reliability value in the absence of more storage. Thus, the referenced scenario shows a marginal capacity accreditation design working as intended to signal what kind of new investment is (and is not) needed. Accordingly, the scenario demonstrates that the NYISO Proposal is just and reasonable, not unjust and unreasonable.

It is just and reasonable to use marginal accreditation to credit the capacity of all resources in a given Capacity Accreditation Resource Class because marginal accreditation allows for the equal comparison of UCAP regardless of the resource type providing the capacity. As noted above, the NYISO is materially different from regions with forward capacity markets in this respect. There are no material discrepancies between the ability to participate in the capacity market and actual capacity market participation under a spot auction structure. In the NYISO context, with marginal accreditation, one MW of UCAP from one resource provides the same marginal reliability contribution as one MW of UCAP from any other resource type. Therefore, marginal accreditation allows for equal comparison of UCAP across all resource types while sending the appropriate market signals for efficient resource entry and exit.

The MMU illustrated the benefits of marginal accreditation in its Consumer Impact Analysis of the capacity accreditation proposal (Attachment VI of the January 5 Filing). The analysis illustrated that an average accreditation approach would require the procurement of over 2 GWs of additional UCAP and $93 to $226 million in consumer costs per year by 2030 compared to a marginal accreditation approach. The increased consumer costs are a result of both increased UCAP procurement and investment in suboptimal resources for meeting reliability. The MMU Comments further explained how the marginal capacity accreditation design would be both fair and efficient because "[n]ew and existing resources with the same marginal reliability benefit would be assigned the same capacity credit."[49] Marginal capacity accreditation is expected to result in more accurate capacity valuations regardless of resource fuel or technology type. For example, the MMU anticipated that the NYISO Proposal would result in lower capacity values for inflexible conventional resources with long startup lead times and gas-only generators without dual-fuel capability. These valuations would encourage such resource to retire and potentially be replaced with more responsive resources such as storage.[50] Similarly, marginal accreditation "would provide incentives to invest in longer-duration storage, which is more expensive but brings greater reliability benefits, instead of shorter-duration storage which has diminishing reliability value as its penetration increases.[51] It could also provide incentives to pair renewables with storage, increasing their capacity value.[52] Marginal accreditation would likewise provide the proper investment signals in a scenario such as the one presented in the question above.

IPPNY's expert, Mr. Mark Younger, also illustrates the inefficient and costly investment decisions that an average accreditation methodology could cause compared to a marginal accreditation methodology.[53] In particular, he demonstrates how the reliability of offshore wind can be materially less than that of onshore wind once offshore wind reaches a certain level.[54]

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[49] MMU Comments at 10.

[50] *Id.* at 10-11.

[51] *Id.* at 11.

[52] *Id.*

[53] *See, e.g.*, Younger Aff. at PP 40-42.

[54] *Id.* at P 42.

<u>Question 4b</u>:

b. Please explain how NYISO would assess the extent to which a resource has complied with its capacity obligation under NYISO's proposed marginal reliability contribution capacity accreditation market design, including how NYISO would assess any applicable penalties or derating factors for non-performance.

<u>NYISO Response</u>:

The NYISO's assessment of resources' compliance with their capacity obligations and penalties for non-compliance would not change with the adoption of marginal capacity accreditation.

All compliance obligations of an ICAP Supplier are based on ICAP values. In particular, an ICAP Supplier's capacity obligation is based on the Installed Capacity Equivalent ("ICE") of the ICAP Supplier's awarded UCAP, with the awarded UCAP of a Supplier being the total UCAP the Supplier has sold for a given obligation period (*e.g.,* UCAP that cleared in the monthly spot auction). The ICE of the awarded UCAP is the awarded UCAP divided by the Supplier's Duration Adjustment Factor, which will be replaced by a Supplier's Capacity Accreditation Factor, and 1 minus the Supplier's resource specific derating factor. While the UCAP of a Supplier may change with the adoption of Capacity Accreditation Factors, a Supplier's ICE would remain the same. All compliance obligations and penalties for non-compliance for ICAP Suppliers are enumerated in section 5.12 of the Market Services Tariff. If an ICAP Supplier has failed to meet its obligation, penalties may be assessed and will be calculated using UCAP value associated with its failure to meet its ICAP obligations.[55]

Consequently, the NYISO has not proposed any tariff provisions to address resources' compliance with capacity obligations or penalties in this proceeding. The NYISO does not believe that any new tariff provisions are needed at this time.

[55] *S*ee Services Tariff, Section 5.14.2 Installed Capacity Supplier Shortfalls and Deficiency Charges.