ASSESSMENT OF THE BUYER-SIDE MITIGATION EXEMPTION TESTS FOR THE CLASS YEAR 2019 ADDITIONAL SDU STUDY PROJECTS

POTOMAC ECONOMICS

Market Monitoring Unit
for the New York ISO

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EXECUTIVE SUMMARY

The NYISO administers buyer-side market power mitigation ("BSM") measures in New York City ("Zone J") and the G-J Locality to prevent capacity prices from being artificially suppressed below competitive levels by the subsidized entry of uneconomic resources.[1] The BSM measures address such entry by imposing an Offer Floor on resources that do not satisfy criteria that are described below. The Offer Floor deters uneconomic entry that would otherwise be intended to suppress capacity prices below competitive levels. To the extent that uneconomic resources are subsidized for other reasons, an Offer Floor may still be imposed to ensure that such entry does not suppress prices below competitive levels.

The NYISO evaluates each Examined Facility in a deliverability study (a Class Year Study, an Additional SDU Study, or an Expedited Deliverability Study) to determine whether it should be subject to Offer Floor mitigation. The NYISO's Tariff requires the Market Monitoring Unit to prepare a report discussing factors affecting the mitigation, whether the determination was tariff-compliant, and if there were flaws in the NYISO approach, which must be posted concurrently with the results of any BSM determinations.[2]

Background on the NYISO's Process for Issuing BSM Determinations

The NYISO's BSM evaluation is coordinated with its Project Cost Allocation ("PCA") process. In each round of the process, the NYISO provides each project remaining in the deliverability study with its estimated PCA and its BSM determination (if applicable), so each developer can consider this information before deciding whether to accept its PCA. To receive CRIS, the developers of the projects are required to accept their PCA, headroom payment, and Deliverable MW and post the required Security. If a developer does not satisfy one or more of these requirements, the project does not receive CRIS and a new PCA round begins.

When a project leaves a deliverability study, the PCA amount for other projects may change, and the ICAP, Energy, and Ancillary Services price forecasts (which are inputs to the BSM determinations for other Examined Facilities) may be updated. Thus, the NYISO provides an updated BSM determination in each round for each remaining Examined Facility until the completion of the study.

Examined Facilities are evaluated for a Competitive Entry Exemption ("CEE"), a Renewable Entry Exemption ("REE"), and/or under the Part A & B tests:

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1 Terms with initial capitalization not defined in this report have the meaning set forth in the NYISO's Market Administration and Control Area Services Tariff ("MST" or "Tariff"), and if not defined therein, then in Open Access Transmission Tariff Attachment S.

2 See MST Sections 23.4.5.7.6.8, 30.4.6.2.13, and 30.10.4.

- *Competitive Entry Exemption* – This provision ensures that the BSM measures do not prevent a new unsubsidized resource from entering the market. An Examined Facility can request a CEE if it does not have a contract, agreement, arrangement, or other relationship with certain entities that could serve as a conduit for a subsidy.
- *Renewable Entry Exemption* – Resources that are exclusively powered by solar, wind, and Limited Control Run-of-River hydropower are eligible to request a REE. These are technologies that the NYISO determined to be weak instruments for exercising buyer-side market power because of their relatively low capacity value and high fixed costs.
- *Part A Test exemption* – This allows a new resource to sell capacity when its entry would not depress capacity prices below competitive levels. Thus, this allows a subsidized resource (that does not qualify for a Renewable Entry Exemption) to sell capacity as long as it does not raise the capacity surplus above moderate levels.
- *Part B Test exemption* – This allows a new economic resource to sell capacity even if it is subsidized or developed by a regulated utility or agency of New York State. A resource is deemed economic if the projected revenues it would receive from the wholesale market would exceed its levelized costs over its first three years of operation.

BSM Results for Examined Facilities in Zone J Class Year 2019 ASDU Study

In the Class Year 2019 ("CY19") Study, the NYISO determined that five Examined Facilities in Zone J would require a new SDU and evaluated these projects as part of the CY19 ASDU Study. The NYISO conducted two rounds of the PCA process in its CY19 ASDU Study. In the first round, the NYISO confidentially provided initial determinations to all five Examined Facilities. In the second round, the NYISO issued its final determination for one project for an exemption under REE provisions.

Table 1 provides a description of each Examined Facility and the status of its BSM evaluation.

Table 1 – Summary of Zone J Examined Facilities in the CY19 ASDU Study

Examined Facility	Summer CRIS MW	Unit Type	Status
CH Interconnection	1000	HVDC	Initial determinations only
Liberty Generating Alternative	1172	CC	
Ravenswood Energy Storage 1	129	ESR	
Ravenswood Energy Storage 2	129	ESR	
EI Sunset Park	816	Offshore Wind	Exempt under REE

The remainder of this Executive Summary provides an overview of the BSM evaluations for the CY19 ASDU Study.

Evaluation for Competitive Entry Exemption in CY19 ASDU Study

The NYISO evaluated three Examined Facilities for a CEE – the Liberty Generating Alternative Project ("the Liberty Project"), and the two Ravenswood Energy Storage projects ("the Ravenswood Projects") - in the first round of the CY19 ASDU BSM evaluations. The NYISO reviewed each project developer's certifications along with planned or existing contracts with non-qualifying entities. The NYISO evaluated the submissions for any non-qualifying contractual relationships, and confidentially provided its determinations to each of the three Examined Facilities. All three projects did not accept their PCA, and did not receive a final determination.

Evaluation for Renewable Entry Exemption in CY19 ASDU Study

In the CY19 ASDU Study, the only project evaluated for a REE was the El Sunset Park Project.

The NYISO calculates a Renewable Exemption Limit ("REL"), which limits the total capacity that may receive a REE in each Mitigated Capacity Zone in each deliverability study. The purpose of the REL is to limit the exemptions to renewable resources such that their entry would not have a significant impact on the capacity prices. The REL, subject to a minimum value, is constructed as the sum of the following factors, each of which tend to offset the price suppressive effect of additional renewable entry:

- Renewable Exemption Bank in UCAP MW at the beginning of the deliverability study;[3]
- Forecasted peak load change over the Mitigation Study Period;
- Incremental Regulatory Retirements ("IRRs") measured in UCAP MW;[4] and
- The Unforced Capacity Reserve Margin ("URM") Impact, which is the amount by which the new renewable generation is forecasted to affect the UCAP requirement.[5]

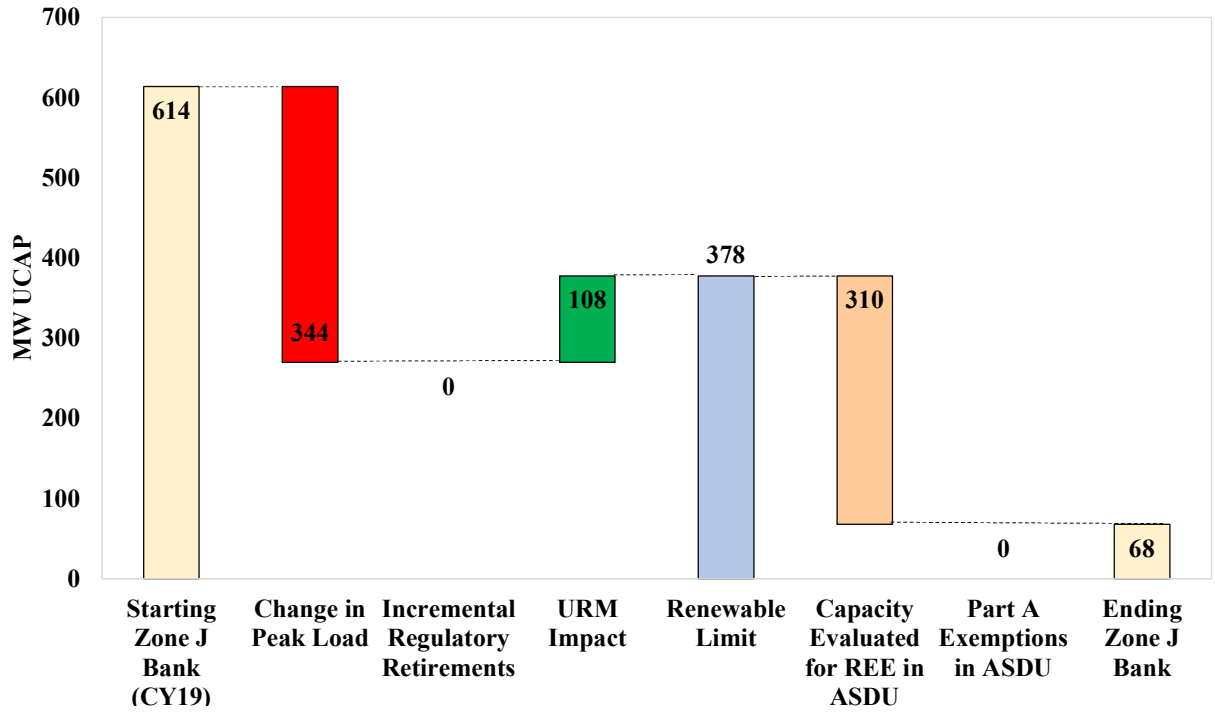
The following figure shows the various components of the REL in the CY19 ASDU Study.

3 The Renewable Exemption Bank represents the UCAP MW from the prior study that was carried forward and be made available for granting REEs in the current study.

4 IRRs include the UCAP of generators forecasted to retire during the Mitigation Study Period that occur due, in significant part, to state regulations.

5 The URM Impact is the change in the UCAP requirement of the Locality as a result of the entry of intermittent renewable resources that are being evaluated for a REE.

Figure 1 - Renewable Entry Exemption Limit and Capacity Evaluated in Zone J



As shown in Figure 1, the bank at the beginning of the CY19 ASDU Study was the largest component of the REL in the CY19 ASDU Study.[6] Another significant driver of the REL was the reduction in the peak load forecast for 2024 (the last year of the study period) in the latest Gold Book (relative to the value used in CY19). Ultimately, the NYISO determined the REL for Zone J in the CY19 ASDU Study to be 378 MW, which was higher than the total UCAP of the El Sunset Park (310 MW UCAP), thus allowing for exempting the project from an Offer Floor.

Evaluation under Part A and Part B Tests in CY19 ASDU Study

In the CY19 ASDU Study, the NYISO provided initial BSM determinations for five Examined Facilities based on Part A and Part B tests. Of these, four projects rejected their Project Cost Allocation after the Initial Decision Period. The NYISO subsequently issued final BSM determination for only one Examined Facility based on Part A and Part B tests.

CY19 ASDU Study Part A Test Results - In the final round of the CY19 ASDU BSM evaluation, the NYISO's forecasted UCAP prices for Zone J during the first year of the Mitigation Study Period (May 2022 to April 2023) were lower than the Default Net CONE ("DNC"), which is the

6 The bank from CY19 was largely due to identifying a number of Zone J resources as IRRs based on the NYSDEC's "Peaker Rule", which imposes limits on NOx emissions rates of simple cycle unit.

price level above which an Examined Facility will be exempted under the Part A test.[7] Thus, the El Sunset Park Project was determined to be not exempt under the Part A test in CY19. The key driver of this result was the forecasted capacity margin, which was 17 percent (in Summer) of the Zone J UCAP requirement. This considerably exceeded the Part A threshold (i.e. the surplus level below which Examined Facilities would be exempt from an Offer Floor) of 8 percent.

CY19 ASDU Study Part B Test Results - In the final round of the CY19 ASDU BSM evaluations, the Unit Net CONE ("UNC") of the El Sunset Park Project was lower than the forecasted capacity prices over the three-year Mitigation Study Period (May 2022 to April 2025). Hence, it was determined to be not exempt under the Part B test. The El Sunset Park Project is eligible to receive payments for the Renewable Energy Credits ("RECs") that it generated. Inclusion of revenues from these led to a significant decrease in the UNC of the project.

Overall, we find that the Part A and Part B tests in the both rounds of the CY19 ASDU BSM evaluations were performed in accordance with the NYISO MST.

Conclusions and Recommended Enhancements

Ultimately, the El Sunset Park Project received a Renewable Entry Exemption because of the large (over 600 MW) Renewable Exemption Bank at the beginning of the CY19 ASDU Study. We conclude that the NYISO's BSM determinations in CY19 ASDU Study were made in accordance with the requirements of the Tariff and based on reasonable assumptions.

As a part of our review, we have identified a number of issues that, if addressed, would improve the accuracy of the BSM evaluations. These relate to the Part A and Part B testing procedures, REE calculations, test assumptions regarding forecasted in-service capacity supply, entry dates of the Examined Facilities, and estimation of revenue offsets and costs.[8]

None of the issues we identified, by themselves or in combination, affected the final determinations in the CY19 ASDU BSM evaluations. However, it is important that the NYISO work with its stakeholders to address these issues in future evaluations because:

- Implementing the recommendations related to the REE could have resulted in a different value for the Renewable Exemption Bank, which will be used in future BSM evaluations.
- Some of these issues could have affected the Unit Net CONE and the Offer Floor of a subset of CY19 ASDU Projects during the Initial Decision Round.
- These issues may have significant impacts on the results of future BSM evaluations.

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7 The purpose of the Part A test is to ensure that a resource will be determined to be exempt when its capacity will be needed to satisfy the capacity requirement for a particular Locality.

8 See section IX.

I. INTRODUCTION AND SUMMARY

The NYISO's Market Administration and Control Area Services Tariff ("MST" or "Tariff") requires that the Market Monitoring Unit ("MMU") prepare a report to be posted concurrently with the results of buyer-side market power mitigation ("BSM") determinations.[9,10]

In Class Year 2019 Additional SDU ("CY19 ASDU") Study, the NYISO conducted the Part A and Part B tests of the BSM evaluations for 5 Examined Facilities located in Zone J.[11,12] Of these, one Examined Facility was also evaluated for Renewable Entry Exemptions ("REE"), and three were evaluated for a Competitive Entry Exemption ("CEE").[13] The NYISO provided initial determinations to all five Examined Facilities prior to the Initial Decision Period of the Project Cost Allocation ("PCA") process. Four Examined Facilities rejected their PCA at the end of the Initial Decision Round.[14] Therefore, only one Examined Facility received final determination, which was exempted from an Offer Floor pursuant to the provisions of the REE.

This report provides our review of the NYISO's BSM evaluations, and it has been posted concurrently with the final BSM determinations in the CY19 ASDU Study.[15] We find that the NYISO's BSM determinations in the CY19 ASDU BSM Study were made in accordance with the Tariff and based on reasonable assumptions.

Table 2 presents a brief overview of the Examined Facilities in Zone J in the CY19 ASDU Study (or "CY19 ASDU Projects"), and their status at the end of CY19 ASDU study.

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9 See Astoria Generating Company, L.P., et al. v. New York Independent System Operator, Inc., 139 FERC ¶ 61,244 (2012) at PP 130. Also see MST §23.4.5.7.6.8.

10 Terms not defined herein have the meaning set forth in the MST, and if not defined there, then as defined in the Open Access Transmission Tariff ("OATT").

11 The following projects required Additional SDU Studies, and were provided with BSM determinations as part of CY19 ASDU Study: Champlain Hudson Interconnection, Liberty Generating Alternative, Ravenswood Energy Storage 1, Ravenswood Energy Storage 2, and EI Sunset Park (formerly Empire Wind). These projects were originally members of CY19, but they were evaluated separately from other CY19 Projects because they required a new SDU.

12 See MST §23.4.5.7.2.

13 See MST §23.4.5.7.9 and §23.4.5.7.13 for Tariff provisions for CEE and REE, respectively.

14 At the end of the initial decision round, four of the Examined Facilities rejected their PCAs. Consequently, the NYISO provided the remaining one project of CY19 ASDU their final PCA and BSM determinations as part of the final round.

15 The NYISO's final determinations in the CY19 ASDU Study are available at the following link.

Table 2 – Summary of CY19 ASDU Projects in Zone J

Examined Facility	Summer CRIS MW	Unit Type	Status
CH Interconnection	1000	HVDC	Initial determinations only
Liberty Generating Alternative	1172	CC	
Ravenswood Energy Storage 1	129	ESR	
Ravenswood Energy Storage 2	129	ESR	
EI Sunset Park	816	Offshore Wind	Exempt under REE

This report discusses key results and assumptions of the CY19 ASDU BSM evaluation. For each assumption, the report discusses how the outcome of the test was affected by the assumption, whether the assumption was in accordance with the MST, and whether the assumption was generally reasonable and consistent with the purposes of the BSM measures. In discussing the reasonableness of the particular assumptions, we identify potential concerns that may justify changes in NYISO procedures or in the BSM rules. A list of assumptions that may be improved for future BSM exemption tests is provided in Section IX of this report. The following sections review key elements of the NYISO's BSM determinations:

- Section II discusses the NYISO's review of the CY19 ASDU Projects for the Competitive Entry Exemption.
- Section III discusses the NYISO's evaluation of the El Sunset Park Project for the Renewable Entry Exemption.
- Section IV discusses the Part A test in which the NYISO compares the forecasted ICAP price in the first year of the Mitigation Study Period ("MSP") to the Default Net CONE.
- Section V discusses the results of the Part B test in which the NYISO compares the forecasted ICAP price during the three-year MSP to the project's Unit Net CONE. Key inputs to the Part B test are discussed in sections VI and VII.
- Section VI evaluates the NYISO's estimates of the cost of new entry ("CONE") for each Examined Facility, which is used to calculate its Unit Net CONE.
- Section VII evaluates the estimated net revenues for each project from the NYISO's Energy and Ancillary Services markets. The estimated net revenues are also used to calculate the project's Unit Net CONE.
- Section VIII discusses assumptions that affect both the Part A and Part B tests.
- Section IX summarizes our overall conclusions and discusses issues that could be addressed in future BSM determinations.

II. COMPETITIVE ENTRY EXEMPTION EVALUATION

The Tariff provides for the NYISO to exempt, from an Offer Floor, Examined Facilities that meet certain Tariff criteria under the Competitive Entry Exemption ("CEE") provisions.[16] Generally, the CEE provisions were put in place to exempt merchant projects that do not receive payments from New York State governmental entities or a Transmission Owner from buyer-side mitigation because the developers of such projects should have market incentives to enter based on their own expectations of market conditions. MST §23.4.5.7.9 specifies the requirements that a project developer needs to fulfill in order to establish that the project is not supported by payments or other subsidies (either direct or indirect) through contracts with non-qualifying entities.

In the CY19 ASDU Study, the Ravenswood ESR and the Liberty Projects requested a CEE.[17] The project developers executed initial Certification and Acknowledgement forms and again as they recertified at different points during the evaluation. The developers also submitted a schedule listing planned or existing contracts with non-qualifying entities and a number of such documents, along with information necessary to calculate a Unit Net CONE ("UNC") for the project. The CEE Project developer's submission to the NYISO included non-disclosure agreements, interconnection studies, fuel service and transport agreements, among other documentation related to the development of the facility.

The NYISO reviewed the developer submissions and, where applicable, requested additional information to determine whether the developer had entered or planned to enter into non-qualifying contracts. The NYISO confidentially provided determinations under the CEE provisions to the project developers prior to the Initial Decision Period. However, since each of the projects that requested a CEE rejected their PCA, none of the Examined Facilities received a CEE in the CY19 ASDU Study. We find that the NYISO's initial determinations were made in accordance with the MST.

16 MST § 23.4.5.7.9.

17 See NYISO notice.

III. RENEWABLE ENTRY EXEMPTION EVALUATION

The Tariff provides for the NYISO to exempt from an Offer Floor Examined Facilities that meet certain criteria under the Renewable Entry Exemption ("REE") provisions. [18] For the CY19 ASDU Study, Examined Facilities that are exclusively powered by solar, wind, and Limited Control Run-of-River hydropower are eligible to request a REE. These are technologies that the NYISO determined to be weak instruments for the exercise of buyer-side market power because of their relatively low capacity value and high fixed costs.

Under the Tariff, the NYISO calculates a Renewable Exemption Limit ("REL"), which limits the total capacity that may receive a REE in each Mitigated Capacity Zone ("MCZ").

- If the total UCAP of Examined Facilities that are eligible for a REE ("Qualified Renewable Entry Applicants" or QREAs) in a MCZ is lower than the REL, each QREA will receive a REE. The remaining MWs of the REL may be made available for granting REEs in following Class Years according to the calculation specified in MST 23.4.5.7.13.5.5.
- If the total UCAP of QREAs in a MCZ exceeds that zone's REL, exemptions in the amount of the REL are awarded on a pro rata basis (using UCAP MW) to each QREA.

In the CY19 ASDU Study, only one project provided written notice to NYISO requesting a REE, and was determined to be a QREA. The project, EI Sunset Park, is a proposed 816 MW offshore wind facility (310.1 MW of UCAP) in Zone J. The REL in the CY19 ASDU Study was determined to be 377.9 MW for Zone J and 53.9 MW for the G-J Locality.[19] As the REL exceeded the total UCAP of the sole QREA, the EI Sunset Park Project was awarded a REE. Figure 2 and Figure 3 show the total REL, the values of various factors used in estimating the REL, and the total UCAP of QREAs in the CY19 ASDU Study for Zone J and the G-J Locality, respectively. We discuss the NYISO's methodology for calculating the REL in subsection A, and the process of awarding REEs in the CY19 ASDU Study and updating the bank in subsection B.

The NYISO's REE determinations in CY19 were consistent with its Tariff.

18 See MST §23.4.5.7.13.

19 See "Class Year 2019 NYC Additional SDU Study Renewable Exemption Limit Assumptions and Calculations Update", issued by NYISO on June 7, 2021.

Figure 2 - Renewable Entry Exemption Limit and Capacity Evaluated in Zone J in CY19 ASDU Study

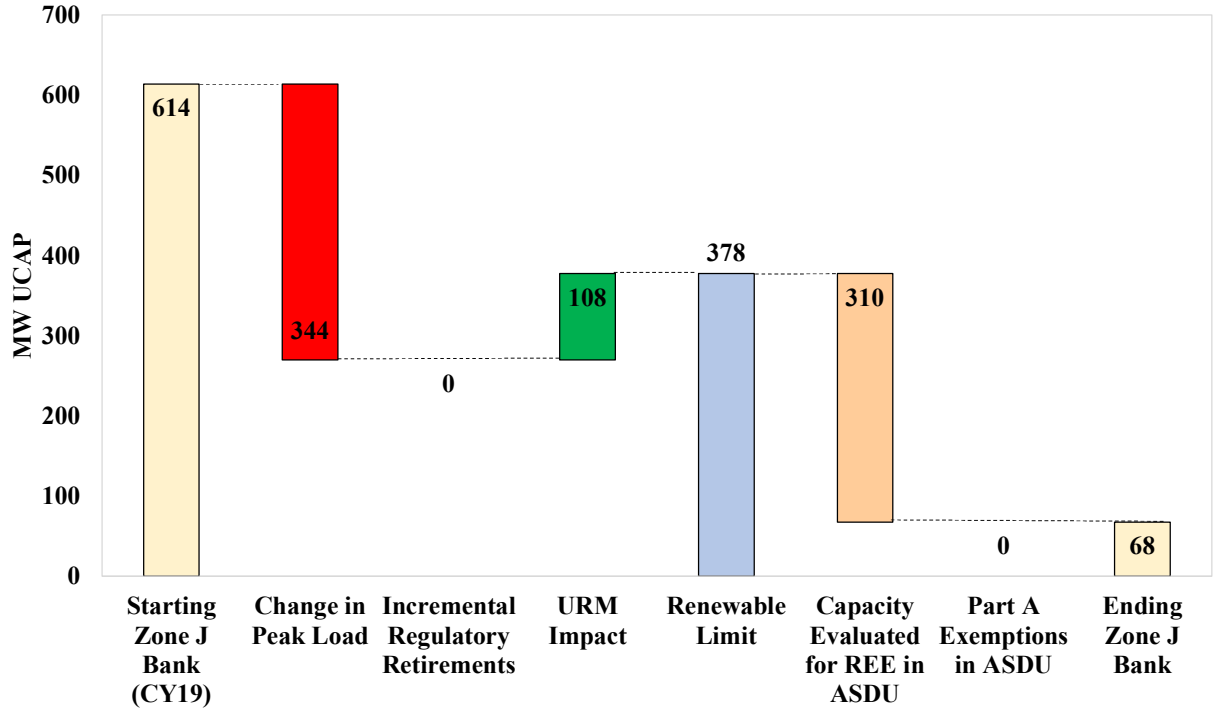
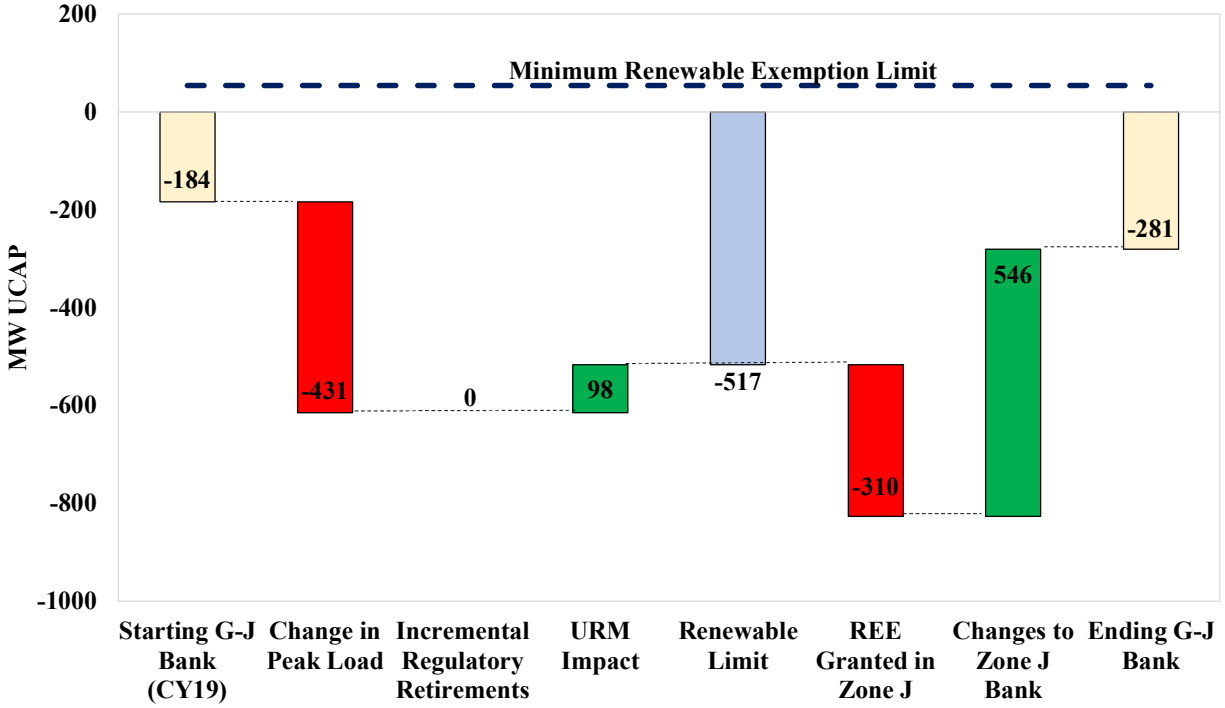


Figure 3 - Renewable Entry Exemption Limit and Capacity Evaluated in G-J Locality in CY19 ASDU Study



A. Calculation of Renewable Exemption Limit

The purpose of the REL is to limit the exemptions to renewable resources such that their entry would not have a significant impact on the capacity prices. The REL, subject to a minimum value, is constructed as the sum of several factors each of which tend to offset the price suppressive effect of additional renewable entry. The REL is calculated as the higher of: (a) the Minimum Renewable Exemption Limit and (b) the sum of the following items:

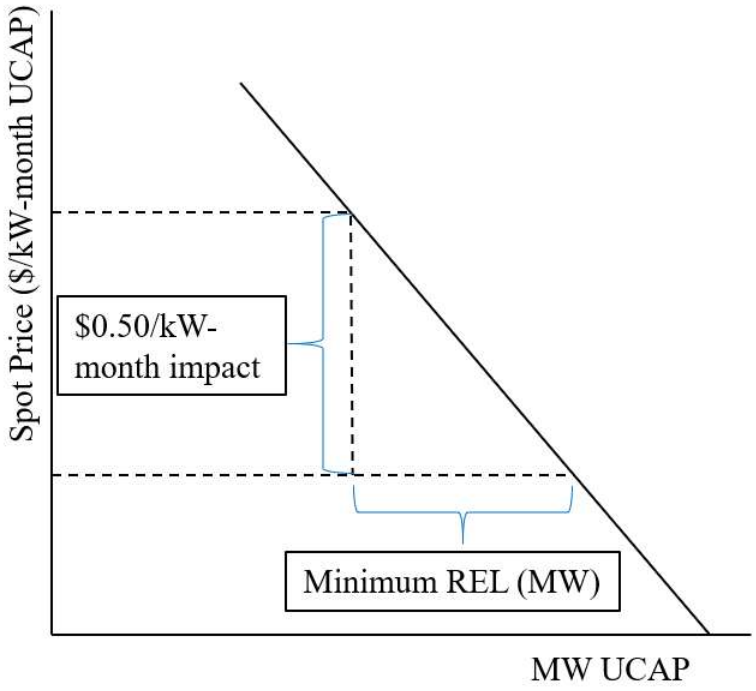
- The UCAP MW in the Renewable Exemption Bank at the beginning of the study
- UCAP MW associated with the change in forecasted peak load over the Mitigation Study Period
- UCAP MW associated with Incremental Regulatory Retirements ("IRRs")
- The Unforced Capacity Reserve Margin ("URM") Impact

We discuss the NYISO's calculation of the Minimum Renewable Exemption Limit, and each of the four terms in subpart (b) of the above formula in the remainder of this subsection.

1. Minimum Renewable Exemption Limit

The Minimum Renewable Exemption Limit is the amount of UCAP that would cause the forecasted ICAP price to decrease by $0.50/kW-month. Under the NYISO's Tariff, this would determine the minimum value the REL can assume for each MCZ. Figure 4 illustrates the calculation of the Minimum Renewable Exemption Limit for a zone.

Figure 4 - Illustration of Minimum Renewable Exemption Limit Calculation



The Minimum REL calculated in the preceding CY Study carries forward to subsequent ASDU Studies that are completed prior to the start of the Initial Decision Period for the following CY Study.[20] In CY19, the NYISO calculated a Minimum REL of 35.4 MW in the NYC Locality and 53.9 MW in the G-J Locality. Hence, these values were retained for the CY19 ASDU Study.

2. Starting Value of Renewable Exemption Bank

The starting value of the Renewable Exemption Bank represents the UCAP MW from the prior BSM evaluation that was carried forward and made available for granting REEs in the current BSM evaluation. The NYISO determined that the bank values at the end of CY19 were 613.8 MW in the Zone J Bank and -184.0 in the G-J Bank. [21, 22] These initial bank values were included in the calculation of the REL for the CY19 ASDU Study.

3. Peak Load Forecast

An increase in peak load leads to an increase in the capacity requirement of a Locality, thus reducing the local capacity margin (and increasing the capacity price). Hence, including changes in peak load when determining the REL allows for entry of additional renewables without suppressing capacity prices.

The Tariff requires the NYISO to estimate this component of the REL based on the summer non-coincident peak load forecasts reported in the Gold Book for the last year of the MSP of the current BSM evaluation and the last year of the MSP of the prior evaluation.[23] At the time the final Renewable Exemption Limit assumptions for the CY19 ASDU Study were published, the latest official NYISO Gold Book load forecast was the 2021 Gold Book. The last year of the MSP for the CY19 ASDU Study, 2024/ 25, was the same as the last year of the MSP for the CY19 BSM evaluation. Hence, the peak load growth component of the REL is calculated as the difference between (a) the forecasted 2024 peak load in the 2021 Gold Book, and (b) the forecasted 2024 peak load that was used in the CY19 BSM evaluation, that was based on the 2020 Gold Book. The resulting values were adjusted for the average ICAP/UCAP translation

20 See MST §23.4.5.7.13.5.1.

21 In CY19, the starting value of the bank was zero. See MST § 23.4.5.7.13.5.5.

22 These values differ from what was initially published in our CY19 Report, which did not reflect the deduction of MW that received Part A exemptions in CY19 in final bank values and included an error in the peak load forecast values used to estimate the ending bank. The G-J Bank has a negative value because the value of the Zone J bank is deducted from the bank for the G-J Locality, reflecting the nesting of Zone J inside of the G-J Locality.

23 See MST §23.4.5.7.13.5.2.

factor to estimate the peak load growth components for the CY19 ASDU Study as -343.8 MW for the NYC Locality and -430.6 MW for the G-J Locality. [24]

4. Incremental Regulatory Retirements

IRRs include the UCAP of generators forecasted to retire during the Mitigation Study Period ("MSP") that occur due, in significant part, to state regulations.[25] State actions that cause resources to exit the market would reduce the capacity margin, thus enabling additional entry of renewable resources without suppressing prices. In CY19, the NYISO identified Incremental Regulatory Retirements related to the "Peaker Rule" issued by the New York State Department of Environmental Conservation, which imposes limits on NOx emissions rates of simple cycle combustion turbine plants beginning in May 2023 with stricter limits beginning in May 2025.

The NYISO did not identify any additional Incremental Regulatory Retirements in the MSP for the CY19 ASDU Study, which is the same as the CY19 MSP. The impact of the 549.9 MW of Incremental Regulatory Retirements in Zone J and 587.9 MW in the G-J Locality that were identified in CY19 are reflected in the starting values of the Renewable Exemption Bank.

5. URM Impact of Qualified Renewable Exemption Applicants

The URM Impact is the change in the UCAP requirement of a MCZ as a result of the entry of intermittent renewable resources that are being evaluated for a REE in the Class Year. The URM Impact term in the REL reflects the fact that the addition of intermittent renewables tends to cause capacity requirements to increase, reducing their net impact on market outcomes. Figure 5 illustrates the effect of the URM in reducing the net change in UCAP supply resulting from the entry of a renewable resource, using data from a New York State Reliability Council ("NYSRC") study of the potential impact of 2,000 MW of offshore wind in Zone J.[26]

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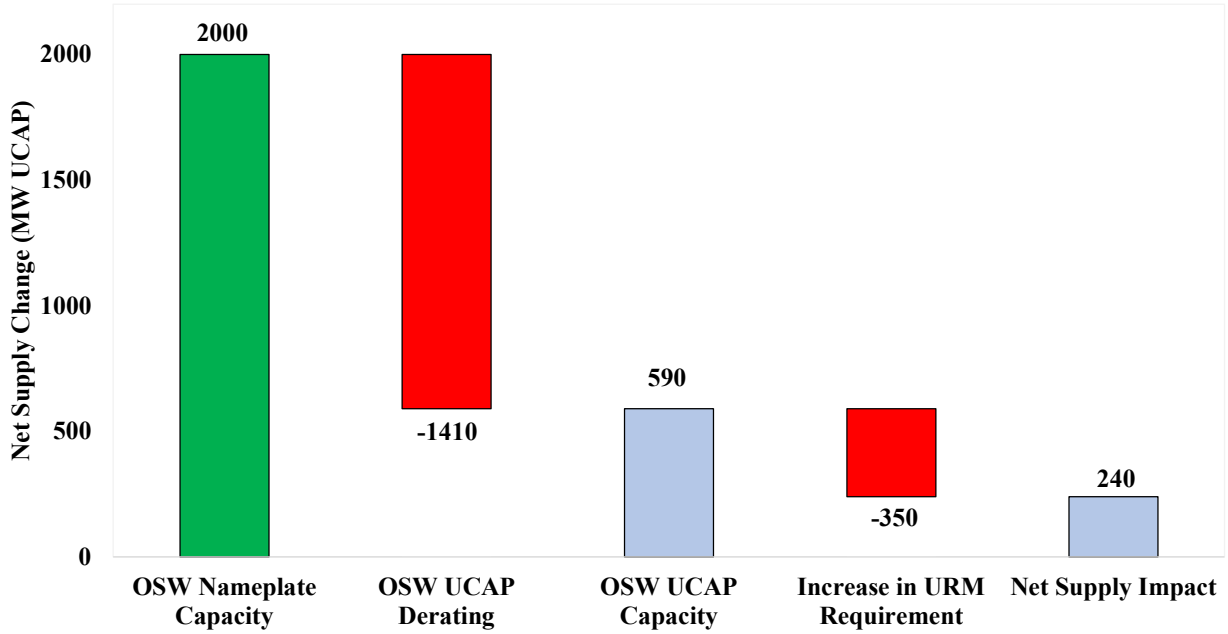
24 The Tariff defines the Peak Load Growth term as the UCAP MW change associated with the Gold Book load forecast. See MST §23.4.5.7.13.5.2.

25 Potomac Economics, Assessment of the Buyer Side Mitigation Exemption Tests for the Class Year 2019 Projects, February 2021, p. 11-12.

26 The NYISO's April 7, 2020 Compliance Filing for the Renewable Entry Exemption cites a study by the NYSRC that found a 350 MW increase in the New York City UCAP requirement after modeling an additional 2,000 MW of offshore wind resources in that zone. As a result, the net increase in supply is the UCAP MW of the offshore wind resources (590 MW) minus the URM increase (350 MW), for a net increase of only 240 resulting from the 2,000 MW offshore wind resource.

Figure 5 - URM Impact Example from NYSRC Study



The NYISO estimates the URM Impact as the difference between the zonal UCAP Requirements with and without the sole QREA.[27] In the CY19 ASDU Study, the URM impacts were 107.9 MW in Zone J and 98.0 MW in the G-J Locality.

Potential Issue with Calculation of URM Impact

The Tariff requires the NYISO to estimate the URM Impact of all QREAs that are members of a deliverability study.[28] As such, the NYISO models all QREAs as in-service when estimating the URM Impact prior to issuing the initial determinations, and incorporates the result into its calculation of the REL and the update to the Renewable Exemption Bank. However, if some of the QREAs were to drop out of the study after the Initial Decision Periods, the URM Impact will not be adjusted. Therefore, to the extent that the QREAs that dropped out had a positive incremental URM Impact associated with them, the final URM Impact and the Renewable Exemption Bank would be overestimated.

The above situation illustrates a potential shortcoming of the current Tariff. Although this issue did not impact the CY19 ASDU determinations or the Renewable Exemption Bank, we recommend the NYISO modify its Tariff and develop procedures for estimating the incremental URM Impact associated with each QREA in its future BSM evaluations. This would allow the

27 See section VIII for discussion of the NYISO's methodology for estimating capacity requirements.

28 MST §23.4.5.7.13.5.4.

NYISO to utilize a more appropriate value for URM Impact in its REL and Renewable Exemption Bank calculations.

B. Awarding Renewable Entry Exemptions and Updating Renewable Exemption Bank

Exemptions under the REE provisions are awarded based on each applicant's UCAP. The Tariff provides that applicants' requested CRIS will be converted to UCAP MW in accordance with the applicable UCAP Derating Factor ("UCDF") determined in the Class Year Deliverability Study.

In the CY19 ASDU Study, the UCDF used for the sole QREA evaluated for a REE was 62 percent.[29] Hence, a total of 310.1 MW sought a REE in the CY19 ASDU in Zone J. Since this value is lower than the REL for Zone J (377.9 MW), the sole QREA in the CY19 ASDU Study received a REE.

The Renewable Exemption Bank will be updated every BSM evaluation by the difference between (a) the REL, and (b) the REEs that are granted in the study. As a result, the ending value of the Zone J bank is 67.8 MW.

For the G-J Locality, the ending value of the bank is -280.8 MW. The NYISO calculated this value as:

- the sum of:(a) the starting value of the G-J Locality bank (-184 MW), and (b) the peak load growth, IRRs and URM Impact estimates for the CY19 ASDU Study (-332.6 MW),
- less (c) the UCAP MW of REE that were awarded in either the G-J Locality or Zone J (310.1 MW).
- Furthermore, the Tariff requires the NYISO to subtract the value of the Zone J bank from the G-J Locality bank.[30] In order to maintain the bank as a "running total of UCAP MW" determined to available for REEs, the NYISO subtracted the change between the beginning and ending value of the Zone J bank (-546 MW) from the G-J Locality bank.[31]

We find the NYISO's REE determination for the CY19 ASDU Study to be consistent with its Tariff. The NYISO has indicated that it intends to propose language that clarifies the calculation of the Renewable Exemption Bank in the future.[32]

Potential Issue with Converting CRIS Requesting REE to UCAP

29 This was consistent with the Class Year Facility Studies Preliminary Deliverability Analysis Draft Report

30 See MST § 23.4.5.7.13.5.5.2.

31 See MST § 23.4.5.7.13.5.5.

32 See NYISO presentation "Buyer Side Mitigation (BSM) Process Improvements" presented to the Installed Capacity Working Group on February 18, 2021.

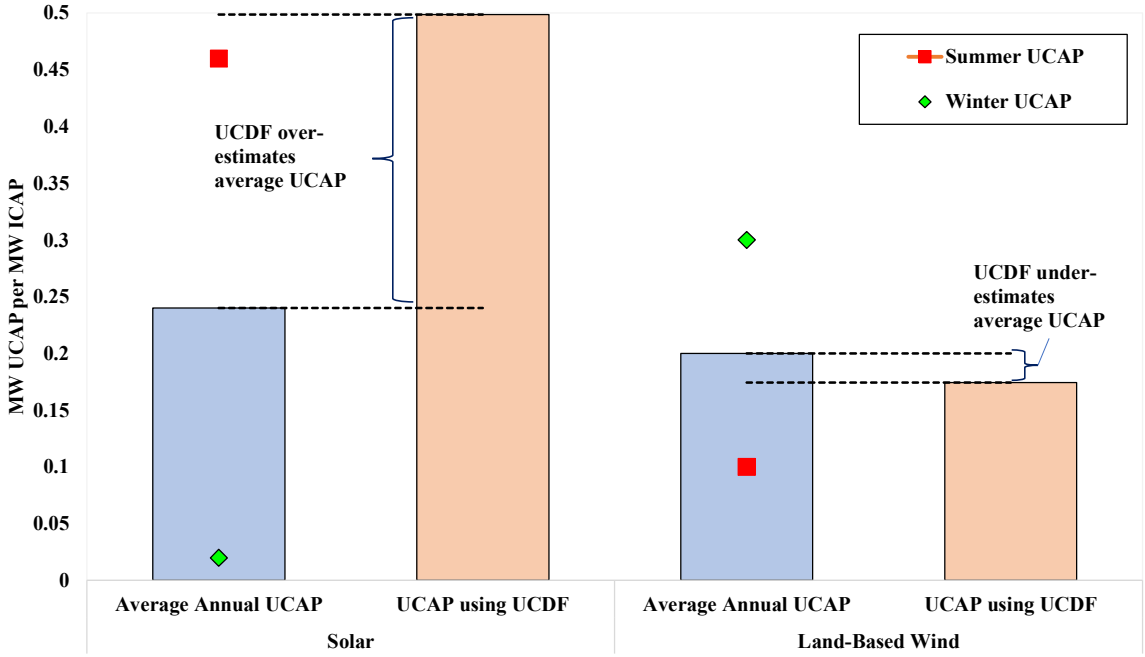
The NYISO's methodology to convert requested CRIS of QREAs to UCAP is consistent with the Tariff. However, using the UCDF established in the Class Year Deliverability Study may lead to an outcome that is inconsistent with the intended price impact of REEs.

The UCDF is used in the Class Year Deliverability Study to model an intermittent resource's output during summer peak conditions. Hence, it represents a resource's performance only during the summer. In contrast, the ICAP price effects of a resource would depend on its derating factors during summer and winter. Intermittent renewable resources can have significantly different Summer and Winter UCAP values. In a situation where the average capacity value of QREAs in a CY is higher than the average UCDF (e.g. if most of the capacity is from wind projects), the current Tariff would result in exempting more resources than intended. Conversely, if the average capacity value of QREAs in a CY is significantly lower than the average UCDF (e.g. if most of the capacity is from solar projects), the current Tariff would result in exempting fewer resources than intended.[33]

Figure 6 compares the UCAP of solar and land-based wind resources estimated using the (a) UCDF of the resource type, and (b) the average annual (summer and winter) derating factors of the resource type. The use of UCDF to allocate the REL to QREAs results in the capacity price impact of granting REEs to be over-estimated for some resource types (such as solar) and under-estimated for others (such as wind). The following chart illustrates the issue with using a UCDF to estimate the annual price impact of a resource. Accordingly, we recommend the NYISO consider amending its Tariff so that the derating factors used to award REEs are based on the capacity value of each QREA.

[33] See Potomac Economics, Assessment of the Buyer Side Mitigation Exemption Tests for the Class Year 2019 Projects, February 2021, p. 14-16.

Figure 6 - Comparison of Solar and Wind UCAP and UCDF



C. Conclusion

In the CY19 ASDU Study, one offshore wind project in Zone J (816 MW summer CRIS) sought a REE. The NYISO determined the REL to be 378 MW for Zone J. The total UCAP MW of the sole QREA was lower than the REL for Zone J. Accordingly, the El Sunset Park Project was exempted from the Offer Floor under the REE provisions. The Renewable Exemption Bank values at the end of CY19 are 68 MW for Zone J and –281 MW for the G-J Locality. We find the NYISO's REE determinations for the CY19 ASDU Study to be consistent with its Tariff.

We identified the following issues that we recommend the NYISO consider addressing in its future evaluations:

- Develop procedures for estimating the URM impact specific to each QREA in a CY.
- Use an annual average capacity value of the resource instead of the UCDF to estimate the UCAP of a QREA.

None of the above issues affected the ultimate outcome of the CY19 ASDU BSM evaluations.

IV. PART A TEST RESULTS

The Part A test compares a forecast of capacity prices for the first year of the MSP to the Default Net CONE ("DNC"), which is 75 percent of Mitigation Net CONE. [34] The purpose of the Part A test is to ensure that a resource is not mitigated when its capacity will be needed to satisfy the capacity requirement for a particular Locality.

In its CY19 ASDU BSM evaluation, the NYISO initially conducted the Part A test for five Examined Facilities.[35] The NYISO tested these projects sequentially according to their presumptive Offer Floors from lowest to highest.[36] A unit is exempt in the Part A test if the price forecast for the first year of the MSP is higher than the Default Net CONE. If a project receives an exemption, it is included in the test for the subsequent project. Otherwise, it is excluded from the ICAP forecast for the subsequent project in the sequence.

Following the Initial Decision period, four Examined Facilities rejected their Project Cost Allocations ("PCAs"). [37] In the final round, the NYISO conducted the Part A test for one Examined Facility. The total summer UCAP supply, including the remaining Examined Facility, was 117 percent of the capacity requirements in Zone J, where the Part A threshold (i.e. the surplus level below which Examined Facilities would be exempt from an Offer Floor) was 108 percent. Therefore, Part A ICAP price forecast for Zone J was lower than the DNC. Accordingly, the Examined Facility that remained in the final round of the CY19 ASDU Study was not exempt under the Part A test.

We find that the Part A tests in the CY19 ASDU BSM evaluations were performed using reasonable assumptions that were in accordance with the NYISO MST. Sub-section A evaluates the assumptions used to forecast capacity prices and to perform the BSM evaluation for each Examined Facility. The conclusion of this section summarizes our evaluations of the Part A test in CY19 ASDU Study.

A. Implications of Factors Identified in Section VIII

This sub-section discusses how key factors identified in Section VIII affected the Part A test.

34 See *BSM Narrative and Numerical Example*, Section 2.

35 The five examined facilities examined under the Part A test include the CEE projects and QREAs.

36 For each Examined Facility, the Part A test is conducted after the Part B test.

37 At the end of the initial decision round, four of the Examined Facilities located in a Mitigated Capacity Zone failed to post security for their PCA. Consequently, the NYISO provided the members of the CY19 ASDU their final PCA and BSM determinations as part of the second round.

1. Starting Capability Period of Summer 2022

In accordance with the Tariff, the CY19 ASDU Projects were assumed to enter in Summer 2022. The CY19 ASDU Projects included a diverse set of technologies and project circumstances, and it is unrealistic to assume that all projects would begin operations on the same timeline.[38]

The use of Summer 2022 as the SCP lowered the price forecast used for the Part A test in the final round of the CY19 ASDU Study. The forecasted ICAP prices in Zone J were significantly higher for 2023/24 and 2024/25 than for 2022/23 (the first year of the MSP), due to the removal of capacity affected by the Peaker Rule in May 2023. However, the capacity surplus in 2023/24 and 2024/25 would still have been insufficient to exempt the Examined Facility that was evaluated in the final round. Therefore, assuming a later start date for Examined Facilities with longer lead times would not have altered the Part A test determination in the final round of the CY19 ASDU Study.

2. Capacity Assumed to be In-Service During the Mitigation Study Period

As discussed in VIII.B, the NYISO made several assumptions regarding the set of resources that will be in-service before and during the MSP for the CY19 ASDU BSM evaluations. In particular, the NYISO included all projects that were determined to be exempt from BSM and accepted their PCA in the recent completed CY19 evaluations. These projects totaled 48 MW of summer ICAP in Zone J. Exclusion of any or all of these projects would not have changed the outcome of the Part A test in the CY19 ASDU Study.

3. Estimating Locational Capacity Requirements for the Mitigation Study Period

In its CY19 ASDU evaluations, the NYISO forecasted Locational Minimum Installed Capacity Requirements ("LCRs") for 2022/2023 for Zone J as 86.0 percent. The NYISO determined its LCR forecast for the MSP using its Alternative LCR Methodology and the assumptions developed for the ICAP Forecast.[39] The forecasted LCRs have a significant impact on the available headroom in the Part A test. For instance, a one percentage point decrease in Zone J LCR would have reduced the ICAP price forecast in the first year of MSP by up to $17/kW-year.

However, to the extent that the forecasted LCRs differed from the prevailing values (80.3 percent in Zone J), the use of the current (i.e. 2021/22 Capability Year) LCRs would not have changed the outcome of the Part A test in the final round of the CY19 ASDU Study.

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38 See subsection VIII.A for additional discussion of this issue.

39 As discussed in section VIII.D, the increased Zone J LCR was partly due to the inclusion of CY19 ASDU Projects, which caused the Zone J ICAP/UCAP Derating Factor to increase. Hence, the increase in the UCAP Requirement was relatively small.

B. Conclusions

In the CY19 ASDU Study, the forecasted ICAP prices for the first year of the MSP were lower than the DNC in Zone J. Hence, no Examined Facilities in Zone J were determined to be exempt under the Part A test. Overall, we find that the Part A tests in CY19 ASDU evaluations were performed in accordance with the NYISO MST.

We identified one issue related to the SCP assumption that affected the Part A ICAP price forecast in the final round of the CY19 ASDU Study. Although this issue did not affect the outcome of the Part A test in the final round of the CY19 ASDU BSM evaluations. Hence, we recommend the NYISO address this issue in its future evaluations.

V. PART B TEST RESULTS

An exemption is granted in the Part B test if the average capacity price forecast over the three-year MSP is higher than the Unit Net CONE ("UNC") of the Examined Facility.[40] The Unit Net CONE is equal to the annualized levelized CONE of the project minus the net revenue earned from selling Energy and Ancillary Services.[41] The purpose of the Part B test is to ensure that a project is not mitigated when it would be economic for the project to move forward.

In the CY19 ASDU BSM evaluation, the NYISO conducted the Part B test for five Examined Facilities. The NYISO's ordering of Examined Facilities for the Part B test included the facilities that were eligible for CEE or REE.[42] Examined Facilities were ordered according to their presumptive Offer Floors and tested sequentially. If the presumptive Offer Floor of an Examined Facility was lower than the ICAP price forecast, it was included in the test for the subsequent project. Otherwise, the Examined Facility was excluded from the ICAP forecast for the subsequent project in the sequence.

Following the Initial Decision period, four Examined Facilities rejected their PCAs. In the Final Decision Round of the CY19 ASDU BSM evaluation, the NYISO conducted the Part B test for one Examined Facility. The UNC of the El Sunset Park Project was higher than the corresponding capacity price forecast over the MSP in the final round of the CY19 ASDU BSM evaluation, hence the project was not exempt under the Part B test.

We find that the Part B test in the CY19 ASDU BSM evaluation was performed using reasonable assumptions that were in accordance with the NYISO MST. Subsection A evaluates the assumptions used to forecast capacity prices and to perform the Part B test of the CY19 ASDU BSM evaluation. The conclusion of this section summarizes our evaluations of the Part B test in CY19 ASDU Study.

A. Implications of Factors Discussed in Sections VI, VII and VIII

This sub-section discusses how several key factors identified in other sections of this report affected the outcome of the Part B test in the CY19 ASDU BSM evaluations. Sections VI, VII and VIII discuss in detail other assumptions that were used in the Part B test.

40 See BSM Numerical Example, Section 3.

41 The assumptions for the estimated annual levelized CONE calculations for the Examined Facilities are evaluated in Section VI, while the reasonably anticipated net revenue assumptions are evaluated in Section VII. Other relevant forecasting assumptions are discussed in Section VIII.

42 Three out of the five Examined Facilities applied for CEE, and one applied for REE.

1. Starting Capability Period of Summer 2022

In accordance with the Tariff, the CY19 ASDU Projects were assumed to enter in Summer 2022.[43] The CY19 ASDU Projects included a diverse set of technologies and project circumstances, and it is unrealistic to assume that all projects would begin operations on the same timeline.

In the initial round of CY19 ASDU BSM evaluation, the estimated net revenue of the CHI Project in the first year of the MSP was over 10 percent higher than the average revenues in the second and third year of the MSP. As discussed in VII.A.1, this is because of the lower capacity and energy surplus in HQ in the later years. Hence, assuming a later start date than 2022/23 for the CHI Project, all else being equal, would have increased the UNC for the project.

In both rounds of the CY19 ASDU BSM evaluation, the forecasted ICAP prices during the last two years of the MSP in Zone J were substantially higher than in the first year due to the removal of capacity affected by the Peaker Rule.[44] Hence, assuming a project will be in service earlier than its actual start date could lead to mitigation of an otherwise economic project. Nonetheless, the SCP assumption by itself did not impact the final determination in the CY19 ASDU BSM evaluation.

2. Estimating Locational Capacity Requirements for the Mitigation Study Period

In its CY19 ASDU BSM evaluation, the NYISO forecasted Zone J LCRs for all three years of the MSP as 86 percent.[45] The LCR for the 2021/2022 Capability Year in Zone J was 80.3 percent. The NYISO determined its LCR forecast for the MSP using its Alternative LCR Methodology and the assumptions developed for the ICAP Forecast.

The forecasted LCRs have a significant impact on the Part B ICAP price forecast. For instance, a one percentage point decrease in Zone J LCR would have reduce the average ICAP price forecast over the last two years of the MSP by up to $17 per kW-year.[46]

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43 The assumption regarding the Starting Capability Period is discussed in further detail in subsection VIII.A.

44 See *Buyer Side Mitigation ICAP Forecast – Class Year 2019 NYC Additional SDU Study Assumptions & References* document, available at: link.

45 See section 2.2 of the *Buyer Side Mitigation ICAP Forecast – Class Year 2019 NYC Additional SDU Study Assumptions & References* document.

46 As the ICAP price in Winter 2022/23 Capability Period in Zone J was set by NYCA in the final round, the decrease of one percentage point decrease in Zone J LCR resulted in a much smaller reduction of the ICAP price in the first year of the MSP.

However, since the El Sunset Park Project was not exempt under the Part B test, lowering the LCRs further to the 2021/22 levels in the ICAP price forecast would not have altered the outcome of the Part B test in the final round of the CY19 ASDU BSM evaluations.

3. Issues Affecting Net Revenues of the Ravenswood Projects

As described in subsection VII.D.1, the NYISO estimated the net revenues for the Ravenswood Projects in its CY19 ASDU evaluations using an optimization model that included a characterization of various physical costs/ constraints related to the operation of the resource.[47] However, the dispatch model likely overestimated the net revenues of battery storage units for the following reasons:

- The dispatch model assumed perfect foresight of prices for the unit operator.
- The NYISO's model implicitly allowed for interval-level offers/ bids, whereas the unit operators can only submit hourly offers/ bids in accordance with current market rules.

Modifying the NYISO's model to address the above shortcomings would not have affected the Part B determinations for the Ravenswood Projects in the initial round.

4. Impact of Non-NYISO Revenues Included in Net CONE Estimates

The Tariff requires the NYISO to include in its net revenue calculations "revenues associated with other energy products (such as energy services and renewable energy credits".[48] Therefore, the NYISO considered revenues from the sale of Renewable Energy Credits ("RECs") in estimating the UNC of the CHI and El Sunset Park Projects. REC revenues reduced the UNCs of these projects significantly. Nonetheless, even if the REC revenues were excluded from the Net CONE calculations, the final determination in the CY19 ASDU BSM evaluation would not have been different.

B. Conclusions

In the final round of the CY19 ASDU BSM evaluations, the UNC of the sole remaining Examined Facility (the El Sunset Project) in Zone J was higher than the average capacity price forecast over the three-year MSP. Accordingly, it was determined to be not exempt from the Offer Floor under the Part B test.

Although the Examined Facility benefited from federal and state incentives, ultimately, the high capital cost was the key driver of the Part B test outcome in the final round of the CY19 ASDU BSM evaluation. Overall, we find that the Part B tests in the CY19 ASDU BSM evaluations were performed using reasonable assumptions in accordance with the NYISO MST.

47 The constraints modeled included a limit on the total number of charge/ discharge cycles.

48 See MST §23.2.1. Also see subsection VII.C.

We recommend the NYISO address the following issues in its future evaluations:

- Starting Capability Period is unrealistic for most Examined Facilities
- Modify ESR dispatch model to: (a) reflect the ability of the ESR to submit only hourly offers, (b) account for the operator's limited foresight of future prices when offering the unit

None of the above issues affected the final determinations for the CY19 ASDU BSM evaluations.

VI. PART B TEST INPUT – COST OF NEW ENTRY

The BSM exemption test requires the NYISO to estimate the annual levelized CONE of each Examined Facility for use as an input to the Part B test. The developers of the CY19 ASDU Projects provided cost information which was evaluated by the NYISO with the assistance of engineering consulting firms. In some cases, the NYISO substituted a developer's identified cost estimates with one that the NYISO determined was more reasonable. This section evaluates key assumptions used in the CONE estimates.

A. Implications of Factors Identified in Section VIII

This sub-section briefly discusses how factors identified in Section VIII affected the estimated CONE of the CY19 ASDU Projects.

1. Starting Capability Period of Summer 2022

As discussed in section VIII.A, the Tariff requires the NYISO assume an in-service date of Summer 2022 for all CY19 ASDU Projects, which is unrealistic since several Examined Facilities are large projects and require long development times. This affected the CONE of the Ravenswood and CHI Projects.

- The costs of battery storage projects are projected to decline considerably in the future. Hence, if a more realistic SCP was used for the Ravenswood Projects, the NYISO would have utilized a lower cost when estimating the CONE of the projects.[49]
- During the spring, summer, and fall, there is substantial excess capacity in Quebec region. However, the HQ region is likely to be capacity constrained during some of the winter months over the MSP. During such months, the cost of procuring capacity in HQ for the CHI project is likely to depend on the price of capacity in neighboring areas, where additional capacity could be exported from HQ given the available interface capabilities. However, the capacity price in neighboring regions depends on the SCP. Hence, the assumed SCP of Summer 2022 affected the (and likely resulted in a slightly lower) CONE for the CHI Project.

B. Assumptions Affecting the CONE of Multiple CY19 ASDU Projects

1. Cost of Capital

The NYISO used the cost of capital estimates submitted by the CY19 ASDU Projects' developers when they were well-substantiated or reasonably consistent with the risk profile of the projects. To the extent that firm-specific or project-specific information was unavailable or

[49] The project developer publicly indicated that "the first 129-MW phase of the Ravenswood facility now may not start up until June 2024", see article.

unsuitable for calculating the WACC for that Examined Facility, the NYISO used values developed in the 2020 ICAP Demand Curve Reset study.

The NYISO assumed that two of the Examined Facilities would receive revenues from sale of Renewable Energy Credits ("RECs") in addition to revenues from the NYISO-operated markets. For these projects, the NYISO developed a representative project-specific WACC that is lower than the value developed in the 2020 ICAP Demand Curve Reset study. The NYISO's estimate reflects the lower risk associated with the REC revenues (relative to revenues from the NYISO's markets).[50] The NYISO estimated the WACC for REC-eligible projects as the weighted average of typical WACC for regulated and merchant entities in New York, with the contributions of REC revenues and NYISO-market revenues to the project's NPV as weights.[51]

We find the cost of capital parameters used by the NYISO in the CY19 ASDU BSM evaluations to be reasonable.

2. Amortization period

The estimated CONE of each CY19 ASDU Project was amortized over the project's economic life, which is the period over which an owner seeks to recover the project costs along with a return on investment. The assumed economic life affects the Gross CONE in a significant manner.

- For the CY19 ASU evaluations, the NYISO assumed a 20-year amortization period for all generation and energy storage Examined Facilities. This is consistent with the currently effective assumptions underlying the ICAP Demand Curves and past BSM evaluations, including the CY19 BSM evaluations.[52]
- Consistent with the CY15 and CY17 BSM evaluations, the CHI Project, as a HVDC transmission facility, was determined by the NYISO (and its consultants) to have a longer useful life than a peaking facility.

The NYISO's approach for determining the amortization period was reasonable.

3. Interconnection Costs

Consistent with Commission directives in previous BSM evaluations, the NYISO used the Project Cost Allocations ("PCAs") for System Upgrade Facilities ("SUFs"), System Deliverability Upgrades ("SDUs") and the headroom payments from the CY19 ASDU Facilities

50 See discussion of Non-NYISO Market Revenue Streams included in the NYISO's calculation of Net CONE in Section VII.C of this report.

51 The NYISO used merchant WACC inputs from the 2020 ICAP Demand Curve Reset study and regulated WACC inputs from the most recently approved rate cases of regulated electric utilities in the Mitigated Capacity Zones (Con Edison, Central Hudson and Orange & Rockland).

52 See section VI.B of our report on the Class Year 2019 BSM outcomes, available here.

Studies Reports to estimate the interconnection costs of the Examined Facilities.[53] The NYISO is responsible for developing the PCAs, so cost estimates were developed for each Examined Facility by the NYISO with input from the Connecting or Affected Transmission Owners ("TO") and the developer.

A developer must post financial security for the amount equal to its PCA in order to remain in the Class Year. If the actual cost of constructing the SUFs and/or SDUs is lower than the amount of Security, the developer is only responsible for the actual cost incurred.[54] The purpose of the PCA is to ensure that the developer is financially responsible for any interconnection costs, while the purpose of the BSM evaluation process is to estimate the expected cost of new entry of an Examined Facility. So, the differing purposes of the processes may justify the use of two estimates.

4. Contingency

The NYISO, in consultation with its engineering consultants, evaluated the validity of cost data submitted by the CY19 Projects' developers. In cases where there was significant uncertainty around the submitted cost data, the NYISO utilized a contingency value that is higher than the input to the prevailing ICAP Demand Curves calculations. For CY19 ASDU evaluations, factors that contributed to greater uncertainty in costs of the Examined Facility (or a portion of it) are: a) the developers did not have a signed EPC contract, and b) the project is in a preliminary stage of development. The contingency values used by the NYISO in CY19 ASDU BSM evaluations ranged from 5 percent to 20 percent of EPC costs.

C. Assumptions Affecting the CONE of Individual CY19 ASDU Projects

1. CONE of the El Sunset Park Project

The NYISO's consultants developed benchmark values for an offshore wind facility of a comparable size. If the submitted costs were comparable to the relevant benchmark, and/ or the submitted costs were well-substantiated, the NYISO utilized the capital and operating costs data from the project developer. Otherwise, the NYISO substituted values based on its consultants' cost benchmarks. Based on this comparison, the NYISO, among other changes, included property tax expenses only related to harbor and port facilities.

Federal Tax Credits - Offshore wind projects are eligible for an Investment Tax Credit ("ITC") or a Production Tax Credit ("PTC") as part of a federal incentive for renewable generation. The ITC reduces the federal income tax of the investors by an amount equal to 10 to 30 percent (depending on the in-service date) of the project's eligible capital costs, and is realized in the

53 See MST §23.4.5.7.3.3.

54 See OATT §25.8.6.2.

first year of the project's commercial operation.[55] The PTC is a per-kWh tax credit for the electricity produced by the facility over a period of 10 years. The NYISO solicited documentation from the developers of the EI Sunset Park Project to support the level of federal incentives that they claimed for their project.

Derating Factor - To determine the project's CONE in UCAP terms, the NYISO calculated a derating factor using hourly projected output data provided by the developer. In accordance with the Installed Capacity Manual, the NYISO determined derating factors based on weighted average hourly output during the 6-hour peak load window defined for each season.[56]

Offshore Wind Area Lease Costs – Developers are typically required to pay the US Bureau of Ocean Energy Management ("BOEM") leasing costs for the use of sites on the Outer Continental Shelf for offshore wind generation.[57] These payments are determined by the prices resulting from periodic auctions conducted by the BOEM. The prices in these auctions are generally driven by the state policies to promote offshore wind, since these projects may not generally be economic based solely on wholesale market revenues, federal incentives, and the sale of renewable energy credits in solicitations that are open to other technologies and other locations.[58] Hence, absent state support to offshore wind resources, a developer would likely incur minimal site leasing costs, as the price of these lease areas may be insignificant. Accordingly, for the purpose of the BSM evaluations, the NYISO excluded the site lease costs of the EI Sunset Park Project.

2. CONE of the Liberty Project

The Liberty Project includes a generation facility in New Jersey as well as a new underground and submarine cable interconnecting the power plant to New York City.

- The NYISO evaluated the developer's submitted capital and operating costs for the generating facility based on cost benchmarks derived from the most recent Demand Curve Reset study.
- The NYISO's consultants developed cost benchmarks specific to the underground and submarine portions of the cable, based on their experience with similar projects.

If the submitted costs were comparable to or exceeded benchmark values, the NYISO utilized the submitted values. Otherwise, the NYISO substituted values based on its cost benchmarks.

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55 See U.S. Department of Energy, "Guide to the Federal Investment Tax Credit for Commercial Solar Photovoltaics", January 2020. See link.

56 The NYISO's procedures for determining the summer and winter derating factor of intermittent resources is consistent with the Attachment J, Section 3.4 of the Installed Capacity Manual.

57 See link for more information.

58 See Section VIII.A of our 2020 State of the NYISO Markets report, available here.

3. CONE of the Ravenswood Projects

The NYISO evaluated the developer's submitted capital and operating costs for the facility based on cost benchmarks derived from the most recent Demand Curve Reset study. If the submitted costs were comparable to or exceeded benchmark values, the NYISO utilized the submitted values. Otherwise, the NYISO substituted values based on its cost benchmarks.

The NYISO also made the following specific adjustments to the submitted costs:

- *Pre-existing Non-common Facilities' Costs* - Pre-existing non-common facilities include equipment that was originally built for another generator that is no longer in use. The proposed Ravenswood Projects will be developed at a site with generators that will not be in use in the future.[59] The developer estimated the embedded cost of the land based on the market value of the land, which the NYISO used in estimating CONE for the project.[60]
- *Property Tax Expense* - Consistent with the 2020 ICAP Demand Curve Reset study the NYISO considered the project to be exempt from paying property tax expense for the first 15 years of its operations.
- *Operations and Maintenance ("O&M") Costs* – The developer's categorized certain costs as variable O&M costs which the NYISO adjusted and used as fixed O&M costs for estimating the CONE for the project. The NYISO estimated the annual levelized value of the variable O&M costs from the developer's submission and used it as the fixed O&M cost. We recommend that the NYISO account for the variable O&M costs in the dispatch model in the future BSM evaluations.

4. CONE of the CHI Project

The NYISO estimated the CONE for the CHI Project using methodologies developed during the prior BSM evaluations, although the NYISO considered additional information that was submitted by the project developer in the CY19 ASDU BSM evaluations.[61]

D. Conclusion – Cost of New Entry

We reviewed detailed information on the NYISO's estimates of the annual levelized CONE values for the CY19 Project. We find that the NYISO's estimates were reasonable and made in accordance with the Tariff.

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59 See article.

60 The use of book values (rather than market values) is consistent with the requirement to use embedded costs. However, using market value instead of the book value for the land cost did not impact the determinations.

61 See the MMU report "Assessment of the Buyer-Side Mitigation Exemption Tests for the Class Year 2012 Projects"

VII. PART B TEST INPUT – NET REVENUE

The forecasted net Energy and Ancillary Services revenue is a key component of the Part B test, since a new project developer expects to recoup a large share of its investment from future energy and ancillary services revenues.[62] Estimating the net revenue of a new generator is a complex endeavor, requiring the use of models to estimate future LBMPs and reserve prices at which the new facility would sell its output, and forecast when the Examined Facility will be scheduled.

We reviewed the assumptions used by the NYISO to estimate the net revenues for the CY19 ASDU Projects to determine whether they were reasonable and consistent with the Tariff. We find that the NYISO used assumptions that were reasonable and tariff compliant. This section is divided into the following sub-sections:

- Implications of key assumptions described in Section VIII
- LBMP and Ancillary Services Price forecasts – This component of the net revenue model forecasts market clearing prices where the Examined Facility would sell electricity.
- Non-NYISO Market Revenue Streams – This sub-section describes the NYISO's treatment of non-NYISO market revenues for some of the CY19 ASDU Projects
- Scheduling models – This forecasts how the Examined Facility will be scheduled based on the LBMPs estimated by the NYISO, the operating parameters (e.g. variable costs, heat rate) of the Examined Facility, and other factors that affect scheduling.
- The conclusion discusses the overall results of the net revenue evaluation.

A. Implications of Assumptions Discussed in Section VIII

This sub-section discusses how factors identified in Section VIII affected the net revenue estimates for the CY19 ASDU Projects.

1. Starting Capability Period of Summer 2022

The Starting Capability Period ("SCP") is important because the assumed timing of entry affects the resource mix, gas futures prices and the load forecast, which are key drivers of the LBMP price forecast that is used to calculate net revenue.[63] Under the current Tariff, all CY19 ASDU Projects are assumed to enter in Summer 2022, although it would be more reasonable to assume that some long lead-time projects would enter much later (e.g. CHI and El Sunset Park Projects).

62 Net revenues are an input to the Unit Net CONE. See *BSM Numerical Example*, Section 3.2.

In particular, for the Initial Decision Round, the assumed SCP impacted the CHI Project's cost of purchasing electricity in HQ for export to New York City. In general, adding supply to the HQ region would tend to reduce the estimated cost of energy in HQ, while additional internal demand would tend to raise the cost of energy. In 2022/23, it is anticipated that supply additions will exceed the forecasted growth in demand in the HQ region. However, in 2023/24 and 2024/25 the capacity margin in HQ is expected to tighten relative to the prior year. Thus, assuming an early SCP of Summer 2022 would tend to overestimate the available energy that could be exported from HQ to neighboring markets. This affects estimated net revenues by underestimating the cost of energy for the CHI Project. Hence, all else being equal, modifying the SCP to a more realistic date would reduce the net revenues for the CHI Project.

B. LBMP and Ancillary Services Price Forecasts

The subsection discusses the NYISO's methodology and its assumptions for projecting the energy and ancillary services prices that were used to estimate the net revenues for the CY19 ASDU Projects.

1. LBMP Forecast

Consistent with the CY19 BSM evaluations, the NYISO utilized a two-step procedure for forecasting the LBMPs for the MSP and the Capability Year 2021/22.[64] The NYISO's approach entailed using the outputs of a neural network model and the GE-MAPS model in a sequential manner to forecast the LBMPs.[65]

The NYISO updated the parameters of the neural network model that it used in its CY19 BSM evaluations, to predict hourly zonal LBMPs for Capability Years 2022/23 – 2024/25.[66]

The NYISO utilized results from the GE-MAPS simulations to adjust the output of the neural network model (hourly zonal LBMPs) for changes in resource mix during the future years, and

64 The NYISO used the forecasted or historical (as available at the time of analysis) LBMPs to determine the net energy and ancillary services revenue for the demand curve unit at the tariff defined Level of Excess conditions, in a manner consistent with the DCR rules. The projected net revenues were then used to forecast the ICAP reference points for the years before and during the MSP, as described in section 2.4.2 of the *Buyer Side Mitigation ICAP Forecast – Class Year 2019 NYC Additional SDU Study Assumptions & References* document.

65 NYISO's approach for forecasting the LBMPs for the MSP is further described in section 3.2 of the BSM Narrative and Numerical Example.

66 See Section VII.B in *Assessment Of The Buyer-Side Mitigation Exemption Tests For The Class Year 2019 Projects* report.

for the differences in zonal and nodal pricing.[67] Specifically, the NYISO used LBMPs from GE-MAPS simulations to estimate a matrix of scalars (at a month-hour level) for adjusting the output of the neural network model to forecast LBMPs for use in the scheduling models.

For the CY19 ASDU BSM evaluations, the NYISO used gas futures prices to forecast the gas prices, LBMPs and the net revenues for the Examined Facilities and the Demand Curve unit. This is consistent with the approach the NYISO utilized in the Part B tests in previous Class Years. The forecasted LBMPs for projects in Zone J were based on gas prices at Transco Zone 6 (NY).

2. Ancillary Services Prices Forecast

The forecasted prices of all reserve products for the MSP were based on the historical prices from the analogous period, consistent with the approach the NYISO used in its prior evaluations.[68]

- To forecast reserve prices for future years, historical prices were adjusted to account for the impact of changes in the resource mix using an array of scalars (at a month-hour level). These scalars were derived from the LBMP results of GE-MAPS simulations of scenarios with and without the Examined Facilities.
- The NYISO began to model Zone J reserve requirements starting June 26, 2019. Hence, data on any increase in the Zone J reserve prices relative to the SENY reserve prices were not available for the entire historical period that was considered for forecasting prices for the MSP. Therefore, the NYISO projected the reserve prices for the Zone J resources by assuming a similar average differential between Zone J and SENY reserve prices, as was observed during the Capability Year 2019/20.

C. Non-NYISO Market Revenue Streams

The Tariff requires the NYISO to include in its net revenue calculations "revenues associated with other energy products (such as energy services and renewable energy credits".[69] Two CY19 ASDU Projects indicated that their projects would receive revenues in addition to what they would receive from the NYISO-operated markets. The EI Sunset Park Project participated in the state's Offshore Wind Standard-related solicitation and entered into a contract to provide

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67 In addition to modeling the entry of CY19 ASDU Projects, the MAPS simulations also modeled changes to the capacity of a number of existing units, as described in subsection VII.A.**Error! Reference source not found.**.

68 The reserve prices for 2022 were kept the same as prices in 2018, prices for 2023 were kept same as prices in 2019, and so on.

69 See MST §23.2.1

offshore RECs ("ORECs") to NYSERDA.[70] The CHI Project is eligible to participate in the state's Tier 4 REC program as well as the market for credits to comply with New York City's Local Law 97.[71, 72] Accordingly, the NYISO assumed that these two Examined Facilities will receive payments for the RECs they generate.

Projects are generally compensated for RECs through long-term bilateral contracts rather than a procurement mechanism that sets transparent uniform prices for all renewable resources. When revenues are received by an Examined Facility from the sale of energy, capacity, ancillary services, or other services such as RECs to an agency of the State or a regulated utility, the NYISO replaces the revenue from the contract with a competitive proxy value that one would expect similarly situated units to receive.[73] Consistent with CY19 BSM evaluations, the NYISO estimated the REC revenues assuming a price of $22.33/MWh, equal to the most recently posted Tier 1 REC sale price posted by NYSERDA.[74]

The Tier 1 REC price represents the cost of attracting an additional unit of energy from new renewable resources, and reflects a reasonable competitive proxy for the cost of satisfying the state's clean energy targets. In contrast, solicitations for ORECs pursuant to the state's Offshore Wind Standard and Tier 4 RECs are not open to all technologies/ locations, and consequently, the resulting prices are likely to be higher than the competitive proxy value of RECs.

The design of the program rules related to Local Law 97 were not finalized at the time of the CY19 ASDU BSM evaluation, and the emission limits are not scheduled to be in place until 2024. Hence, market prices for the credits that can be used to comply with program requirements were not available for consideration in the BSM evaluation of the CHI Project.

The NYISO's inclusion of REC revenues was compliant with its Tariff, and the methodology to estimate REC revenues of solar resources was consistent with its previous BSM evaluations and

70 See NYSERDA, *Launching New York's Offshore Wind Industry: Phase 1 Report,* October 2019, available here.

71 The Tier 4 program is intended to increase the penetration of renewable energy in New York City. To be compensated under Tier 4, the resource must either be located in Zone J or delivered to Zone J over a new transmission interconnection (that electrically connects after October 15, 2020). Hydropower resources are eligible, provided that they were existing or already under construction as of June 18, 2020. See link.

72 Local Law 97 requires owners of covered buildings in New York City to reduce emissions per square foot below a declining limit over time. Building owners may comply by offsetting their emissions through the purchase of renewable energy credits. RECs used for this purpose must be deliverable to NYISO Zone J and may be generated from a hydropower resource. See Local Laws of the City of New York No. 97.

73 See Astoria Generating Company, L.P., et al. v. New York Independent System Operator, Inc., 140 FERC ¶ 61,189 (2012) at PP 134, 135 and 137.

74 This reflects NYSERDA's 2021 Quarter 1 Tier 1 REC Sale Price. See link.

a related Order from the Commission. An alternative approach for estimating the competitive proxy values could have affected the determinations for the CY19 ASDU Projects.

D. Scheduling Models

The following subsections discuss the scheduling models the NYISO used for estimating the net revenues of the CY19 ASDU Projects.

1. Energy Storage Scheduling Model

The NYISO modeled the operation of a ESR as an optimization problem with the objective of maximizing profit from the sale of energy and reserves over all the intervals in the MSP. The NYISO's ESR dispatch modeling methodology is the same as the one used in its CY19 BSM evaluations.[75] The key assumptions of the NYISO's methodology are:

- The ESR will be committed in the day-ahead market for selling 10-minute spinning reserves in all hours. The resource can buy-out of its day-ahead commitment, and discharge/ charge in each interval in real-time.
- The resource will be able to modify its offer for every interval in the NYISO's real-time market.
- The number of charge/ discharge cycles a resource can go through is limited to an average (over the MSP) of one cycle per day.
- The charging cost in the model includes a cost adder, calculated as the product of the unit's State of Charge ("SOC") and a constant value, to prevent the SOC from deviating significantly from a preestablished target (50 percent). The NYISO estimated this adder as the value that produced an average SOC of 50% over the MSP.
- The unit-specific round-trip efficiency of the ESR is applied when the unit is charging.
- The ESR incurs costs associated with auxiliary station load (unit-specific) and rate schedule 1 costs for injections (0.30 $/MWh) and withdrawals (0.78 $/MWh).

We identify two factors that are likely to result in the ESR dispatch model overestimating the unit's net revenues:

- Under the current rules, all resources can only submit hourly offers. Therefore, allowing the unit operator to place interval-level offers/bids would enable unrealistically high net revenues for the unit.
- The model assumes perfect foresight of future prices for the unit operator. Hence, the resulting net revenues are likely to be overestimated.[76]

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75 See Section VII.D.I on page 44 of the CY19 MMU Report, available at: link

76 The cost adder that is applied to the SOC could partially limit the increase in net revenues due to the perfect foresight assumption. However, the extent to which the assumed cost adder offsets the increase in net revenues due to perfect foresight is unclear.

Neither of the above issues affected the CY19 ASDU determinations. Nonetheless, they could result in an unreasonably low UNC estimates in future evaluations. Accordingly, we recommend the NYISO modify its ESR dispatch model to address these issues.

2. EI Sunset Park Project Scheduling Model

The NYISO estimated real time schedules for the EI Sunset Park project based on hourly output profile data that was substantiated by the project's developer. The NYISO estimated the project's net revenues from the sale of (a) energy in the NYISO's real-time market, and (b) Renewable Energy Credits ("RECs").

For each year of the Mitigation Study Period, the NYISO estimated the resource's net revenue as the product of the assumed output and the sum of the real-time energy price at its location in that hour and the REC price. For hours when the hourly energy price was negative and greater in magnitude than the REC price, revenue was assumed to be zero.

3. Liberty Project Scheduling Model

The NYISO estimated the net revenues of the Liberty Project using the scheduling models its consultants developed as part of the 2020 ICAP Demand Curve Reset study.[77] The scheduling models determines the optimal set of hours for running the unit each day based on DAM and RT LBMPs and Ancillary Services prices, considering various categories of costs (including fuel costs based on gas and oil prices, start-up costs, balancing charges, emissions allowance costs) and constraints on operation of the unit (e.g. start time, run hour limits).

4. The CHI Project Scheduling Model

The NYISO's model assumed the CHI Project would export to New York City when the summation of the forecasted day-ahead LBMP at the Project's interconnection node in Zone J and the applicable REC price was greater than the expected cost of purchasing power in the HQ region plus the applicable transmission service charge. The underlying assumptions and methodology of the NYISO's net revenue model for the CHI Project was discussed in our CY12 BSM evaluation and CY17 BSM evaluation reports.[78]

In its CY19 ASDU BSM evaluation, the NYISO updated the following inputs to the model it used in the CY17 BSM evaluation:

- Peak load and energy demand forecasts in HQ,

[77] The assumptions and methodology for the Demand Curve scheduling models are described in *Independent Consultant Study to Establish New York ICAP Demand Curve Parameters for the 2021/2022 through 2024/2025 Capability Years – Final Report*, dated September 9, 2020.

[78] See section VI.E of the CY12 MMU report, available at: link, and section VI.D.3 of the CY17 MMU report, available at: link.

- Forecasted capacity additions in HQ,[79]
- LBMPs in neighboring regions,
- Transmission service charges,
- RGGI and Massachusetts GHG emissions allowances' price forecasts, and Canada's carbon tax, and[80]
- the USD/ CAD exchange rate.

This methodology is consistent with the Tariff's guiding principles to determine a UDR project's likely projected net Energy and Ancillary Services.

E. Conclusion

Overall, we find that the NYISO's methodologies for estimating the net revenues were reasonable and in compliance with its Tariff. We recommend the NYISO consider the following methodological changes to its ESR dispatch model to account for the following:

- Reflect the ability of the ESR to submit only hourly offers
- Develop a reasonable methodology that accounts for the operator's limited foresight of future prices when offering the unit.

79 The NYISO also assumed the surplus capacity in Newfoundland and Labrador to be available for export from HQ.

80 Canada has implemented a carbon tax that is expected to increase every year until it reaches C$170 per ton in 2030 (see link). However, the tax is imposed only on units with an emission intensity in excess of 0.37 CO2e tons per MWh (see, BofA Securities research article *'Our 2021 Canadian Utilities & Power Conference: Carbon Pricing, Taxes & More',* published on April 9, 2021). This threshold level is approximately equal to a heat rate of ~7,500 BTU/kWh. Hence, the NYISO included the carbon tax in its LBMP estimates for Ontario only when the implied marginal heat rate is above 7,500 BTU/kWh.

VIII. Assumptions Affecting Part A and Part B Tests

A. Starting Capability Period of Summer 2022

The Starting Capability Period ("SCP") is the Capability Period in which the Examined Facilities are assumed to begin operating and offering capacity for the purposes of the BSM evaluations. As the CY19 ASDU evaluation was completed before the lockdown of the CY21 Annual Transmission Baseline Assessment study cases, the Tariff required the NYISO to assume the same SCP as the CY19 BSM evaluations.[81] Hence, the NYISO assumed that CY19 ASDU Projects will be in service beginning in May 2022.

The three-year rule was implemented to increase transparency and the certainty for developers and market participants regarding the assumptions used in the BSM evaluations and to avoid gaming of the timing of a project's identification of its commercial operation date ("COD"). However, this approach often results in a misalignment of the SCP with the likely CODs of Examined Facilities in two ways:

- First, the COD of an Examined Facility depends on, among other factors, the underlying technology and its timeline for securing the required permits. As a result, assuming that all Examined Facilities will begin operations three years from the calendar year of the Class Year is likely to be incorrect for a number of Examined Facilities.
- Second, the tariff provision for determining the Starting Capability Period is tied to the start of the Class Year and does not account for the time required to perform CY studies. Therefore, in cases where the developer's decision to move forward with the project is contingent on the PCA and/or the determination, the SCP is much earlier than the likely commercial operation date.

The SCP is important because the timing of entry affects a number of inputs to the Part A and Part B tests, including the load forecasts, LCRs, units assumed to be in service for the BSM evaluations, capital costs, energy revenues and any applicable opportunity costs.[82] Furthermore, if the SCP is not aligned with the CODs of Examined Facilities, it might disadvantage Examined Facilities that are likely to be operational earlier than other projects.[83] Consequently, a fixed SCP could produce unreasonable determinations when actual CODs are misaligned with the assumed COD.

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81 See MST §23.4.5.7.3.2.

82 We discuss the effects of each of these inputs on the Part A and Part B tests in the CY19 ASDU BSM evaluations in sub-sections IV.A.1, V.A.1, VI.A.1, and VII.A.1. Previous MMU BSM Reports have identified additional problems with the Starting Capability Period assumption.

83 For instance, assuming that a new project with a long lead-time will begin operating at the same time as existing and/ or short lead-time projects may result in an unrealistically low capacity price forecast if it includes the new long lead-time project.

Hence, we recommend the NYISO modify its Tariff provisions related to the SCP to improve alignment with the likely CODs of the Examined Facilities. A potential alternative to the three-year rule could be to assume a COD that is based on the underlying technology of the Examined Facility.[84] Such a technology-specific start date rule could provide that the date be adjusted as needed to reflect an Examined Facility's progress in meeting its permitting milestones and the timing of conducting the CY studies.[85]

B. Capacity Assumed to be In-service During the Mitigation Study Period

The BSM exemption test requires the NYISO to project capacity prices as much as six years into the future. The resources that are assumed to be in service during the MSP are an important driver of the projected capacity prices. Over-estimating the amount of in-service capacity increases the likelihood of mitigating an economic project, while under-estimating the amount of in-service capacity may lead to under-mitigation. The capacity price forecast is very sensitive to the amount of capacity that is assumed to be in service. For instance, a 100 MW increase in UCAP could increase the Zone J prices by over $12 per kW-year UCAP averaged over the MSP in the CY19 ASDU Part A test.

The LBMP forecasts are also affected by both the quantity of in-service resources and the anticipated capacity factor of the resources. High-capacity factor resources (e.g., current or prior CY Projects) have more impact on LBMPs than low-capacity factor resources (e.g., units in a Mothball Outage). The LBMP forecasts are a key input to the energy and ancillary services net revenues, which are used to calculate Unit Net CONE of the Examined Facilities.

In this sub-section, we discuss the treatment of several categories of resources in the NYISO's ICAP price and LBMP forecasts for CY19 ASDU Projects. We also identify areas where the Tariff or the current procedures for determining the in-service capacity should be modified.

84 For instance, the Energy Information Administration in its NEMS model assumes a lead time that varies as follows: less than a year (for ESRs), two years (for Combustion Turbine and Solar PV facilities), and four years (for Biomass, Coal and Offshore wind facilities) for most of the generation technologies.

85 The NYISO had proposed Tariff revisions for the Part A test that would have, in part, addressed the misalignment of the SCP with the likely COD. See NYISO's April 30, 2020 filing in ER20-1718-001. However, the Commission rejected the NYISO's filing. The NYISO filed a Petition for Review of the Commission's order in the United States Court of Appeals for the District of Columbia Circuit on December 31, 2020.

1. Additional Units, Excluded Units and Units Transferring CRIS Rights

The NYISO included most facilities classified as Existing Units in the 2021 Gold Book.[86] This sub-section discusses the assumptions regarding inclusion of other categories of generation ("Additional Units"), and exclusion of certain existing facilities ("Excluded Units")in the NYISO's capacity price and LBMP forecasts for the CY19 ASDU BSM evaluations.[87]

Additional Units – These comprise resources that are in a Mothball Outage or an ICAP Ineligible Forced Outage ("IIFO") or resources that have recently retired. These resources currently possess CRIS rights, but are not operating and retain the ability to return to service during the MSP. In accordance with its Tariff, the NYISO excluded resources that were in an IIFO as a result of Catastrophic Failure, and resources whose CRIS expired at the time of Initial Determinations. The NYISO included any resources that were determined to have a positive net present value in case they returned to service.

Excluded Units – In the CY19 ASDU BSM evaluations, the NYISO reviewed publicly available information demonstrating with reasonable certainty that some of the units currently operating are likely to retire before or during the MSP.

- The NYISO also considered information from the compliance plans of generators affected by the Peaker Rule. The Peaker Rule limits NOx emissions rates of simple cycle units beginning in May 2023, with stricter limits beginning in May 2025. Units whose owners indicated that they intend to retire or permanently cease operation to comply with the May 2023 limits were excluded from the second year of the MSP. A subset of the affected unit owners indicated that some of the resources will not operate during the ozone season (May through September), but will continue operating during the other months of the year. Accordingly, the NYISO excluded these units from the ICAP supply for the months May through September.[88]
- The NYISO excluded the capacity from the Indian Point unit 3 for all the years of the MSP. [89]

We find that the NYISO's treatment of Additional Units and Excluded Units to be compliant with its Tariff.

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86 See Table III-2 of the 2021 Gold Book for CY19 ASDU evaluation. These resources possess CRIS rights, and are currently operating or may be in a Forced Outage or Inactive Reserve status, and are referred to as "Existing Units" (see MST §23.4.5.7.15.4).

87 See Section 3.2.1 of the *Buyer Side Mitigation ICAP Forecast – Class Year 2019 NYC Additional SDU Study Assumptions & References* document.

88 The NYISO identified units that ceased operations permanently due to the Peaker Rule as Incremental Regulatory Retirements for the purpose of its evaluations for REE. See subsection III.A.4.

89 Indian Point unit 3 had retired in April, 2021, but was included as an existing facility in the 2021 Gold Book.

2. Existing Units at Risk of Retiring or Mothballing

The NYISO, in accordance with its Tariff, included all Existing Units in its price forecasts.[90] However, several capacity suppliers that are currently operating may choose to mothball or retire if capacity prices drop to levels that are insufficient to cover their fixed operating costs. Therefore, it is unrealistic to assume that all Existing Units will continue to operate during the MSP regardless of how low the forecasted prices are. However, the NYISO's current Tariff does not allow it to consider the economic circumstances of the resources while developing the price forecasts. Although this issue did not affect the ultimate outcome of the CY19 ASDU BSM evaluations, unrealistically low price forecasts could act as a barrier to new entry in future Class Years. Therefore, we recommend the NYISO work with its stakeholders to develop reasonable criteria for treatment of Existing Units that are at risk of retiring or mothballing.

3. Prior Class Year Projects in the Interconnection Queue

The BSM exemption test requires the NYISO to estimate the effects on capacity and energy prices of prior CY projects in the Interconnection Queue ("Prior-CY Projects") that accepted their PCA in a previous Class Year but have not begun construction. The developer of a new project must post security for the amount of the PCA, but there is no guarantee that such a project will eventually be built.[91] The assumptions regarding such projects are important because over-estimating the amount of in-service capacity tends to depress the capacity price and the LBMP forecasts. Since new projects could have high capacity factors, over-estimating the amount of new in-service capacity will tend to have large effects on the LBMP price forecast, which will also tend to inflate the UNC of the Examined Facilities.

The NYISO's tariff does not prescribe any specific assumptions for the treatment of Prior-CY Projects in the BSM exemption tests. Hence, it is important to use a reasonable approach for treatment of these projects in both the ICAP forecast as well as the net revenue calculations. The NYISO's treatment of these projects is described below.

The NYISO included a Prior-CY Project in the price forecasts based on whether it was reasonably likely that the project would be built under the circumstances modeled in the CY19 ASDU BSM evaluation. In particular, the NYISO assumed the project will be built if it has made progress in meeting its regulatory milestones, and if the project satisfied one of the following two criteria:

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90 See MST §23.4.5.7.15.4.

91 In some cases, the PCA may be very small relative to the overall investment, so there is little cost to the developer of remaining in the queue. In other cases, a project may remain in the interconnection queue for more than a year with little risk to the developer that it might lose a portion of its deposit if the project does not ultimately move forward.

- the developer has made some other significant irrevocable financial commitment towards the project, or
- the project would earn sufficient forecasted revenues from the NYISO markets for it to be profitable for the developer to move forward.

The NYISO applied the above criteria to determine whether a particular Prior-CY Project will be built, and included it in the ICAP supply as a price-taker or at the project's Offer Floor, if applicable. The NYISO's treatment is reasonable given the uncertainty about whether the Prior-CY Projects will ever enter service.

The NYISO, however, did not apply the above criteria for the projects that received an exemption and accepted their PCA in the recently concluded CY19 evaluations. Instead, the NYISO included all such CY19 projects in the ICAP supply as price-takers. The NYISO's treatment for the CY19 projects is consistent with the changes it proposed as part of its Part A enhancements filing. Ultimately, excluding the CY19 Projects from the ICAP forecast would not have affected any of the CY19 ASDU BSM determinations.

4. Examined Facilities Seeking Competitive Entry Exemption

As discussed in Section II, the NYISO considered requests from three Examined Facilities seeking a CEE ("CEE Projects") in its CY19 ASDU BSM evaluation. The NYISO's Tariff requires it to conduct the Part A and Part B tests modeling the potential entry of CEE Projects like other Examined Facilities. Accordingly, the NYISO estimated the UNC of the CY19 ASDU CEE Projects based on the information provided by project developers. The NYISO subsequently incorporated the UNC of the CEE Projects into its ICAP price forecast in a manner that is consistent with the test procedure described in Section VIII.H. However, the Tariff-prescribed treatment for the CEE Projects could produce unreasonable outcomes for the BSM evaluations.

A developer's choice to move forward with a CEE Project will be driven by its own expectations, but the same information is not incorporated into the NYISO's estimated UNC. For instance, the developer of a CEE Project that would qualify for an exemption from the Offer Floor may commence construction, and expend significant costs by the time the NYISO issues initial determinations. Similarly, it is possible for the developers of CEE Projects to have a view of the future market conditions that is significantly different from the NYISO's assumptions, particularly in areas where the NYISO's methodology could be enhanced.[92] In such situations, the UNC calculated in compliance with the tariff may not provide a reasonable representation of whether a CEE project would be in service during the MSP. Therefore, the NYISO's approach could result in unreasonably excluding CEE Projects in some situations.

92 See Table 3 for a summary of recommended enhancements to BSM evaluations.

Therefore, we recommend the NYISO develop Tariff provisions that would allow it to estimate the UNC based on a) any significant expenditures that the developer may have incurred by the Initial Decision Period, and b) well-substantiated developer forecasts.

5. Examined Facilities Seeking Renewable Entry Exemption

As discussed in Section III, the NYISO considered requests for REE from one Examined Facility in its CY19 ASDU BSM evaluation. The NYISO's Tariff requires it to evaluate Examined Facilities for a REE after it has conducted its Part A and Part B evaluations. Accordingly, the NYISO estimated the UNC of the QREA project based on the information provided by project developers. The NYISO subsequently incorporated the UNC of the QREA into its ICAP price forecast in a manner that is consistent with the test procedure described in subsection H.

6. Class Year 2019 Projects Located Outside the Mitigated Capacity Zones

For CY19 ASDU BSM evaluation, the NYISO assumed over 3GW (ICAP Summer) of CY19 projects and over 300 MW of ASDU projects that are located in Zones A-F and Zone K (Non-Mitigated Capacity Zones or "Non-MCZs"), respectively. The Tariff does not prescribe a specific treatment of the Non-MCZ Projects in its ICAP price forecast. Therefore, consistent with their treatment for determining LCRs for the MSP, the NYISO assumed that all Non-MCZ Projects will be in-service as price takers in the ICAP spot auctions for determining the (a) total UCAP, (b) the ICAP/UCAP translating factor, and (c) the winter-to-summer ratio.[93]

While it would be reasonable to include all Non-MCZ Projects that are currently operational, it may not be reasonable to assume all Non-MCZ Projects will be in-service as a project's decision to enter may depend on the capacity and energy revenues. Therefore, we recommend that the NYISO utilize the treatment that it followed in its CY17 evaluation for all the future CY evaluations.[94]

In CY19 ASDU BSM evaluations, the forecasted ICAP price for Zone J for some of the Capability Periods was determined by the NYCA ICAP demand curve. Hence, assuming that a subset of the Non-MCZ Projects will not be in-service during the MSP could have raised the forecasted ICAP price. However, this could have resulted in additional supply from price responsive supply such as imports, UDRs and mothball/ IIFO units.[95] Ultimately, this assumption did not affect any of the CY19 ASDU BSM determinations.

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93 The NYISO did not include the zone K ASDU projects in the estimation of LCRs, ICAP/UCAP translating factor, and the winter-to-summer ratio. However, this assumption did not have any impact on the outcome of the CY19 ASDU BSM evaluation.

94 See Section VII.D.6 of the CY17 BSM report that discusses the treatment of Class Year 2017 Projects Located Outside the Mitigated Capacity Zones.

95 See Section VIII.C.2 for treatment of imports.

C. Impact of Imports on Capacity Price Forecast

The NYISO's assumptions regarding capacity imports from neighboring control areas are important since they impact the ICAP price forecast used in the BSM evaluations. This sub-section discusses the underlying assumptions for imports into the NYCA from PJM, ISO-NE, HQ and IESO across various transmission lines.

1. Imports from PJM to New York City

The BSM exemption tests require the NYISO to estimate the effects on capacity prices of controllable transmission lines that possess Unforced Capacity Deliverability Rights ("UDRs"). The assumptions regarding such facilities possessing UDRs are important, since there is currently over 300 MW of potential capacity associated with UDRs between the PJM Interconnection ("PJM") and New York City.[96] The evaluation of potential UDR capacity is complicated by two factors:

- Holders of rights to use UDRs must obtain capacity from the neighboring market in order to sell capacity into New York. They will not generally do this unless the New York City price is expected to be greater than the price in the neighboring market.
- If the holder of rights to use the UDRs elects by the annual deadline not to use its UDRs to import capacity to New York, the New York State Reliability Council's annual IRM technical study and Study Report will assume the line can provide emergency assistance. Consequently, the existence of the transmission line will tend to reduce the LCR for Zone J and the G-J Locality.

In the CY19 ASDU BSM evaluation, the NYISO assumed that transmission lines possessing UDRs would import capacity to New York City at recently observed levels throughout the MSP. While this assumption did not impact the final outcome of the CY19 ASDU BSM evaluation, we recommend the NYISO to follow the approach that was used in the CY17 BSM evaluation.[97]

2. Imports to Zones A-F and Zone K

The amount of net imports to and generation in NYCA Load Zones external to the G-J Locality can have a significant impact on the BSM exemption test for projects in New York City. This is because capacity prices in the New York City are sometimes determined by the NYCA ICAP Demand Curve when there is substantial surplus capacity in New York City. In general, capacity surpluses are forecasted to occur most during the Winter Capability Periods when the seasonal

96 660MW CRIS for the HTP Scheduled Line expired in April, 2020.

97 In prior BSM evaluations, the NYISO assumed that transmission lines possessing UDRs would import capacity to New York City when capacity could be sold at a price that would compensate the UDR rights holder for the cost of obtaining capacity and transmission service in the neighboring market. See section VII.E.1 of the CY17 MMU report.

capability of most generators is highest. This subsection discusses assumptions made by the NYISO that affect the NYCA capacity price forecast.

Imports to Zone K

In recent years, there has not been a strong relationship between the capacity price spread between Long Island and neighboring ISOs, and the levels of capacity imports to Long Island across the Cross Sound Cable and the Neptune line (both of which have associated UDRs). Hence, the NYISO assumed that imports across the Cross Sound Cable and the Neptune line would remain at recently observed levels throughout the MSP.

Imports to Zones A-F

The NYCA's interfaces with neighboring Control Areas allow external resources from PJM, Hydro Quebec, ISO-NE and IESO to offer capacity into the NYCA region (*i.e.*, only the region outside of the G-J Locality, NYC, and Long Island).

PJM Interface – For the interface with PJM, the NYISO assumed that imports from PJM are likely to incur substantial firm transmission service charges and were assumed to be zero for the CY19 ASDU BSM evaluation. The net exports were limited to historically observed maximum levels over the past three years for the entire MSP for the PJM interface.

ISO-NE Interface – For the interface with ISO-NE, the NYISO assumed the net exports based on the capacity that cleared in the ISO-NE capacity auctions for export of capacity over the New York AC Ties for the period 2022/23 through 2024/25.

HQ Interfaces – Net imports from HQ in recent Capability Year were not found to be price responsive. The NYISO estimated the net imports from HQ to be at a level that was observed over the three most recent Capability Years from 2018/19 to 2020/21.

IESO Interfaces – Net imports from IESO in recent Capability Year were not found to be price responsive. The NYISO estimated the net imports from Ontario to be at a level that was observed over the three most recent Capability Years from 2018/19 to 2020/21, limited by the import rights limits. However, the imports from Ontario were not incorporated into the final ICAP forecast due to a spreadsheet error. This error had no impact on the outcome of the CY19 ASDU BSM evaluations.

In CY19 ASDU BSM evaluation, unlike the CY19 BSM evaluation, the NYISO did not consider some of the imports to be price responsive.[98] Assuming imports to be price responsive could have lowered the forecasted ICAP prices. Ultimately, this assumption had no impact on the

98 See section VIII.C.2 on page 55 of the CY19 MMU report.

CY19 ASDU BSM determinations. However, we recommend the NYISO follow the approach it utilized for forecasting imports in CY19 BSM evaluation in future BSM evaluations.

D. Estimating Locational Capacity Requirements for the Mitigation Study Period

The NYISO determines the Locational Minimum Installed Capacity Requirements ("LCRs") every year for New York City, Long Island and the G-J Locality, which it uses in conjunction with the locational annual peak load forecast to calculate the locational ICAP requirements. The capacity price forecast used in the NYISO's BSM evaluation is significantly dependent on the LCRs assumed for the duration of the MSP. Hence, the assumed LCRs are important inputs to the BSM evaluation.

The LCRs during the MSP will be significantly influenced by the distribution of in-service capacity and by other system conditions which may differ from the current conditions. However, the NYISO's current Tariff does not provide any guidance regarding the LCRs to be used in the BSM evaluations. The NYISO estimated the LCRs for the MSP using the *Alternative Method for Determining LCRs*, which was also used in the CY19 BSM evaluation.[99] As discussed in VIII.B, the NYISO's assumptions underlying its capacity and energy price forecasts included several changes to its resource mix. Similarly, for its CY19 ASDU BSM evaluation, the NYISO estimated LCRs during the MSP by modeling the following changes to the MARS topology that was used for determining the 2021/22 LCRs:

- Retirement or limited operation of units subject to the Peaker Rule in the last two years of the MSP
- Entry or exit of resources based on criteria described in subsection VIII.B.1
- Addition of all CY19 ASDU Examined Facilities
- Inclusion of the Public Policy Western NY Transmission project in the last two years of the MSP, and Public Policy AC Transmission projects for the last year of the MSP.[100]

99 For information on the LCR and IRM values that the NYISO estimated for the CY19 ASDU BSM evaluation, refer Section 2.2 of the *Buyer Side Mitigation ICAP Forecast – Class Year 2019 NYC Additional SDU Study Assumptions & References* document.

100 In the absence of modeling results that considered the entry of Public Policy AC Transmission projects, the NYISO estimated the effect on LCRs by considering related studies which modeled these projects as in-service. See results for 1000 MW change in transfer capability on UPNY-SENY under the Optimization Methodology in "Alternative Methods for Determining LCRs" (presentation to Installed Capacity Working Group on June 1, 2017, and Results for Optimization Runs for T19 Project in "AC Public Policy Transmission Planning Report Addendum" (presented to Electric System Planning Working Group on February 11, 2019). These indicated a decrease of at least 6 percentage points in the LCR for the G-J Locality, based on which the NYISO assumed a 6 percentage point reduction in the G-J Locality's LCR for the last year of the MSP.

We find the NYISO's approach for estimating the LCRs in the CY19 ASDU BSM evaluation to be reasonable.[101] Given the volatility in LCR estimates and the difficulty of running the LCR Optimizer in the available timeframe, particularly in between decision periods, the NYISO is considering alternative approaches to simplifying its method for forecasting LCRs in its future BSM evaluations.[102]

E. Estimating Locality ICAP/UCAP Translation Factor

The ICAP/UCAP Translation Factor ("Translation Factor") is used to translate the ICAP requirement, ICAP demand curves and the total supply into UCAP terms. The NYISO calculated the Translation Factor by taking the ratio of the summation of UCAP to ICAP of the resources that were assumed to be in-service for the purpose of ICAP price forecast.[103]

The Translation Factor of the New York City increased considerably from 2.7 percent in summer season of 2021/ 22 to an average of 8.4 percent in the summer seasons during the MSP because of the inclusion of over 800 MW (ICAP Summer) of offshore wind. The inclusion of these CY19 ASDU Projects also resulted in a significant increase in the Zone J LCRs from 80.3 percent in 2021/ 22 to an average of 86.0 percent over the MSP. Hence, although the Zone J Translation Factor increased substantially (relative to 2021/ 22), the change in the UCAP requirement was modest.[104]

We find the NYISO's approach of estimating the Locality ICAP/UCAP Translation Factor to be reasonable.

F. Forecasted ICAP Reference Points

The NYISO's Tariff requires it to forecast the ICAP Reference Points for the MSP to develop each MCZ's ICAP Demand Curves for its BSM evaluations.[105] For the CY19 ASDU evaluation, the NYISO updated the Gross CONE, net energy and ancillary services revenue offset, and the

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101 For the LCR values used in the CY19 BSM evaluation, see section 2.2 of the *Buyer Side Mitigation ICAP Forecast – Class Year 2019 NYC Additional SDU Study Assumptions & References*.

102 See NYISO presentation "Buyer Side Mitigation (BSM) Process Improvements" presented to the Installed Capacity Working Group on February 18, 2021.

103 See subsection B. Forecasted ICAP/UCAP Translation Factors for different Localities are available in Table 4 of the *Buyer Side Mitigation ICAP Forecast – Class Year 2019 NYC Additional SDU Study Assumptions & References.*

104 The NYISO made a spreadsheet error in accounting for the ICAP/UCAP Translation Factors in the ICAP forecast in the initial round. This error was corrected in the final round. In this report, we estimate the effects of other assumptions assuming the correct derating factors.

105 MST Section 23.4.5.7.15.3.

winter-to-summer ratio of the demand curve unit based on the methodology used in the Demand Curve Reset or Annual Update process. [106]

Gross CONE – The Tariff requires the NYISO to identify the projected ICAP demand curves for its BSM evaluations "by applying the "inflation index"". Furthermore, the Tariff defines Mitigation Net CONE ("MNC") as "the capacity price on the currently effective ICAP Demand Curve for the Mitigated Capacity Zone" at the prescribed Level of Excess. Therefore, the NYISO forecasted the Gross CONE of the demand curve unit by inflating the value underlying the currently effective ICAP Demand Curves using the applicable Inflation Index.[107]

Energy and Ancillary Services Revenue Offset - The NYISO forecasted the LBMPs for the years 2022/23 through 2024/25 using outputs from the neural network model and GE MAPS.[108] The NYISO adjusted the forecasted LBMPs using with the prescribed Level of Excess factors, and applied the dispatch model that was developed as part of the 2020 ICAP Demand Curve Reset study to estimate the yearly EAS offset of the reference unit.

Winter-to-Summer Ratio - The NYISO updated the WSR for each capability period of the MSP using the total assumed summer and winter ICAP supply of capacity resources (see subsection B), translated into UCAP terms based on the associated ICAP/UCAP Translation Factors (see subsection E).[109]

Overall, we find the NYISO's approach to forecasting the ICAP Reference Points for the MSP to be compliant with its Tariff.

G. Treatment of Mitigated Projects in Capacity Forecast

The BSM exemption test requires the NYISO to estimate the effects on capacity prices of resources that are subject to an Offer Floor. An Offer Floor is imposed on such resources until the resource clears for 12 months, which do not have to be consecutive.[110] The treatment

106 For updates regarding the Gross CONE, net EAS revenues, and WSR, see sections 2.4.1, 2.4.2, and 2.4.3, respectively of the *Buyer Side Mitigation ICAP Forecast – Class Year 2019 NYC Additional SDU Study Assumptions & References.*

107 Section 23.4.5.7.15.

108 See subsection VII.B.

109 Estimated values for WSR and ICAP/UCAP Translation Factors over the MSP are available in tables 3 and 4, respectively of the *Buyer Side Mitigation ICAP Forecast – Class Year 2019 NYC Additional SDU Study Assumptions & References* document.

110 The 12-month criterion is applied by the level of UCAP that cleared in the ICAP Spot Market Auction. Thus if a 100 MW resources clears 60 MW for six months and 100 MW for six months, 60 MW of the resource's cleared UCAP would not be mitigated and 40 MW would still be subject to the Offer Floor. See *BSM Numerical Example*, Section 8.4.

described below was applied to all MW of capacity that are subject to an Offer Floor and, including the mitigated units from Prior-CY Projects in accordance with subsection B.3.

The NYISO forecasted capacity prices not only during the MSP, but also for the months leading up to the MSP. If MW of capacity subject to an Offer Floor was expected to clear in a month prior to the MSP or during the initial portion of the MSP, those sales would be considered in the NYISO's assumptions regarding how much of the unit's capacity would be subject to the Offer Floor in subsequent months of the MSP. The price level of each Offer Floor was adjusted annually for inflation, using the 2.2 percent inflation rate underlying the currently-effective ICAP Demand Curves. We find that NYISO's methodology in this regard was reasonable and compliant with the NYISO Tariff.

H. Testing Multiple Examined Facilities

MST §23.4.5.7.3.2 states that "when the ISO is evaluating more than one Examined Facility concurrently, the ISO shall recognize in its computation of the anticipated ICAP Spot Market Auction forecast price that Generators or UDR facilities will clear from lowest to highest, using for each Examined Facility the lower of (i) its Unit Net CONE or (ii) the numerical value equal to 75% of the Mitigation Net CONE". This provision is designed to ensure that the test identifies the most economic Examined Facility when some but not all of the Examined Facilities in the Class Year are economic.

In its CY19 ASDU BSM evaluation, the NYISO continued to apply MST §23.4.5.7.3.2 to the Part A and Part B tests using a modified procedure that it used in the last three CY BSM evaluations.[111] Specifically, the NYISO first tested the Examined Facility with the lowest presumptive Offer Floor by itself in the Part A and Part B tests assuming it offers as a price taker. If the first Examined Facility received an exemption, it was included in the test for subsequent Examined Facilities. If the first Examined Facility did not receive an exemption, then it was excluded from the ICAP forecast for the subsequent Examined Facilities in the sequence. We find NYISO's test procedure to be compliant with the Tariff, and support its continued use for future BSM evaluations with a modification that is described below.

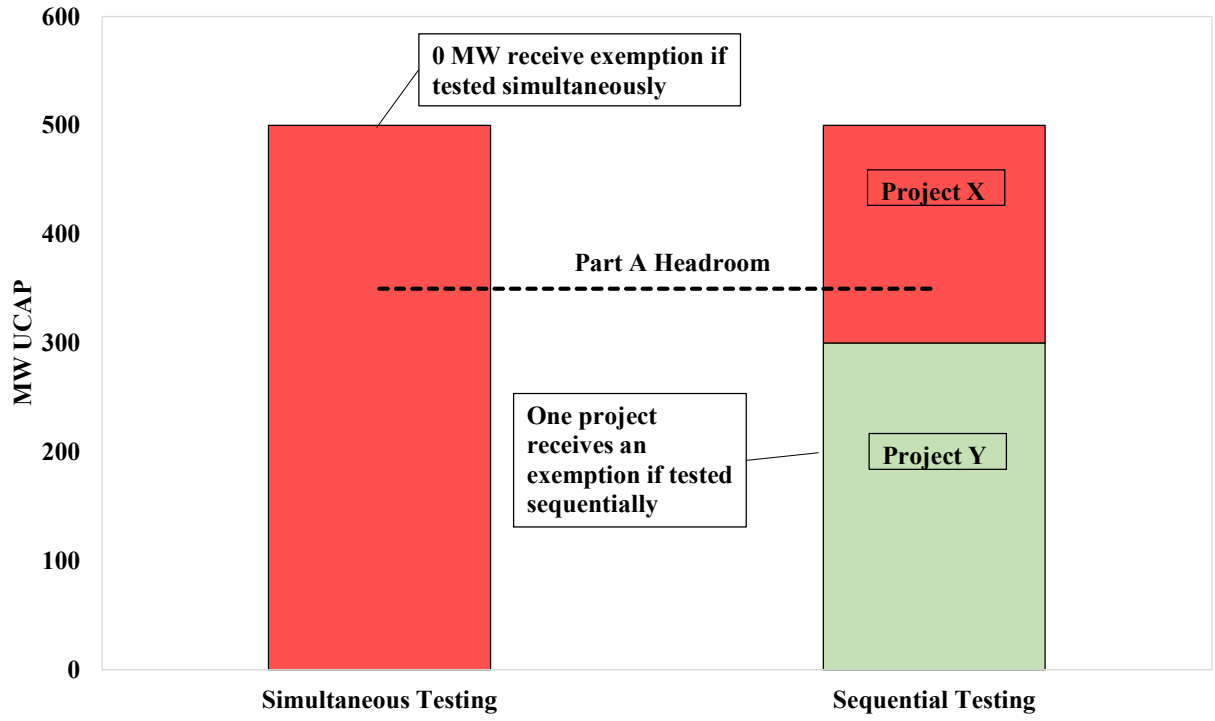
Under the NYISO's current procedure, if the presumptive Offer Floors of multiple Examined Facilities were determined to be equal to the Default Net CONE, then all such projects are tested simultaneously in the Part A and Part B tests. This could result in mitigating all Examined Facilities even when a subset of the projects could have been exempt if they were tested sequentially. For instance, consider a BSM evaluation where two Examined Facilities, Project X of 200 MW and Project Y of 300 MW, are being evaluated for a Part A exemption. Assume that each Examined Facility's UNC is greater than the DNC, and that the in-service capacity is 350

111 See *BSM Numerical Example*, Section 8.1 and Section 8.2.

MW below the Part A threshold. In this situation, if the Part A test is conducted simultaneously, neither of the two Examined Facilities would be exempt from an Offer Floor. However, if the Examined Facilities are tested one at a time, the first project to be tested would be exempt from an Offer Floor under the Part A test. Figure 7 illustrates this example.

The purpose of the Part A test is to ensure that resource are exempted if their capacity is needed to satisfy reliability needs in their Capacity Zone. As illustrated above, testing Examined Facilities in order of their presumptive Offer Floors could result in all resources being tested simultaneously, which could lead to mitigating all resources even when a subset are required to satisfy local reliability needs. Hence, we recommend that the NYISO modify its Tariff to allow for testing Examined Facilities sequentially in the order of their Unit Net CONE rather than the presumptive Offer Floor.[112]

Figure 7 – Example Impact of Simultaneous Part A Testing



112 The NYISO had recently proposed Tariff revisions to the Part A test that would have addressed this issue for the Part A test. See NYISO's April 30, 2020 filing in ER20-1718-001. However, the Commission rejected the NYISO's filing. The NYISO filed a Petition for Review of the Commission's order in the United States Court of Appeals for the District of Columbia Circuit on December 31, 2020.

IX. Conclusions and Recommendations

In the first round of the CY19 ASDU BSM evaluation, the NYISO evaluated five Examined Facilities under the Part A and Part B tests. In addition, it evaluated three projects for a CEE and one project for a REE. Four Examined Facilities rejected their PCA by the end of the Initial Decision Period. Hence, the NYISO evaluated and provided final determination to only one Examined Facility, the El Sunset Park Project, which was deemed to be exempt under the REE provisions.

We reviewed materials documenting the NYISO's evaluation of investment and operating costs, the reasonably anticipated LBMPs and net revenues, and capacity price forecasts for all the CY19 ASDU Examined Facilities. In addition, we reviewed the materials regarding the request for a CEE. Lastly, we also reviewed the NYISO's assumptions and calculations for the Examined Facilities' requests for a REE.

Ultimately, the availability of over 600 MW in the Renewable Exemption Bank at the beginning of the CY19 ASDU Study resulted in a REE for the El Sunset Park Project.[113] We conclude that the NYISO's BSM determinations in CY19 ASDU Study were made in accordance with the requirements of the Tariff and based on reasonable assumptions.

We identify seven issues with the Tariff that, if addressed, could improve the accuracy of the capacity price forecasts and the Unit Net CONE, and/ or would strengthen the provisions of the REE or CEE. We also identify two improvements to the BSM evaluation assumptions that do not require tariff modifications. None of these issues, by itself or in combination, affected the final determinations in the CY19 ASDU BSM evaluations. Nonetheless, these issues may have significant impacts on the results of future BSM evaluations. Accordingly, we recommend that the NYISO address these issues in future evaluations.

The issues we identified are summarized in Table 3 below. The Table also shows the portion of BSM evaluations that is affected by the issue, whether addressing this issue requires a Tariff change (T) or can be addressed by improving existing procedures (I), and the subsection in the report where we discuss the specific issue in further detail.

[113] Incremental Regulatory Retirements resulting from the DEC Peaker Rule were the largest driver of the Renewable Exemption Bank at the end of CY19.

Table 3 - Summary of Recommended Enhancements to BSM Evaluation

No	Issue	Evaluation/ Rec	Section
1	Interconnection costs may be inflated for some Examined Facilities	Part B/ T	VI.B.3
2	Starting Capability Period is unrealistic for most Examined Facilities	Part A & B/ T	VIII.A
3	Treatment of some Existing Units at risk of retiring or mothballing is unrealistic for some units	Part A & B/ T	VIII.B.2
4	Treatment of Examined Facilities seeking Competitive Entry Exemption may be inconsistent with developers' expectations	Part A & B/ T	VIII.B.4
5	Test Examined Facilities sequentially in the order of their Unit Net CONE rather than the presumptive Offer Floor	Part A & B/ T	VIII.H
6	Modify Part A test procedure to exempt Zone J projects if they are needed to satisfy the G-J Locality's capacity requirement	Part A/ T	IV.B (CY19 Report)
7	Modify following aspects of REE calculations: (a) Develop procedures for estimating the URM impact specific to each QREA in a CY (b) Use an annual average capacity value of the resource instead of the UCDF to estimate the UCAP of a QREA when awarding REE	REE/ T	III.A.5, III.B
8	Modify ESR dispatch model to: (a) Reflect the ability of the ESR to submit only hourly offers, (b) Develop a reasonable methodology that accounts for the operator's limited foresight of future prices when offering the unit	Part B/ I	VII.D.1
9	Consider modifying definition of Mitigation Net CONE to allow for using a reasonable forecast of the ICAP demand curves	Part A & B/ T	VIII.F (CY19 Report)