At the May 16 Operating Committee meeting, market participants observed that the Locational Minimum Installed Capacity Requirements[1] ("LCRs") projected as part of the Class Year 2017-2 Buyer-side Mitigation ("BSM") evaluations[2] are notably different from those developed as part of the Public Policy AC Transmission ("PPACT") process[3] and requested the NYISO provide additional explanation of the factors that led to these differences. This document seeks to add clarity by identifying the primary drivers of the differences between the two projections.

The CY2017-2 BSM evaluations build on the projections developed for CY2017-1, both of which examine a period of time spanning three Capability Years that begins May 1, 2020 and ends April 30, 2023 (the "Mitigation Study Period"). The PPACT process examined several different scenarios for four indicative years, beginning in 2025 and spaced five years apart thereafter. This discussion, and the comparisons made between the numbers developed for the BSM and PPACT processes concern themselves only with the "Base" scenario for the year 2025. The projected LCRs in question are summarized in Table 1.

Table 1: Projected LCRs for CY2017-2 BSM and PPACT

	Capability Year	Zone J	Zone K	G-J Locality	NYCA *(Installed Reserve Margin)*
CY2017-1 BSM	2020/21	83%	105%	91.0%	118.2%
	2021/22	85%	104%	91.5%	
	2022/23				
CY2017-2 BSM	2020/21	83%	105%	92.5%	117%
	2021/22	84.5%	104%		
	2022/23				
PPACT	2025/26	86.89%	111.03%	87.04%	120.46%
2019 Actual	2019/20	82.8%	104.1%	92.3%	117%

Preliminaries

Buyer-side Mitigation evaluations and the Public Policy AC Transmission study have fundamentally different objectives and philosophies. BSM evaluations seek to examine expected costs and revenues of Examined Facilities for a relatively short span of time. The PPACT process evaluates the relative costs and benefits of multiple proposed projects, all of a similar nature and in pursuit of the same objective.

The result of BSM evaluations is a single binary exempt/not-exempt determination for each Examined Facility. It is imperative that the BSM assumptions and methodologies favor absolute accuracy, given the information available at the time. Considering the relatively near-future term of the Mitigation Study Period, the resulting philosophy is to use the

[1] Terms with initial capitalization not defined herein have the meaning set forth in the NYISO's Market Administration and Control Area Services Tariff ("Services Tariff"), and if not defined in the Services Tariff, have the meaning set forth in the NYISO's Open Access Transmission Tariff.

[2] *See: ICAP Forecast – CY2017-2 Assumptions and References* (May 14, 2019) Available at: https://www.nyiso.com/documents/20142/3025517/ICAP%20Buyer%20Side%20Mitigation%20Test%20Data%20for%20Class%20Year%202017-2%20Initial%20Decision%20Round%20May%2014%202019.pdf/843862c4-5031-7949-7400-2fac17e9b76f

[3] *See: AC Transmission Public Policy Transmission Planning Report Addendum,* Dawei Fan and Timothy Duffy, Available at: https://www.nyiso.com/documents/20142/4934999/AC Transmission 0211ESPWG.pdf/8e3160c5-b0a4-05d8-097c-8dabaab0aceb

most recent actual and projected market data as a starting point, with adjustments and modifications made to that data where appropriate.[4,5]

The PPACT analysis, by contrast, has the objective of providing the most valuable information to assist in the ranking and selection of similar and competing transmission projects. The PPACT evaluation period extends over two decades and the selected project(s) will be in operation and recover their costs over several decades. Market rules are constantly changing and being improved to meet the continued evolution of the electrical industry, and system planners do consider this evolving landscape in the development of their inputs and assumptions in order to better inform their long-term decision-making. In this particular instance, examining each project's effect on reliability fundamentals provides additional valuable information about a project's lifetime benefits, even when the currently existing market framework does not yet realize all of those fundamental benefits.

In addition, the LCR optimizer is a complex, gradientless problem, therefore it can be challenging to identify which differences and/or combinations of differences among the inputs are responsible for the differences in the outputs. There are, however, certain relationships between inputs and constraints, as well as other reasonably well understood phenomena that can be examined in order to connect changes in inputs to changes in outputs with reasonable certainty. In the case of the PPACT projections and CY2017-2 projections, there are two interacting phenomena that, when taken together, comprise the most likely explanation for their different outputs.

Installed Reserve Margin

The development of the CY2017-2 LCRs assumed a fixed 117% Installed Reserve Margin ("IRM"), which corresponds to the most recent IRM established for the NYCA, for the 2019/20 Capability Year.[6] The New York State Reliability Council is responsible for the establishment of the IRM, while the NYISO is responsible for establishing the LCRs. Owing to its significantly longer-term horizon and its purpose in examining the cost benefits of transmission buildout for upstate to downstate, the PPACT study assumes that the IRM will be included in the least cost-optimization of locational capacity requirements. This allows for the LCR optimizer to evaluate the trade-off in upstate versus downstate capacity and allocate requirements in an economically efficient manner, resulting in a IRM of 120.46% for PPACT.

Transmission Security Limits

Transmission Security Limits (TSLs) are modeled as lower bounds ("transmission security floors")[7] in the LCR optimizer in order to ensure solutions produced that meet the resource adequacy criterion do not violate reliability criteria associated with transmission security. A higher TSL for a Locality results in a lower transmission security floor, which allows for – but does not necessitate – the identification of a lower LCR for that Locality. A higher TSL will only result in a lower LCR for a Locality if a lower LCR is cost-optimal. The TSLs in question are summarized in Table 2.

---

[4] *See:* MST 23.4.5.15 "*Forecasts Under the Buyer Side Market Power Mitigation Measures,"* Available at: https://www.nyiso.com/regulatory-viewer

[5] In depth discussions of project-specific adjustments in methodologies can be found in the reports of the Market Monitoring Unit, published on the NYISO website concurrent with BSM Exemption Determinations. https://www.nyiso.com/market-monitoring

[6] *See: Technical Study Report; New York Control Area Installed Capacity Requirement,* available at: http://www.nysrc.org/pdf/Reports/2019%20IRM%20Study%20Body-Final%20Report[6815].pdf

[7] For more information about how TSLs are determined and what they represent, s*ee: 2019 Transmission Security Limit Report,* available at: https://www.nyiso.com/documents/20142/3679493/2019-Transmission-Security-Limit-TSL-Report.pdf/ed398aee-675c-19b4-7d7d-bc26b20cae7b

Table 2: Assumed Transmission Security Limits [MW]

	Capability Year	Zone J	Zone K	G-J Locality
CY2017-1 BSM	2020/21	3,175	350	3,000
	2021/22			
	2022/23			
CY2017-2 BSM	2020/21	3,200	350	3,200
	2021/22			
	2022/23			
PPACT	2025/26	3,200	350	3,450
2019 Actual	2019/20	3,200	350	3,200

When the IRM is a fixed input (not included in the cost-optimization), a higher TSL will not result in a lower LCR for a Locality if that Locality's LCR is already above the transmission security floor – despite allowing for such solutions. Such is the case for the CY2017-2 LCRs, where the updated TSL did not affect the optimized LCR despite increasing by 200 MW relative to the TSL modeled in CY2017-1. In the PPACT LCRs, the higher TSL of 3,450 allowed for the significant movement in the G-J LCR (relative to the 2019 actual LCRs and the CY2017-2 LCRs) that resulted from the significantly higher IRM, which in turn resulted from modeling the IRM as an optimizable variable instead of a fixed input.