UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Managing Transmission Line Ratings Docket No. RM20-16-000

NOTICE OF PROPOSED RULEMAKING COMMENTS OF THE NEW YORK INDEPENDENT SYSTEM OPERATOR, INC.

The New York Independent System Operator, Inc. ("NYISO") respectfully submits its comments in response to the *Notice of Proposed Rulemaking* in the above-captioned proceeding issued by the Federal Energy Regulatory Commission ("Commission") on November 19, 2020 ("Notice").[1] In its comments, the NYISO addresses certain questions raised in the Commission's Notice regarding the requirements for (1) transmission providers to implement ambient-adjusted ratings ("AARs") on the transmission lines over which they provide transmission service, and (2) Regional Transmission Organizations ("RTOs") and Independent System Operators ("ISOs") to establish and implement the systems and procedures necessary to allow transmission owners to electronically update transmission line ratings at least hourly. The NYISO appreciates the opportunity to work with the Commission and Commission Staff through the technical conference and the submission of written comments.

The NYISO recommends that the Commission allow each RTO/ISO to work with its respective stakeholders to develop a solution that is based on the objectives outlined by the Commission and is appropriate for that RTO's or ISO's market structure. The Commission should not impose a uniform implementation approach for managing transmission line ratings. Allowing AARs to modify Day-Ahead transmission line ratings overly complicates the Day-

[1] Managing Transmission Line Ratings, *Notice of Proposed Rulemaking*, Docket No. RM20-16-000 (November 19, 2020).

Ahead Market ("DAM") solution and will reduce the efficiency of market outcomes. Further, real-time system reliability could be jeopardized if the modified AARs result in transmission line ratings that need to be reduced in the Real-Time Market or real-time system operations. Expansive implementation of AARs in New York would not provide universal benefits to the NYISO, asset owners, or electric system reliability.

Each RTO/ISO employs different power system modelling techniques, has different approaches to scheduling transmission service, employs different pricing methods, has different market rules, relies on a different mix of transmission and generation resources, and uses different software to implement its markets. In particular, the NYISO strongly recommends that any new transmission line rating-related rules be sufficiently flexible to accommodate the NYISO's financial reservation transmission model, as well as other regional differences among the RTOs/ISOs. The NYISO, therefore, requests that the Commission provide regional flexibility for RTOs/ISOs to work within their respective stakeholder processes to develop any necessary improvements based on the proposed rules for managing transmission line ratings.

I. COMMENTS

A. Overview

The NYISO currently utilizes two sets of seasonal transmission line ratings, provided by Transmission Owners, in numerous settings across its planning, operations, and market-administration functions. Transmission line ratings affect planning studies, Installed Capacity Auctions, Centralized TCC Auctions, Day-Ahead Energy scheduling, and real-time system operations. Summer seasonal ratings are in place from May 1 through October 31, while Winter seasonal ratings are in place from November 1 through April 30. The equipment ratings that Transmission Owners rely on to develop seasonal ratings are publically available through the

summer and winter operating studies performed and discussed with stakeholders.[2] The applicable pre- and post-contingency seasonal ratings in effect and utilized in the DAM, Real-Time Market, and the TCC market solutions are available to NYISO stakeholders, upon request, on a secure basis.

In the New York Control Area ("NYCA"), the Transmission Owners ("TOs") own the physical transmission assets and are responsible for developing the ratings.[3] These asset owners provide the element ratings directly to the NYISO and the NYISO determines the most limiting element, which becomes the applicable transmission facility limit. For example, a breaker disconnect in series with a transmission line may be the limiting element of the path and, therefore, will be used to set the limit for the transmission line.[4] The NYISO assigns each facility a rating authority for real-time operations to avoid potential disagreements over the rating in effect. The NYISO Operating Committee then reviews and approves the transfer limits developed by the NYISO through the seasonal study process.

The NYISO has Dynamic Line Ratings ("DLRs") functionality in place today for the Transmission Owners to increase transmission line ratings in real-time, when appropriate. The functionality does not differentiate between AARs and DLRs. Asset owners may increase or decrease real-time line ratings for any reason, including ambient temperature, using the DLR functionality. These real time adjustments historically have been made to increase the ratings used in real time based on ambient conditions. A majority of the Bulk Electric System ("BES")

[2] *See*, https://www.nyiso.com/documents/20142/3691300/Winter2020-21-Operating-Study-Appendicies-Final.pdf/0bed36d6-8060-67ab-4a07-bcf23e5d7816.

[3] The NYISO does not own any transmission equipment; it relies on the asset owners to provide transmission line ratings.

[4] Pursuant to NERC standards, the most limiting rating should be used until a disagreement can be resolved.

equipment in New York is able to be rated using DLRs (or AARs). Transmission Owners submit the updated ratings to the NYISO via the Inter-control Center Communications Protocol ("ICCP") secure communications tool.

The NYISO accepts DLRs via the ICCP secure communications from asset owners. Accepted DLR data is used in Real-Time Market commitment and dispatch solutions and the Energy Management System ("EMS") Security analysis functions.[5] While the set of facilities that generally utilize the DLR functionality is almost exclusively comprised of underground cables, changes in ratings do not occur frequently. Underground cables rating adjustments typically result from line-specific operating conditions (*e.g.*, thermal issues in the oil-filled pipe) and generally does not vary with ambient air temperature. When overhead facilities ratings are adjusted for ambient air temperature through the DLR functionality, the adjustments increase the real-time transmission line rating based on the temperature forecast for the day and the adjustments typically do not vary significantly from the seasonal ratings. The NYISO realizes significant benefits from this approach. However, as discussed further below, DLRs that change frequently, especially those that would reduce ratings from seasonal ratings, may be detrimental to system security, harm efficient price formation, and increase uplift costs.

The NYISO encourages the Commission to carefully consider all of the potential consequences of a general requirement to implement more granular transmission line ratings (*e.g.*, ratings that vary hourly) beyond those ratings already employed by the RTOs/ISOs.

[5] The Energy Management System ("EMS") is used by the system operators to monitor the reliable operation of the grid and for situational awareness. It includes applications that monitor flows, voltages and perform contingency analyses, such as security monitor, state estimator, outage monitoring, as well as automatic generation control. The NYISO also employs a Business Management System ("BMS"), which is the suite of applications that comprise the Security-Constrained Unity Commitment ("SCUC"), Real-Time Commitment ("RTC") and Real-Time Dispatch ("RTD") software. This software is used to develop schedules and prices for the NYISO's Energy and Ancillary Services markets.

Utilizing AARs or DLRs in the NYISO's DAM, or for any day within the following ten days, would introduce significant market inefficiencies to the existing NYISO market structure and increases the potential for real-time reliability issues. The NYISO DAM incorporates both financial and reliability passes to present a secure day ahead plan to the operators. This plan may need to be augmented as needed to address reliability concerns identified after the DAM, but the DAM is the starting point for addressing these concerns. To avoid the risk of an unanticipated reduction in transmission capability, and potentially a reliability concern, the NYISO uses the seasonal ratings in the DAM. If transmission line ratings are reduced in real-time, compared to the values relied on in the Day-Ahead Market solution, the NYISO may be required to rapidly reduce the schedules of certain Generators while quickly ramping up other generation resources. Given the limited amount of system flexibility in real-time due to the reduced lead-time to bring on additional resources, this situation could present reliability issues if sufficient generation is not available to serve load, after certain transmission line ratings are reduced. If sufficient resources are available, the revised market solution could present significant cost increases to customers. On the other hand, when DLRs and AARs make additional transmission capability available in the Real-Time Market relative to the DAM, the increased system flexibility allows efficient online fast-ramping generation to be dispatched in real-time and may result in a reduction of Real-Time Market congestion costs for NYISO Load Serving Entities, thereby directly providing a cost benefit to consumers.

In addition to these Energy market and reliability concerns, transmission line ratings play a significant role in the NYISO's electric system planning function. As part of its economic planning process, the NYISO regularly evaluates the electric system both with and without any transmission constraints to understand the impact of existing transmission limits on the delivery

of Energy.[6] This approach is the equivalent of having infinite transmission capability across the New York grid, which provides an understanding of "ideal" system behavior. In order to compare the ideal system to the existing physical limitations, the NYISO evaluates electric system congestion with the New York transmission limits reset to their actual values. The difference in annual generation (or hourly generation, depending on the study) by resource type and location informs an estimate of the resources that cannot deliver Energy at times due to existing transmission limits and constraints. These studies rely on seasonal transmission line ratings to provide information about the future of the entire electric system to Transmission Owners, Generator developers, Load Serving Entities, customers, and regulators. Significant deviations between the transmission line ratings used in these studies and those used in real-time operations increase the risk of misguided investment decisions and, in the worst case, real-time reliability issues.

The currently-effective seasonal transmission line ratings and DLR functionality support effective system planning, efficient markets, reliable system operation, and the flexibility needed for NYISO and TO operators to respond to real-time system conditions. Any regular deviations from the seasonal ratings in effect, especially downward deviations, would require significant changes to the NYISO's planning studies, operational studies, market administration, and operation of the New York State Power System. More granular transmission line ratings (*e.g.*, three-month seasonal ratings, monthly ratings, or hourly ratings) would require numerous projects to develop the necessary market and operational rules to avoid the cost increases and

[6] A number of transmission development projects are underway in New York that will facilitate more transmission capability throughout the state and reduce congestion constraints. For example, the Western New York and AC Transmission Public Policy Transmission Projects are planned to enter into service in June 1, 2022 and December 31, 2023, respectively.

potential reliability issues discussed throughout these comments, as well as software to implement the suite of new rules.

B. Use and Impact of DLRs and AARs in the New York Control Area

The NYISO encourages the Commission to review and consider the wide-ranging and negative impacts that could result from a general requirement to implement AARs and/or DLRs beyond the Real-Time Market. While asset owners and the NYISO already use DLRs, including AARs, in certain circumstances to facilitate real-time operation, implementing a general requirement that significantly broadens the use of AARs and DLRs may be detrimental to system security, price formation, and reducing uplift. In addition to the burden of developing and tracking a voluminous compilation of transmission line ratings, the NYISO has particular concerns related to requiring AARs and DLRs to be permitted in the Day-Ahead Market, a multi-day look-ahead or the forward-looking markets, and allowing AARs or DLRs to reduce transmission facility capability in real-time operation.

Reliability is the cornerstone of establishing and administering wholesale electricity markets. The NYISO Day-Ahead Market incorporates both financial and reliability passes to present a secure day-ahead plan to the system operators. This plan may need to be augmented to address reliability concerns identified after the DAM, but the DAM is the starting point for addressing these concerns. To avoid the risk of an unanticipated reduction in transmission capability, and potentially a reliability concern, the NYISO uses the seasonal ratings in the DAM. In real-time, DLRs and AARs are accepted and utilized to make any additional transfer capability available.

Frequently changing ratings, especially during emergency conditions, would require significant operator attention to be focused on redeveloping corrective action plans. The North American Electric Reliability Corporation ("NERC") standards require operators to plan for

contingences and develop corrective action plans that will be implemented to respect System Operating Limits ("SOL") if a contingency occurs. The number of corrective action plans that could be necessary to address frequently changing ratings may overwhelm system operators and jeopardize the reliable operation of the electric system. Of particular concern would be a scenario when one set of ratings is used to develop a plan to resolve a projected post-contingency overload, and then, when the contingency occurs and the actual loading on the facility increases, the DLR starts to decrease and continues to decrease even as corrective actions are being implemented. The decreasing DLR could degrade real-time system reliability in cases where operators do not have a sufficient set of available resources to reduce flow on the relevant transmission line to under the new limit in the appropriate timeframes. Shedding load involuntarily may be required to clear the overload or equipment may be damaged, as drastic actions are required to reduce flow in the permitted timeframe.

Many of the thermally-limited transmission elements in the downstate load centers of New York City and Long Island (NYISO Load Zones J and K) are oil filled pipe type underground cables. While these cables use the NYISO's existing DLR functionality to increase capability in real-time for a variety of reasons, requiring AAR for these facilities may not be appropriate. The heat dissipation characteristics on these lines are very different from overhead circuits, and high loading of these facilities on one day may affect limits for days into the future. Asset owners carefully weigh numerous factors, in addition to the ambient temperature, when considering an adjustment of the DLRs for these facilities. Decisions regarding line-rating adjustments must be left up to the asset owners in real-time, since, for example, market conditions on day one may require the facility to keep emergency capability available to avoid load shedding on that day or the next few days. Given these complex considerations, the NYISO

does not support requiring AARs, or specific DLRs, to be implemented on underground cables. The underground cable asset owners need to retain the ability to manage the capability of these facilities.

C. The NYISO's Transmission Model Warrants Regional Flexibility for Managing Transmission Line Ratings

If the Commission chooses to proceed with the requirements outlined in this Notice, the NYISO strongly recommends that any new transmission line rating-related rules be sufficiently flexible to accommodate the NYISO's financial reservation transmission model, as well as other regional differences among the RTOs/ISOs. The NYISO's "financial reservation" transmission model differs substantially from the "physical reservation" transmission model contemplated by the Order Nos. 888 and 890 *pro forma* OATT.[7] Firm transmission service within the NYCA is scheduled "implicitly" when customers receive Energy schedules from the NYISO. There are no express reservations of physical transmission service within the NYISO control area. Flexible transmission line rating rules would allow the RTOs and ISOs to implement the Commission's objectives in the most efficient means possible given the existing regional differences.

Unlike markets that rely on "physical" (MW) reservations of ramp and transfer capability, the NYISO does not permit Market Participants to pre-reserve ramp or transfer capability. Instead, the NYISO awards firm transmission service to economically committed resources, including External Transactions. In the NYISO's Real-Time Market software, internal New York generation resources compete with External Transactions (Imports, Exports and Wheels-Through) to be economically awarded an Energy schedule, and therefore, the

[7] *See New York Independent System Operator, Inc.*, 123 FERC ¶ 61,134 (2008), at PP 8-13; *New York Independent System Operator, Inc.*, Letter Order on Compliance Filing, Docket No. OA08-13-003 (November 12, 2008); *New York Independent System Operator, Inc.*, Compliance with Order No. 890, Docket No. OA08-13-000 (April 11, 2008); *New York Independent System Operator, Inc.*, Compliance Filing, Docket No. OA08-13-000 (October 11, 2007).

necessary transmission service and ramp schedule. All desired uses of the transmission system are scheduled to the extent that customers are willing to pay congestion charges (some of which can be hedged using financial rights). This approach directly incorporates expected transmission system congestion and transmission service into the market software evaluations, and permits the NYISO to meet its demand obligations at the lowest production cost.

The NYISO has previously described to the Commission how its customers' ability to schedule transactions is, with certain limited exceptions,[8] not limited by a pre-defined amount of Available Transfer Capability ("ATC") as under the *pro forma* OATT. Instead, the entire capacity of the New York State Transmission System is made available prior to the start of each DAM cycle. The ATC is calculated and posted based on the transactions accepted in the Day-Ahead Market. If a posted ATC value is zero, that value indicates that an interface is congested and that additional transmission capacity would not be available absent redispatch in the Real-Time Market. However, it may still be possible for the NYISO to schedule additional transactions for customers that are willing to pay the applicable congestion charges.

Consequently, the information conveyed by NYISO ATC postings is markedly different from that conveyed by such postings in areas with physical reservation regimes. The NYISO's ATC postings are really advisory projections. The ATC within the NYISO represents the transmission capability that is left over after all scheduled transactions have been accommodated.

[8] The NYISO previously accommodated "Pre-Scheduled Transaction Requests" across External Interfaces, which could be submitted in the Day-Ahead Market up to 18 months in advance of the Dispatch Day. If a customer arranged for a Pre-Scheduled Transaction, it would obtain a special priority reservation in the Day-Ahead Market that would necessitate a reduction in the ATC posted for the relevant External Interface. The NYISO's Pre-Scheduled Transaction Request procedure, however, went essentially unused for many years and the Commission recently accepted the NYISO's proposal to eliminate it. *See Tariff Amendments to Eliminate Pre-Scheduled Transaction Capability*, Letter Order, Docket No. ER10-2517-000 (November 2, 2010). The NYISO also supports "Advance Reservations" on specific designated controllable "Scheduled Lines" between the NYISO and certain neighboring entities. Scheduled Lines allow for Advanced Reservations on a basis that would be limited by a pre-defined amount of ATC. With one exception, however, other RTOs/ISOs are responsible for calculating ATC for each of the existing Scheduled Lines.

Stated differently, ATC is used only as an instantaneous indication of the existence of uncongested transmission paths, and not as a determinant of whether additional requests for transmission service can be satisfied. Based on numerous compliance filings under Orders No. 890 and No. 890-A and various waivers filed and approved by the Commission,[9] the NYISO is not obligated to maintain and post the same OASIS-related information as RTOs and ISOs with a physical reservation transmission system.

As a practical matter, because physical reservation models are much more common than financial ones, the Commission, NERC, and the North American Energy Standards Board ("NAESB") have tended to create transmission rules, including ATC rules, which are geared towards physical reservation systems. The NYISO has thus often been left to seek waivers of some requirements, and to provide detailed explanations of its compliance with others. The NYISO offers these comments to remind the Commission of the circumstances in New York and to urge the Commission to be mindful of them in devising any new transmission-focused requirements. Any new requirements should account for regional flexibility based on the existing, approved approaches in various regions.

[9] *Request for Limited OASIS Waivers,* Docket No. EL99-77-000 (July 9, 1999), at pp 5-6; *see also New York Independent System Operator, Inc.*, Filing in Compliance with May 7, 2008 Order, Docket No. OA08-13-003 (June 6, 2008), at pp 4-6; *New York Independent System Operator, Inc.*, Filing in Compliance with Order No. 890-A, Docket No. OA08-107-000 (April 15, 2008), at pp 8-11; *see also New York Independent System Operator, Inc.*, 130 FERC ¶ 61,104 (2010), at PP 9-14. *See New York Independent System Operator, Inc.*, Letter Order, Docket Nos. ER11-2048-003, -004 (June 6, 2011); *New York Independent System Operator, Inc.*, 133 FERC ¶ 61,208 (2010), at PP 12-13 (granting the NYISO's amended waiver request from OASIS posting requirements that were incompatible with the NYISO's transmission service); *New York Independent System Operator, Inc.*, 132 FERC ¶ 61,239 (2010), at P 22; *New York Independent System Operator, Inc.*, 125 FERC ¶ 61,274 (December 5, 2008), at PP 8-13; *New York Independent System Operator, Inc.*, Letter Order, Docket No. OA08-13-003 (November 12, 2008); *New York Independent System Operator, Inc.*, 127 FERC ¶ 61,005 (2009), at P 7; *New York Independent System Operator, Inc.*, 125 FERC ¶ 61,275 (2008); *New York Independent System Operator, Inc.*, 94 FERC ¶ 61,215 (2001), at P 61,795; *Central Hudson Gas & Electric Corp.*, 88 FERC ¶ 61,253 (1999).

D. Energy Market Administration Tools Support Limiting DLRs and AARs to Increasing Ratings in Real-Time

The NYISO's market design includes various components that collectively ensure that sufficient generation and transmission flexibility exist on the bulk system. Market design features that ensure adequate flexibility and the scheduling and commitment of sufficient resources to maintain reliability include: (i) the NYISO's Security Constrained Unit Commitment ("SCUC") software used for the Day-Ahead Market evaluation, which specifically includes a reliability pass; and (ii) NYISO's Real-Time Market software, which is comprised of a Real-Time Commitment ("RTC") and a Real-Time Dispatch ("RTD"). As discussed above, both SCUC and RTC award transmission service to resources with economic Energy and Transaction schedules. These same market design components have also been refined throughout the NYISO's history to reduce out-of-market actions and the resulting charges to customers.

The NYISO's SCUC process includes a reliability pass to provide that sufficient supply resources are committed Day-Ahead to meet forecasted load. The reliability pass commits any additional supply resources and schedules the necessary transmission service, through the economic commitment software, that are needed to make up any difference between the load bid into the Day-Ahead Market and the NYISO's forecasted load requirements. This functionality has significantly reduced out-of-market actions taken in real-time.

The NYISO's Real-Time Market, which is comprised of RTC and RTD, performs a unique *ex ante*, simultaneously co-optimized, multi-period commitment, scheduling and dispatch process that evaluates bids and offers submitted by External Transactions and internal resources to simultaneously solve for all Load, External Interchange Schedules, Operating Reserves and Regulation Service requirements while satisfying transmission constraints in order to minimize

the total as-bid production costs. Both RTC and RTD include look-ahead functionality.[10] This look-ahead functionality is intended to schedule the most efficient set of resources, recognizing both the current system conditions and expected future conditions.[11] The software's forward-looking capability recognizes Energy and Transmission needs and dispatches resources in a manner consistent with real-time system conditions and helps avoid the need for out-of-market action.

The twenty-four hour Day-Ahead optimization and the real-time look-ahead tool both schedule resources and external interchange while considering transmission constraints based on the limits presented to the software at the time the look-ahead tool runs. The DAM and the Real-Time Market look-ahead runs utilize the entire transmission system capability presented to the software to schedule economic interchange or transfers from other parts of the system as part of its least cost mix of Ancillary Services and Energy from Suppliers. However, if the DLR or AAR lowers the capability of the transmission facility in real-time (compared to the prior evaluation), the Real-Time Market process may develop a solution with considerably more transmission congestion and potentially significant uplift costs or, in more extreme cases, significant reliability issues, such as the need to shed load if generation and transmission are not available. Real-time transmission capability reductions require system operators to back down certain efficient Generators and/or economic transactions and increase other less efficient Generators on the system, as long as these resources are available to ramp to meet the needs.[12]

[10] RTC schedules Imports, Exports and internal (NYCA) resources every 15 minutes over a forward-looking 2.5-hour commitment window. The RTD optimization horizon is 55 to 60 minutes, depending on the interval.

[11] Many market operators in RTO/ISO regions have real-time look-ahead tools embedded within their Real-Time Scheduling ("RTS") processes that schedule and forecast internal resources and external transactions.

[12] The NYISO and the New York TOs have an existing process for asset owners to derate transmission line capability to protect system reliability when transmission equipment warrants such reductions. This existing process should not be expanded to other transmission line rating reductions in real time. *See* Section 3.2 and Appendix E of

Since there is usually less overall system flexibility in real-time operations, there could be limited, or no, resources available to satisfy the changing conditions. These actions could result in significant costs or introduce more drastic operational and reliability issues.

In response, the NYISO would need to consider developing tools to designate a portion of the dynamic line rating to address the potential operational and cost volatility in real-time, as opposed to utilizing the full capability during economic commitment and dispatch opportunities. Designating a portion of the transmission capability could avoid sharp increases in transmission congestion and the corresponding uplift costs. However, intentionally preventing the co-optimization software from evaluating the entire system would limit the overall efficiency of the Day-Ahead and Real-Time Market solutions and unnecessarily increase total system production costs.[13]

The NYISO has gone to great lengths to reduce uplift costs in its markets. In New York, real-time uplift is generally the result of either the lumpiness of committed resources or different system conditions being anticipated by the RTC and RTD.[14] However, using DLRs or AARs to increase the transmission ratings available to the DAM SCUC software only to reduce the transmission line capability available to the Real-Time Market software program would result in unnecessary Day-Ahead Margin Assurance Payment for flexible resources and possibly require

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the NYISO Reliability Analysis Data Manual, available at https://www.nyiso.com/documents/20142/2924447/rel-anl-data-mnl.pdf/2d42445e-317d-b7e9-24b8-c983ae6518ec. *See also*, the Tie Lines Task Force Final Report (1995), available at https://www.nyiso.com/documents/20142/1402024/nypp_tieline_ratings_report.pdf.

[13] At the same time, NYISO supports having a unique emergency rating for transmission facilities, as long as the equipment supports the rating. For example, a facility that is limited by a conductor is likely to have unique normal and emergency ratings, while a facility that is limited by a relay may not have unique normal and emergency ratings. *See*, Notice at footnote 57.

[14] RTC schedules/commits resources every 15 minutes. Each RTC run requires 15 minutes to execute. RTD optimizes the NYISO's resource dispatch every five minutes. As a result, the two programs may consider slightly different real-time operating conditions, including Generator operating status and output levels. This may result in circumstances where RTC may not perfectly anticipate Real-Time LBMPs produced by RTD.

additional costly commitments of less efficient resources thereby increasing uplift costs to consumers. To avoid these concerns and to continue realizing all of the benefits of twenty-plus years of market design improvements, the NYISO recommends that DLRs and AARs only be used in real-time to increase line ratings. Increasing line ratings in real-time, above the seasonal rating values, improves Real-Time Market operation by adding flexibility to schedule generation, reducing transmission system congestion, and reducing the overall production costs to serve Load.

AARs and DLRs only provide additional flexibility in real time if the asset owners release the increased capability in real time. To the extent that additional capability is released and utilized in the Day-Ahead Market evaluation, as suggested by this Notice, it does not actually improve the operator's ability to manage reliability in real-time despite being made available for the near-term scheduling processes. The Day-Ahead SCUC software will schedule resources satisfying transmission constraints based on the transmission facility limits presented to the software at the time of the DAM evaluation and will utilize whatever additional transmission capability is available at that time. Therefore, none of the increased transmission capability made available through the AAR or DLR would be available to the real-time software or system operators to manage real-time system conditions. Given the ability that SCUC and RTC have demonstrated to facilitate reliable real-time operations through reliance on seasonal ratings, the NYISO does not see a benefit to adding more DLR functionality to the Day-Ahead Market.

The NYISO has successfully implemented DLR functionality to allow asset owners to increase real-time line capability, when appropriate, throughout the NYCA. For example, the NYISO utilized a dynamic line rating increase, provided by National Grid, on the 181-922

Packard-Erie Street 115kV circuit in Western New York to improve Real-Time Market operation in 2,848 hours between May 1 and October 31, 2020. The NYISO also utilized a dynamic line rating increase, provided by National Grid, on the 92 Leeds-Pleasant Valley 345kV circuit in Southeastern New York to improve Real-Time Market operation in 1,023 hours during the same period of 2020. As discussed above, increasing transmission facility ratings in real-time allows the co-optimization software to schedule the least cost mix of Ancillary Services and Energy from Suppliers thereby reducing transmission system congestion and avoiding unnecessary uplift costs to consumers.

The NYISO cannot support one-size-fits-all application of AARs and/or DLRs.[15] Expansive implementation of AARs or DLRs in New York would not provide universal benefits to the NYISO, asset owners, or electric system reliability. At the same time, implementation of AARs and DLRs would certainly have direct and indirect costs. The use of AARs and DLRs should be encouraged on an appropriate set of facilities and certain, real-time circumstances. The Commission should allow each RTO/ISO to prioritize and implement the best approach for its region, based on both the existing market constructs and the existing transmission equipment.

E. The Final Rule Should Accommodate Regional Differences and Permit ISOs and RTOs to Propose and Justify Flexible Implementation Schedules

The Commission proposes that tariff changes filed in response to a Final Rule in this proceeding must become effective no more than six months after compliance filings are due. The NYISO requests that the Commission provide flexibility to each ISO/RTO to develop and implement the objectives discussed in the Notice. To achieve the Commission's goals, the NYISO must review, and may have to develop changes to, its economic planning processes,

[15] The NYISO supports the other parties in this proceeding, such as the MISO Transmission Owners, who argue that no universal solution is appropriate. *See e.g.*, Notice at P 64.

seasonal operating studies processes, Installed Capacity market structure, TCC market structure,[16] Day-Ahead Market rules and processes, and Real-Time Market rules and processes, including fundamental changes to its *ex ante* pricing logic and transmission scheduling logic.

Given all of these NYISO-specific concerns, the NYISO encourages the Commission to allow each ISO/RTO to work with its respective stakeholders to develop a solution that meets the objectives outlined by the Commission and is appropriate for that ISO's or RTO's market structure. The Commission should not impose a uniform implementation process or timeline on all ISOs/RTOs. Each ISO/RTO employs different power system modelling techniques, has different approaches to scheduling transmission service, employs different pricing methods, has different market rules, relies on a different mix of resources, including transmission equipment, and uses different software to implement its markets. The characteristics of each ISO's/RTO's commitment, dispatch and settlement processes should inform the decision of when and how to implement different transmission line ratings, including the use of AARs and DLRs. The Commission has recognized that ISOs and RTOs do not (and need not) have identical software or market rules for their markets and power systems to produce compatible results.[17] The Commission has also recognized that the practical ability of each ISO or RTO to implement software changes, including the potential costs of making those changes, often justifies allowing

[16] Forward Transmission Right ("FTR") markets, known as the Transmission Congestion Contract ("TCC") market in New York, should not represent more transmission capability than is expected to be realized in the Day-Ahead Market. To this end, the NYISO TCC market utilizes the applicable seasonal ratings and the NYISO recommends that the applicable seasonal transmission line ratings continue to be reflected consistently in the TCC market and the DAM.

[17] *See, e.g., New York Independent System Operator, Inc*., 142 FERC ¶ 61,202 at PP 24-26 (2013) ("NYISO's compliance obligation does not require NYISO to redesign its market. [footnote omitted] This would be particularly unnecessary here where, as NYISO points out, it would be costly and economically inefficient to do so.")

ISOs/RTOs to comply with Commission mandates in ways that accommodate regional differences rather than insisting on "one-size fits all" solutions.[18]

The NYISO therefore requests that the Commission provide regional flexibility for the implementation timeline and transmission line rating rules contemplated in the Notice. As discussed throughout these comments and the Notice, existing regional differences will play a significant role in developing appropriate rules, procedures, and software to achieve the Commission's objectives and the timeline necessary to implement any changes. The Final Rule should account for these conditions. The NYISO respectfully requests that the Commission provide at least 180 days from the effective date of a Final Rule to submit its compliance filing. The NYISO also requests that the Commission allow each ISO/RTO to request an effective date (or a series of staged effective dates) in accordance with its software development schedule.

The Notice contemplates a staggered implementation approach that would prioritize introducing the AAR reforms on congested lines within one year of a compliance filing in response to a final rule. A less aggressive implementation of AARs on all other lines would follow within two years from the date of the compliance filing.[19] The one- and two-year timeframes proposed do not provide enough time for the NYISO to implement such sweeping and fundamental changes to its transmission scheduling process and several NYISO-administered markets. As discussed above, these reforms would require significant changes to the mechanics of buying, selling, and scheduling Energy in the Day-Ahead and Real-Time Markets. Any deviation from the NYISO's current use of two sets of seasonal ratings would also require a suite of changes to planning processes, the Installed Capacity Market, and the TCC

[18] *Id*. *See also, New York Independent System Operator, Inc.*, 133 FERC ¶ 61,246 at P 25 (2010).

[19] *See* Notice at P 81.

Market. The changes needed to incorporate more granular AARs and DLRs touch numerous software and market systems and would require an extensive period of time to review, develop, and test software changes after the revised ambient-adjusted ratings rules and procedures are fully developed.

Developing the rules and software necessary to achieve the goals outlined in the Notice would involve many NYISO departments and personnel that are heavily involved in several ongoing large-scale efforts (*e.g.*, Distributed Energy Resources, Co-located Storage Resources, Hybrid Storage Resources, and Grid in Transition, among others). Many of these projects are NYISO-stakeholder driven and were prioritized by the stakeholders for NYISO to complete on specified timeframes. Due to the NYISO's ongoing project commitments, the NYISO could incur significant risk and expense if the Commission requires it to comply with the rules outlined in this Notice within one to two years.

Significant software and rule changes would be needed to incorporate changing transmission line capability ratings into all aspects of the NYISO's planning, operation, and market responsibilities, particularly in the area of calculating ATC/Total Transfer Capability.[20] Specifically, changes would be required to the NYISO's Common Information Model Data Engineering Tool ("CIM-DE")[21] to allow the additional rating sets to be stored in the power system model.[22] Once the additional ratings were incorporated into the modelling software systems (including but not limited to the State Estimator), the Contingency Analysis, Security

[20] The required changes may include revisions to the NYISO's Operating Committee bylaws as they relate to review and approval of transfer limits developed by the NYISO through the seasonal study process.

[21] The Common Information Model-Data Engineering Tool is the software tool used to build and to store all of the EMS model information.

[22] Including the additional EMS functionality required to accept and store the additional ratings sets provided as part of the CIM-DE Power System Model update process.

Monitor, Alarming, Automatic Generation Control and Operator Study tools would need to be augmented to utilize these additional ratings when they were applicable.

The NYISO Day-Ahead and Real-Time Market tools, collectively referred to as the Business Management Systems ("BMS"), would also require modifications to utilize the additional ratings when applicable. At the same time, the Transmission Owners would have to calculate these additional rating sets, providing that all of the elements on the transmission path are included in the calculation to operate to the most limiting parameter pursuant to the NERC Standards. Then the ratings would need to be transferred to the NYISO for implementation into the CIM-DE Tool, to apply the ratings to the correct elements and without error. Lastly, all ratings would need to be reviewed each year, consistent with Good Utility Practice, to maintain accurate ratings, resulting in a significant additional annual obligation for the NYISO and TO staffs.

F. Initial Incremental Steps Could Provide Significant Benefits

Although allowing Transmission Owners to develop another set of seasonal transmission line ratings for the shoulder months would appear to be a reasonable first step, the NYISO would still have to undertake a significant, broad-ranging software development effort. The NYISO encourages the Commission to allow ISOs/RTOs to engage with stakeholders to review and prioritize opportunities for implementing more granular seasonal transmission line ratings. The numerous stakeholders in each region impacted by these potential changes should have an opportunity to prioritize and shape the potential changes through the ISO's/RTO's stakeholder processes. The NYISO expects that, together with stakeholders, it could develop a proposal that achieves many of the objectives outlined in the Notice but respects the existing markets, operations, and planning processes that develop, utilize and rely on the seasonal transmission line ratings. For example, while still a significant software effort to implement, three or four sets

of seasonal ratings (as opposed to the two sets currently in place) would be easier to develop and implement than the full, hourly implementation approach described in the Notice.

II. COMMUNICATIONS AND CORRESPONDENCE

All communications regarding this filing should be directed to:

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III. CONCLUSION

The NYISO respectfully submits these comments for the Commission's consideration.

Respectfully submitted,

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March 22, 2021

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CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding in accordance with the requirements of Rule 2010 of the Rules of Practice and Procedure, 18 C.F.R. §385.2010.

Dated at Rensselaer, NY this 22nd day of March, 2021.

/s/ Mohsana Akter

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