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October 9, 2020

VIA E-MAIL

Mr. Mark Seibert
Mr. Ryan Patterson
New York Independent System Operator, Inc.
10 Krey Boulevard
Rensselaer, New York 12144

Re: NYISO 2021-2025 ICAP Demand Curve Reset Process
Comments on NYISO Staff Final Recommendations

Dear Messrs. Seibert and Patterson:

In accordance with the timeline set forth by NYISO Staff in its September 9, 2020 Final Recommendations and the NYISO's October 5, 2020 email notice, enclosed are the Comments of GenOn Bowline, LLC and GenOn Energy Management, LLC (collectively, "GenOn") directed to the NYISO Board of Directors to address NYISO Staff Final Recommendations for the 2021-2025 ICAP Demand Curve Reset Process. GenOn hereby authorizes the NYISO to publicly post these comments and requests the opportunity to participate in oral argument before the NYISO Board of Directors scheduled for October 19, 2020.

Should you have any questions, please contact me.

Very truly yours,

Jonathan A. Sacks, CFA
Vice President
GenOn Bowline, LLC
GenOn Energy Management, LLC

Enclosure

cc: Ms. Deborah Eckels (w/enc.; via email)
Mr. Zachary T. Smith (w/enc.; via email)

Comments of GenOn Bowline, LLC and GenOn Energy Management, LLC on NYISO Staff Final Recommendations for the 2021-2022 ICAP Demand Curves and the Parameters for the 2021-2025 Demand Curve Reset Process

On September 9, 2020, NYISO Staff issued its recommended 2021-2022 ICAP Demand Curves for the four capacity zones in New York and its final recommendations for the parameters to be used to calculate all ICAP Demand Curves for these zones during the 2021-2025 Demand Curve Reset Process period.[1] Specific to the G-J Zone ICAP Demand Curves for this period, NYISO Staff has accepted the Consultants and the NYISO Market Monitoring Unit's ("MMU") recommendation to select TETCO M3 plus a $0.27/MMBtu transportation adder as the natural gas hub to calculate the net energy and ancillary service revenues ("Net E&AS Revenues") for this zone's proxy peaking plant. NYISO Staff provided no independently developed analysis confirming the viability of this selection. Instead, it primarily relied on data cited by the MMU to establish interruptible transportation service was available to deliver TETCO M3 gas in the G-J Zone (Rockland County).

To be just and reasonable as required by Federal Power Act Section 205, the data used to define the Demand Curve parameters must accurately capture the gas market dynamics a peaking plant will face to provide electric service. As demonstrated herein, the MMU applied an incomplete data set to ascertain whether interruptible transportation service on the Algonquin pipeline would be available to supply TETCO M3 gas to generators in Rockland County. Thus, while the figures themselves in this data set may be accurate,[2] they are entirely irrelevant. More

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[1] *See New York Independent System Operator, Inc*., "Proposed NYISO Installed Capacity Demand Curves for the 2021-2022 Capability Year and Annual Update Methodology and Inputs for the 2022-2023, 2023-2024, 2024-2025 Capability Years – Final Report" (dated September 9, 2020) (hereinafter, "NYISO Staff Final Recommendations").

[2] The MMU indicates it has used the SNL data to develop the bar chart designated as Figure 7 in its Comments. (*See* NYISO Staff Final Recommendations, Appendix A, "MMU Comments on Independent Consultant Interim Final Draft

problematically, reliance solely on this data set is likely to substantially jeopardize reliability in this zone.

When the complete data sets are applied, it is apparent that interruptible transportation service on the Algonquin pipeline has been unavailable in Rockland County during both peak summer and winter operating conditions, the primary periods peaking plants are required to operate for reliability. GenOn Bowline, LLC and GenOn Energy Management, LLC (collectively, "GenOn") hereby submit these comments to demonstrate the error embedded in the MMU's position and, by extension, NYISO Staff's TETCO M3 recommendation.[3]

Because NYISO Staff primarily relied on the MMU's analysis and presents no independent analysis or alternative, its recommendation cannot reasonably stand. For the reasons set forth herein, for the ICAP Demand Curves for the G-J Zone to be just and reasonable, GenOn respectfully urges the NYISO Board to reject this aspect of NYISO Staff's Final Recommendations.[4] In the last reset process, the NYISO Board demonstrated in its filing to the

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ICAP Demand Curve Reset Report and NYISO Staff DCR Draft Recommendations" (dated September 3, 2020) (hereinafter, "MMU Comments") at 21-22.) However, the MMU has not provided enough details to determine whether the calculations derived from the SNL data are correct or the timely nomination data sets from the periods September, 2016 through August, 2019 themselves have been interpreted accurately. Regardless, the use of timely cycle data alone provides an incomplete picture that does not account for the pipeline's actual utilization of its system and ultimately leads to a fallacious conclusion that interruptible transportation service is available to the proxy peaking plant in Rockland County when, in fact, it is not.

[3] GenOn has reviewed the comments being filed by the Independent Power Producers of New York, Inc. ("IPPNY") contemporaneously herewith, supports IPPNY's positions and respectfully urges the NYISO Board to take the actions requested therein.

[4] The ICAP Demand Curves for the G-J Zone were set for the first time in the 2013 Demand Curve reset period, with the Curves becoming effective May 1, 2014. While TETCO M3 was designated as the gas hub for the G-J Zone in this first period, there was very little price separation among the pipelines that could be considered as eligible to serve the G-J Zone at that time and there were other far more contentious issues that required attention vis-à-vis the G-J Zone ICAP Demand Curves in that reset period. As discussed *infra*, the Consultants, NYISO Staff, and the MMU expressly considered and rejected designating TETCO M3 as the natural gas hub in the 2016 demand curve reset period process. Given evolving system conditions since that time addressed herein and the resultant wide divide in pricing that has materialized over time which itself reflects these changed conditions, review of the Demand Curve models in this reset period reveals that TETCO M3 is clearly no longer viable to be the gas hub for the proxy peaking plant in the G-J Zone, and thus, its designation in this reset period cannot be just and reasonable. (*See* FERC Docket ER17-386, *New York Independent System Operator, Inc*., "Request for Leave to Answer and Answer of the New York

Federal Energy Regulatory Commission ("FERC") that it was just and reasonable to designate Iroquois Zone 2 ("IZ2") as the natural gas hub for the proxy peaking unit in the G-J Zone. Upon review of comments and protests received on this point, FERC approved that designation.[5] The ICAP Demand Curves for the G-J Zone for the preceding three capability years and the current 2020-2021 Capability Year have accordingly been with IZ2 designated as the natural gas hub in the Demand Curve model.

As reflected in the data compiled by the Consultants, IZ2 continues to meet the gas hub selection criteria developed by the Consultants and, in fact, has a stronger correlation with Zone G LBMPs. It is, thus, just and reasonable. Likewise, the Algonquin Citygate index also meets these criteria, making it a just and reasonable option as well it. It too, has a better correlation to Zone G LBMPs than both TETCO M3 and IZ2. Thus, the NYISO Board should designate IZ2, or alternatively, the Algonquin Citygate, as the natural gas hub for the proxy peaking plant in the G-J Zone for the 2021-2025 Demand Curve reset period.

I. COMMENTS

A. The NYISO Services Tariff Delineates the Components That Must Be Contained in the Net E&AS Revenue Model, Requires Fuel Prices To Be Determined Using Appropriate Data Sources and Accounts for Operating Hour Constraints Caused by Fuel Availability

It is well-established that the capacity market is designed to "…provide a level of compensation that will attract and retain needed infrastructure *and thus promote long-term*

Independent System Operator, Inc.," (dated December 22, 2016) at 25 (establishing decisions must be made in extensive stakeholder process and tariff provides "the necessary flexibility for determinations made from DCR-to-DCR to evolve and appropriately account for the conditions and circumstances attendant to each request.").)

[5] *See New York Independent System Operator, Inc.*, 158 FERC ¶ 61,028 (2017) (hereinafter, "FERC 2016 Demand Curve Reset Period Order") at PP 156-57.

reliability while neither over-compensating nor undercompensating generators."[6] In New York, the NYISO's capacity market is administered through the ICAP Demand Curve mechanism in accordance with the tariff provisions that are set forth in NYISO Services Tariff Section 5.14.1.2.[7] The ICAP Demand Curves are set based on the net cost of new entry ("Net CONE") of the proxy peaking plant in each zone calculated as the difference between the unit's gross cost of new entry ("Gross CONE") and its Net E&AS Revenues.

Net E&AS Revenues reflect the revenues the proxy peaking plant is expected to earn less the costs to produce energy and ancillary services and are calculated using a net revenue model.[8] In accordance with a series of tariff modifications approved by FERC for the existing reset period, the model calculates positive net revenue attributable to the proxy peaking plant in each hour using historical prices and the unit's variable costs over the prior three-year period, adjusted for the defined level of excess. In each reset period, the model's methodology and inputs to determine these projections are established.[9]

It is well-recognized that fuel prices are a substantial variable cost incurred by generators.[10] As the NYISO itself established in its 2016 Demand Curve Reset Period Filing to FERC, "fuel

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[6] *See New York Independent System Operator, Inc.*, 118 FERC ¶ 61,182 at P 17 (2007) (emphasis added).

[7] *See* NYISO Market Operations and Control Area Services Tariff ("Services Tariff"), § 5.14.1.2. Initially implemented in 2003 and structured on a locality basis, the currently effective ICAP Demand Curve structure was enhanced in 2016 and now requires the NYISO Board to conduct a periodic review using a four-year reset period and, prior to the beginning of each reset period, to file with FERC for approval: (i) the first year of the reset period; and (ii) the parameters to be used to calculate the ICAP Demand Curves for the remaining three years of that period. (*Id*. at §§ 5.14.1.2.1, 5.14.1.2.2.)

[8] *Id*. at § 5.14.1.2.2.

[9] *Id*. at § 5.14.1.2.2.2; *see also* NYISO 2016 answer (establishing NYISO is required to address circumstances specific to the rest period under review).

[10] In reset period reviews conducted to date, parties have focused on the selection of gas hubs, acknowledging the importance of calculating Net E&AS Revenues "to reflect the cost a unit at that location would incur to purchase gas" because it "has a major effect on the net EAS revenue the unit can earn and, consequently, on the relevant demand curve." (*See* FERC Docket ER17-386, *supra*, "Motion To Intervene and Protest of the New York Transmission

prices are one of the single largest drivers of variable costs for the peaking plants," and thus, utilizing reasonably representative fuel prices in the Demand Curve model "is *critically important* to the ability of the [N]et E[&]AS [R]evenues model to produce *appropriate and reasonable results*."[11]

The NYISO Services Tariff expressly establishes that the variable cost calculation includes a component for the "applicable fuel cost" by load zone and hour which shall be "based on the applicable daily spot price for [the load zone] published in the specified data source…plus an adder to account for any applicable transportation and delivery costs."[12] Both the data source and the level of the adder are determined in the periodic review process and held fixed for the reset period.

When calculating the Net E&AS Revenues for the proxy peaking plant in each zone, operating hour constraints to address fuel availability must also be taken into account.[13] If fuel is not available, revenues from that hour correctly must be excluded from the model's calculation thereby producing lower Net E&AS Revenues overall and, in turn, necessarily a higher Net CONE for the proxy peaking plant.[14]

The applicable daily spot price for gas is determined based on the natural gas hub that is selected for the proxy peaking plant in each zone. Noting that there are numerous gas hubs in and

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Owners" (dated December 9, 2016) at 5 (further noting ICAP Demand Curves are to provide sufficient revenues to support the development of capacity in a given location.)

[11] *See* FERC Docket ER17-386, *supra*, "Proposed ICAP Demand Curves for the 2017/2018 Capability Year and Parameters for Annual Updates for Capability Years 2018/2019, 2019/2020 and 2020/2021" (dated November 18, 2016) (hereinafter, "2016 Demand Curve Reset Period Filing") at 25 (emphasis added); *see also, id.* (further noting that "The Services Tariff requires that, as part of the [Demand Curve reset process], the appropriate data sources for fuel prices be determined.").

[12] *See* NYISO Services Tariff § 5.14.1.2.2.2.

[13] *Id.*

[14] As demonstrated *infra*, because lack of fuel jeopardizes system reliability, it is not just and reasonable to select a gas hub if the proxy peaking plant cannot reasonably procure gas from that hub during peak operating periods.

around New York and asserting "it is not necessarily a straightforward process to select the gas index most appropriate for a peaking plant in a given location," the Consultants have developed the following four criteria to make this selection for each proxy peaking plant – 1) market dynamics; 2) liquidity; 3) geography; and 4) precedent.[15] Per the Consultants, this selection requires balancing these considerations to reflect market-based pricing and may entail the selection of a gas hub outside the applicable region and the addition of gas transportation charges.[16] The Consultants further assert that selecting the natural gas hub may require considering, "the type of service *likely to be used* for gas delivery, including interruptible service at tariff rates."[17]

B. The Correct Pipeline-Generated Data Sets Confirm Interruptible Transportation Service Is Almost Entirely Unavailable on the Algonquin Pipeline To Supply TETCO M3 Gas to Generators in the G-J Zone During Peak Operating Periods

Balancing these criteria in the last demand curve reset process, both the Consultants and NYISO Staff recommended that a sole gas hub pricing point should be used for Zone G to set the G-J Zone ICAP Demand Curves.[18] Focusing on the fact that IZ2 was most reflective of market

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[15] *See* 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) (hereinafter, "Consultants Final Report") at 90-91. The Consultants retained by the NYISO for this reset period are Analysis Group, Inc. ("AGI") and Burns & McDonnell. While they issued the Final Report jointly, selecting the natural gas hubs fell solely within AGI's scope of responsibilities, and thus, in these Comments, reference to Consultants is limited to AGI. AGI was also retained as the independent consultant for the 2016 demand curve reset period effort and – with one exception important here – generally utilized these four criteria in the same manner to determine the gas hubs to be designated for the proxy peaking plant in each zone therein.

[16] *Id*. at 91 (further noting, "…selection among available natural gas indices aim to identify the index that reasonably represents the natural gas prices that would be faced by a peaking plant within that Load Zone").

[17] *Id*. (emphasis added).

[18] *See* 2016 Demand Curve Reset Period Filing at 29 (acknowledging the change in the approach used to identify the natural gas hub designation for the proxy peaking plant in this zone as compared to the previous reset period where different hubs were identified for Dutchess and Rockland Counties); *see also Id*., Attachment III, Affidavit of Paul J. Hibbard, Dr. Todd Schatzki and Craig Aubuchon (dated November 17, 2016) (hereinafter, "Consultants 2016 Demand Curve Filing Affidavit") at P 53 (finding "While the 2013 DCR used separate gas hubs for both Rockland and Dutchess Counties in Load Zone G, our review of TETCO M3 suggested this distinction was not necessary for the current DCR.")

dynamics, had an adequate depth of trading history and produced pricing that reflected long run equilibrium conditions and not simply short-term arbitrage opportunities, the NYISO Board demonstrated to FERC that it was just and reasonable to designate IZ2 as the natural gas hub for the proxy peaking plant in the G-J Zone.[19]

Acknowledging in their Final Report that TETCO M3's delivery points are located outside Rockland County – indeed, outside the State of New York, the Consultants now attempt to support designating TETCO M3 as the gas hub in the G-J Zone in this reset period by asserting, "TETCO M3 delivers to points *proximate to* Rockland County and the transportation costs (discussed below) *provide a reasonable estimate* of the incremental costs needed to obtain fuel in Rockland County relative to points in Northeast New Jersey."[20] The MMU and NYISO Staff reach the same conclusion. In addition, NYISO Staff cites to the position advanced by the New York Transmission Owners that the Millennium pipeline also has available transportation capacity to meet a generator's needs in Rockland County.[21]

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[19] *See* 2016 Demand Curve Reset Period Filing at 26-30.

[20] *See* Consultants Final Report at 95 (emphasis added). Listing a $0.27/MMBtu gas transportation charge as a fuel cost adder for the G-J Zone on a chart without citation or other explanation constitutes the sum and substance of the Consultants' "discussion below" on this point. (*Id*. at 98-99.) In a footnote, the Consultants summarily state that it has utilized an "updated methodology" of assessing gas hubs for each location in Zone G separately. (*Id*. at n.80.) While a marked change from the last reset period where the same consultants expressly determined a sole gas hub approach should be used for Zone G, the Consultants provided no explanation of, or basis for, such "update" to its methodology in its Final Report. While a single zone within multi-zone capacity localities has been chosen to base the costs of the proxy peaking plant in the past, it is noteworthy that the Consultants approach would narrowly limit future development of resources in Zone G to just one side of the Hudson River. Given limited land availability and the difficulties of identifying sites that have reasonable gas and electric interconnection capabilities, the Board should carefully consider whether it should depart from the sole gas hub approach that it applied for this zone in the last reset period.

[21] *See* NYISO Staff Final Recommendations at 35, citing, New York Transmission Owners Comments on Proposed NYISO Installed Capacity Demand Curves for the 2021-2022 Capability Year and Annual Update Methodology and Inputs for the 2022-2023, 2023-2024 and 2024-2025 Capability Years (dated August 24, 2020) (hereinafter, "Joint TO Comments").

Notwithstanding the fact that this designation was challenged repeatedly during stakeholder meetings and in written comments on both the Consultants initial report and NYISO Staff's draft recommendations,[22] neither NYISO Staff nor, remarkably, the Consultants has provided any independent analysis or evidence to support TETCO M3's viability.[23] For its part, the MMU relies entirely on a bar chart it developed by utilizing SNL data that identifies available capacity in the timely nomination window.[24] Claiming its chart proves "[a]verage available capacity exceeded the maximum daily burn in most months, and covered a high percentage of maximum daily burn even in cold winter months,"[25] the MMU concludes there is adequate operational available capacity on the Algonquin Millennium Mainline segment of the Algonquin pipeline, west of the Stony Point compressor station, to designate TETCO M3 as the gas hub for the proxy peaking plant in the G-J Zone.

However, as demonstrated below, the MMU's conclusion, and correspondingly, NYISO Staff's Final Recommendation in this regard, by extension, were derived using an incomplete data set. Reviewing the data sets delineating all gas scheduling cycles comprehensively confirms

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[22] *See, e.g.*, CPV Valley LLC, "Comments on NYISO Draft Recommendations and Analysis Group Interim Final Report" (dated August 24, 2020); GenOn Bowline, LLC and GenOn Energy Management, LLC, "NYISO 2021-2025 Demand Curve Reset Process Comments on Consultants' Final Report and NYISO Staff Draft Recommendations" (dated August 24, 2020); CPV Valley, LLC, "Comments on the Initial Draft Demand Curve Report for Capability Years 2021/2022 through 2024/2025" (dated July 1, 2020).

[23] *See* Consultants Final Report at 91 (generally asserting gas hubs were selected in all zones by applying the four criteria identified *supra* and taking into consideration input and discussions with stakeholders and the MMU but providing no information or analysis specific to its determination to designate TETCO M3 as the gas hub for the proxy peaking plant in the G-J Zone); *see also* NYISO Staff Final Recommendations at 35-37 (parroting at some length MMU's position and otherwise generally referencing information provided in the Joint TO Comments but providing no independently derived information or analysis).

[24] *See* MMU Comments. at n.20 (emphasis added), stating, "Available capacity data is obtained from SNL and reflects capacity *in the Timely nomination window*."

[25] *Id.* at 21. The Algonquin Millennium Mainline station is the first compressor station on the New York side of the New Jersey/New York border and is located in close proximity to, and just beyond, the point in Ramapo where the Millennium pipeline connects to the Algonquin pipeline.

interruptible transportation service will not be available to supply TETCO M3 gas to the proxy peaking plant. Because NYISO Staff's Final Recommendation does not present a viable alternative, it cannot be deemed just and reasonable. The NYISO Board must thus correct the natural gas hub selection designated for the proxy peaking unit in the G-J Zone.

As the Consultants, the MMU, NYISO Staff and Market Participants all acknowledge, TETCO M3's pipeline terminates in New Jersey before reaching the New York border and becomes the Algonquin Gas Transmission pipeline at this point in New Jersey.[26] For the proxy peaking plant in the G-J Zone to be able to operate on TETCO M3 gas supply and thus for TETCO M3 to even be eligible as the natural gas hub for the G-J Zone, the proxy peaking plant must be able to secure sufficient transportation service (either firm transmission service or interruptible transmission service) on the Algonquin pipeline to its facility.[27] No party disputes that fact either.

The NYISO Board must thus examine the evidence provided to determine whether TETCO M3, located outside New York State, is nevertheless a viable gas hub option. To that end, it initially must be noted that the MMU's decision to rely on system utilization is itself misplaced. There is a poor to non-existent correlation between system utilization (*i.e.*, available capacity) and a generator's ability to secure interruptible transportation service. As reflected in Attachment 1, publicly available pipeline data demonstrates that interruptible transportation service is often unavailable even though it appears that there is otherwise adequate system capacity (*i.e.,* it appears

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[26] *See* NYISO Staff Final Recommendations at 35. Of note, FERC previously has held, while TETCO M3 had been chosen in an earlier reset period for the G-J Zone, the NYISO must properly justify the natural gas hub designations for the proxy peaking plant in each zone that are identified in *each* reset period. (*See* FERC 2016 Demand Curve Reset Period Order at P 154.)

[27] *See* NYISO Services Tariff, § 5.14.1.2.2.2. (mandating a proxy peaking plant's variable costs must include "an adder to account for any applicable transportation and delivery costs.").

the pipeline's system is not being fully utilized).[28] For example, at the Ramapo Interconnect, interruptible transportation service has been unavailable more than three quarters of the time since September 2016, including on days where Ramapo compressor utilization was less than 20%.[29]

To understand why there is not a direct correlation between utilization and the availability of interruptible service, it is important to recognize that gas operations occur within a linked network composed of complex and interrelated systems that often result in circumstances on pipelines affecting operations on each other. This dynamic can be due to a significant number of factors including, *e.g.*, service interruptions on one pipeline that cause constraints to materialize "downstream." Physical availability at a specific compressor station does not thus mean that a pipeline can (or will) actually flow incremental gas through that compressor station on a given day. Thus, relying on compressor utilization as the probative data point to determine whether the proxy peaking plant in the G-J Zone (Rockland County) could reasonably access TETCO M3 gas was itself a flawed approach from the outset.

Compounding the limitations inherent in MMU approach generally, the MMU then used an incomplete data set to measure such available capacity. GenOn appreciates that the MMU at least made some attempt to support its position. However, for data to be valid in a specific context, it must match the purpose for which it is being used. Here, the MMU's apparent fundamental misunderstanding of gas system scheduling and operations will needlessly lead to precarious and

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[28] *See* Attachment 1, "Ramapo IT Available Days vs Ramapo Interconnect Utilization." The attachments annexed hereto were developed by BTU Analytics, a consulting firm with extensive gas market expertise in analyzing natural gas pipeline nominations data to identify pipeline constraints and provides clients with data-driven analyses on the outlook for upstream, midstream, and downstream assets in North America . GenOn retained BTU Analytics to evaluate the NYISO Staff Final Recommendations and BTU Analytics' market expertise has been incorporated into GenOn's experiences and participation in the competitive wholesale markets in New York.

[29] *Id*.

tenuous power dispatch operation and attendant significant reliability repercussions, a result that the NYISO Board cannot sanction.

To accurately assess this issue and the evidence the NYISO Board is being provided, basic gas market dynamics must first be understood, including the types of service available, capacity that must be reserved by a pipeline and the timing of nominations. Each pipeline has a series of nomination cycles for each gas flow day and shippers holding different levels of transportation service (including, but not limited to no-notice service, firm transportation and interruptible service) have varying rights they may exercise through the nomination cycles depending on their transportation contract.[30]

As reflected in the map included in the MMU Comments as Figure 6, [31] the Algonquin pipeline runs from New Jersey, transverses New York and terminates in New England delivering natural gas supplies to its customers— gas utilities that have an obligation to serve their end-use customers and other end users. It has five nomination cycles: timely, evening, ID1, ID2, and ID3. Timely nominations are submitted to the pipeline before 6 pm on the day before a flow day. However, contrary to the MMU's apparent belief, firm transportation and no-notice shippers on Algonquin do not surrender or relinquish their rights if they under-nominate at the timely nomination cycle and more importantly for the issue at hand, interruptible shippers are not guaranteed delivery of nominated quantities during the timely nomination cycle even if

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[30] *See, e.g.*, "Algonquin Gas Transmission, LP Scheduling Process," available at https://linkwc.spectraenergy.com/Scheduling/AGT_NonCriticalPostingSchedulingProcess.pdf. In rank order, no-notice service provides the most certainty gas will be received at the identified delivery point. The pipeline must utilize its transportation capacity to deliver gas to customers holding no-notice service if there is any gas supply that is available. Firm transportation (primary points) provides the next level of service where gas is guaranteed at the receipt and delivery points designated in the firm transportation contracts. Firm transportation (secondary points) permits the delivery of gas to firm transportation holders to points other than their primary points if no other primary point is adversely affected.

[31] *See* MMU Comments at 21.

interruptible transportation service is indicated as available at timely. To the contrary, no-notice and firm transportation rights are preserved for later nomination cycles and these shippers are permitted to "bump" lower levels of transportation service, *e.g.*, interruptible transportation service, a point that is critical to the accurate resolution of this issue. The pipeline also has the authority to "cut" interruptible transportation service if operational considerations require such action. Quantities nominated on interruptible transportation service are always the first quantities cut by the pipeline.

It further bears note that, on the Algonquin pipeline, a significant number of shippers (mostly LDCs in New England downstream of Rockland County) have "no-notice" transportation rights.[32] These rights allow shippers to deliver gas on the pipeline without a corresponding nomination. To accommodate these rights, Algonquin must reserve space on their system. While these "reserved quantities" are not included as capacity utilization in the MMU analysis, they are *not* available to interruptible shippers.

Indeed, as its name suggests, interruptible transportation ultimately carries the least certainty of gas delivery with the pipeline providing no guarantee that a customer's nominations will be met, even as parties are transacting in day. Gas will only be delivered using this service if gas remains available after *all other levels of service have been accommodated and pipeline conditions allow*. The pipeline operations group can accept an interruptible transportation

[32] The utilities in New England downstream of Rockland County have "no-notice" service, *i.e.*, no matter what level of gas they nominate, Algonquin must reserve transportation capacity to provide additional gas to them in day up to their predefined no-notice levels. In its 2016 Reset Period Final Report, the Consultants noted that, while it had not occurred over the prior three-year period, market activity outside the NYISO could affect the natural gas indices being considered for these purposes. (*See* Analysis Group, Inc. and Lummus Consultants International, Inc., "Study To Establish New York Electricity Market ICAP Demand Curve Parameters" (dated September 13, 2016) (hereinafter, "Consultants 2016 Reset Period Final Report") at 78.) As reflected in the information provided herein, system conditions and demand in New England have evolved in the intervening period making access to gas in New York using interruptible transportation service across the Algonquin pipeline far less likely.

nomination at timely and then cut it at a later nomination cycle. As a result, there is absolutely no guarantee that a plant receiving natural gas via interruptible transportation service on a fully subscribed pipeline will be able to actually flow gas to the plant even during the flow day itself.

Importantly, the Algonquin pipeline publishes IT flags to notify market participants regarding whether interruptible transportation service is available on a daily basis. At the end of the gas day, ID3 nominations are also posted by the pipeline identifying the final nominations that were not cut in an earlier stage of the gas day scheduling process.[33]

To identify whether interruptible transportation service was, in fact, available on any given day, the ID3 nominations, the reserved no notice service *and* the IT flag data sets must all be reviewed. As revealed in Attachments 2 and 3, analyzing the actual pipeline data is critical, particularly during the peak months given the proxy peaking plant's role as the reliability unit.[34] Because the MMU used data from just the first step in the gas scheduling process, it relied on an incomplete data set which led it to erroneously conclude that there was adequate interruptible transportation service available during most of the days in these months. The complete data sets, however, reveal there is actually very little to no available interruptible transportation service. Specifically, since the CPV Valley generating plant began operating in Zone G in the fall, 2018, interruptible transportation service on the Algonquin pipeline has essentially never been available.[35] For example, pipeline-generated IT flags confirm *no* interruptible transportation

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[33] When this information is released, pipelines only provide data specific to no-notice contracts. As a result, to accurately quantify the amount of interruptible transportation service that is actually available on any given day, IT flag information must also be reviewed.

[34] Attachment 2 provides information on monthly average flows on the Algonquin pipeline by nomination cycle, daily flows by nomination cycle and the percentage of capacity actually available on the Algonquin pipeline. Attachment 3 provides information concerning pipeline-generated IT flags.

[35] *See* Attachment 2; *see also* Natural Gas Intelligence, "FERC Approves Startup of Valley Lateral, Ending Years-Long Dispute" (dated July 10, 2018), available at https://www.naturalgasintel.com/ferc-approves-startup-of-valley-

service was available *at all* during either the summer or winter peak operating periods in 2019 and 2020.[36]

Compiling this information on a daily basis during the peak months further demonstrates that NYISO Staff's Final Recommendation is not just and reasonable. Attachment 4 provides a day-by-day analysis of operations on the Algonquin pipeline in these months using the correct and complete data sets reflecting the IT flags together with the actual ID 3 nominations plus reserved no notice service.[37] Specifically, after the CPV Valley facility began operating in the fall, 2018, there were only 6 days in the peak winter months of 2018/2019 (two back-to-back days in December and four back-to-back days in January (over the MLK Day holiday weekend)) where interruptible transportation service was available. In the peak winter months of 2019/2020, there were none.[38] Thus, when broken down on a daily basis, it becomes even more apparent that a generator in Rockland County will not be able to procure TETCO M3 gas.

Additional information available on the Algonquin pipeline web site reinforces these conclusions. The Algonquin pipeline publishes an interruptible transportation availability "Yes/No" flag for many delivery points which confirms whether interruptible transportation service was available to flow at each nomination cycle at the specified delivery point. For interruptible transportation to flow to the proxy peaking plant during the daily nomination cycles Algonquin must have published a "yes" IT flag at both the timely and the ID3 cycles.

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lateral-ending-years-long-dispute. Market operations data reflects that commercial operation of CPV Valley facility began in the October, 2018 time frame.

[36] *See* Attachment 3 (registering 0% availability during peak summer and winter months).

[37] Attachment 4 provides day-by-day information depicting the availability of interruptible transportation service in the peak winter months of December, January and February for the winters 2017/2018, 2018/2019 and 2019/2020.

[38] *Id*.

Attachment 5 provides further evidence that interruptible transportation service is simply not available at the Ramapo Interconnection with Millennium in virtually all intervals.[39] In the 1,096 days from September 1, 2017 through August 31, 2020 evaluation timeframe, interruptible transportation service was available at both the timely and ID3 cycles in just 174 days (15.9%). In the 701 days from October 1,2018 when the CPV Valley plant ramped up commercial operations, through August 31, 2020, that number has dropped to just 19 days (2.7%). As reflected in Attachment 3, from December 1, 2019 through February 29, 2020, that number becomes zero.[40]

Indeed, this graph demonstrates why the MMU's reliance on the wrong data set to support its conclusion is likely to jeopardize reliability. While there were 583 days where interruptible transportation was available at the Timely nomination cycle, that service was no longer available at ID3 in 409 of these days, i.e., these quantities were cut. If the proxy peaking plant had a day-ahead commitment on any of these 409 days, the plant would have been required to declare a forced outage and would not have served load.[41]

Nor do the Transmission Owners' claims of available transportation capability on the Millennium Pipeline otherwise resurrect TETCO M3's viability to be the natural gas hub for the proxy peaking plant in the G-J Zone. While the Millennium pipeline connects with Algonquin at Ramapo, it is fully subscribed from supply areas in Western and Central New York to the interconnection with the Algonquin pipeline at Ramapo. Supply to the proxy peaking plant in

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[39] Attachment 5 establishes IT flags at the timely and ID3 cycles, further characterized to reflect pre and post CPV Valley operations, a critical development from a system utilization standpoint in this region.

[40] *See* Attachment 3.

[41] NYISO Staff points to the ability to generate on fuel oil when natural gas is not available. However, there are restrictions on fuel oil operation in facility air permits that limit hours of operation and/or seasons of operation. Furthermore, fuel oil is much more expensive than natural gas, a factor not addressed in the Demand Curve calculations for this zone. These higher costs would expose the plant to significant energy market losses or the NYISO grid to reliability issues.

Rockland County using this line faces two constraint points in New York, the Wagoner West Compressor located in Sullivan County and the Mini-sink compressor station located in Orange County. Open operational capacity must be available at both points. Attachment 6 establishes that operational supply constraints in peak winter months across the three years reduced expected generation by 24% over the entire period.[42] In the winter of 2019-2020, operational constraints reduced expected generation by 90% with attendant reliability consequences in Zone G.[43]

In fact, the almost complete lack of available interruptible transportation service across the Algonquin pipeline in these periods is likely a primary factor driving the differential between TETCO M3 and Algonquin Citygate prices. For example, as established in Attachment 7, the spread between these two service providers during the past four Winter Capability Periods has averaged $1.61/MMBtu.[44] During these periods, demand for natural gas in New England is higher than in New York leading Algonquin shippers to maximize their firm transportation rights thereby eliminating the availability of lower service levels in New York, like interruptible service, and thus crowding these shippers out of the market on those days.

As FERC has expressly established, by their structure, the ICAP Demand Curves are designed to ensure the long-term reliability of the system by providing adequate revenues to generators to attract and retain resources where they are needed; fuel prices designated in the

[42] Attachment 6 provides data concerning flows on the Millennium pipeline.

[43] It also must be recognized that Millennium does not allow short schedules that match how peaking plants are called upon to operate during peak operating periods. The proxy peaking plant would, thus, face the Hobson's Choice of running the entire day or dumping unused gas on the intra-day market, both at a loss. Moreover, while Millennium allows hourly nominations under a firm contract arrangement, this service comes with a much higher fixed cost component and is otherwise fully subscribed.

[44] Attachment 7 quantifies the monthly average spread between Algonquin Citygate and TETCO M3 pricing.

Demand Curve model play a critical role in this construct.[45] As demonstrated herein, because NYISO Staff and the MMU erroneously used only data derived from SNL's timely nomination window to determine interruptible transportation capacity was available on the Algonquin pipeline rather than using the complete data sets to analyze this issue, they incorrectly concluded this service was widely available to the proxy peaking plant west of Stony Point during the peak operating periods. It is not.

C. The Core Purpose of the Capacity Market Construct Is To Ensure Sufficient Resources Remain on the System Where Needed To Provide Reliable Service, and Thus, Choosing a Gas Hub That Would Force a Generator To Declare Forced Outages During Peak Operating Conditions When It Will Be Most Needed Is Likely To Jeopardize Reliability and Is Not Just and Reasonable

As NYISO Staff acknowledges in its Final Report, stakeholders – and, specifically, suppliers, have raised concerns throughout this process that gas service from TETCO M3 was not feasible due to the lack of available interruptible transportation service.[46] As established *supra*, available pipeline-generated data validate those concerns during peak operating periods. When expected to operate to address peak system conditions, this data clearly reveals that the proxy peaking plant – the unit intended to be the reliability unit -- would almost certainly be required to declare a forced outage.[47]

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[45] *See* 2016 Demand Curve Reset Period Order at P 153 (finding designation of IZ2 as the gas hub for the proxy peaking plant in the G-J Zone, in particular, to be just and reasonable and emphasizing, by providing a reasonable justification for this designation, the NYISO will "ensure that the ICAP Demand Curves are set at appropriate levels to encourage investors to build resources as necessary to meet the reliability needs of the system.") (citation omitted).

[46] *See* NYISO Staff Final Recommendations at 35. NYISO Staff did not identify or address the concerns raised by stakeholders in its Final Recommendations.

[47] While the argument has been made that the Zone G facility could default to oil operations, oil operations should not be the norm (and, indeed, as noted *supra*, permit restrictions governing oil operations will prevent it from being so). Equally important, to operate on oil, these peaking plants initially require some amount of gas to begin operations before they can transition to oil operations. As reflected herein, it is unlikely the requisite gas will be available even for this limited purpose in a large number of these intervals where the facility will be needed.

This, in turn, may well leave system operators with inadequate options to serve load. Given that this data demonstrates that there is a substantial likelihood the proxy peaking plant could not secure gas supply throughout peak operating periods, designation of TETCO M3 as the natural gas hub for the proxy peaking plant in the G-J Zone does not meet the fundamental purpose of the capacity markets to ensure reliability, and thus, cannot be deemed just and reasonable.[48]

Addressing similar issues with the Consultants' proposed gas hub for the proxy peaking plant in Zone C which NYISO Staff had initially accepted in its draft recommendations, the MMU noted the frequency of restrictions during peak winter operating conditions such that "…the purchase of gas at the TGP Z4 200L hub and transport to New York using interruptible service is often not possible during the winter."[49] Recognizing that the actual lack of fuel availability would cause Net E&AS Revenues for the proxy peaking plant in Zone C to be overstated, the MMU proposed a seasonal distinction and, concomitantly, a dual gas hub approach for Zone C pursuant to which TGP Z4 200 L gas hub and the Niagara gas hub plus a $0.27/MMBtu transportation adder would be designated as the gas hub for the proxy peaking plant in the ROS market to set the NYCA Demand Curve during Summer Capability Periods and Winter Capability Periods, respectively.[50]

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[48] Confirming the continued need for the proxy peaking plant in the G-J Zone to be equipped with SCR technology which has been incorporated into the plant design in every reset process to date, NYISO Staff correctly found, *inter alia*, the severity of the operating hour limits that would be enforced in the absence of such technology "is not practical for a resource needed to maintain reliability." (*See* NYISO Staff Final Recommendations at 13-14.) Taking all factors into account, NYISO Staff concurred with the Consultants recommendation to equip the proxy peaking plant in the G-J Zone with this technology so that it would be "economically viable and practically constructible." (*Id*.) Given the frequency of forced outages resulting from the lack of available interruptible transportation service to deliver fuel to the facility, the same rationale must be applied in this context.

[49] *See* MMU Comments at 16.

[50] *Id*. at 17, 19. To reach its conclusions, the MMU again relied entirely on SNL data from the timely nomination window. While, here, too, this approach was flawed for the same reasons documented *supra*, it ultimately did not cause the MMU's conclusion to be wrong because the timely nomination data, in this limited instance, did not happen to be out of lockstep with actual system operations and market fundamentals for Zone C.

Focusing on the MMU's additional analysis, NYISO Staff agreed that pipeline constraints must be accounted for when purchases of gas will not be "readily accessible in the winter."[51] Thus, NYISO Staff supported the seasonal approach proposed by the MMU and has recommended the dual TGP Z4 200 L/Niagara gas hub designation for the proxy peaking plant in the ROS region in its Final Recommendations.[52]

Once the correct data sets are analyzed and complete information is used, it is apparent that a generator's ability to access TETCO M3 gas would be severely stymied by major system constraints. It cannot be just and reasonable to recognize the pipeline constraints that would be faced by the proxy peaking plant in one part of the State but ignore those same constraints faced by the proxy peaking plant in another part of the State – particularly given the fact that the constraints in Zone G are even more severe and, as documented herein, span across *both* the summer and winter peak operating periods. In light of the near complete unavailability of interruptible transportation service during the peak operating periods when the peaking unit would be relied upon the most to meet the system's reliability needs, TETCO M3 cannot reasonably be designated as the gas hub for the proxy peaking plant in the G-J Zone. Given this evidence, the NYISO Board must instead select a gas hub that is just and reasonable.

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[51] *See* NYISO Staff Final Recommendations at 34, citing MMU Comments; *see also* New York Independent System Operator, Inc., "2021-2025 ICAP Demand Curve Reset: NYISO Staff Final Recommendations" (presented to September 22, 2020 Installed Capacity meeting) at 9, available at https://www.nyiso.com/documents/20142/15473217/2019-2020%20NYISO%20Staff%20Final%20Recommendations.pdf/9b61975a-0eba-fd27-3151-9aab5e383a81. Here, too, NYISO Staff relied entirely on the MMU's work without developing its own analysis or information. Because the MMU ultimately reached the correct conclusion --albeit by relying on the wrong data set and, thus, incomplete information, NYISO Staff's ultimate conclusion was also sound notwithstanding the faulty rationale NYISO Staff, by extension, relied upon to reach it.

[52] *See* NYISO Staff Final Recommendations at 35-36.

During the last reset process, the same Consultants considered TGP Z6, TETCO M3, Millennium and IZ2 for the natural gas hub designation in the G-J Zone. Rejecting Millennium because it did not capture observed spikes in Load Zone G electric prices during the winter months and had relatively few years of data and market liquidity, the Consultants selected IZ2, finding it "more fully reflect[ed] market dynamics and is consistent with gas hubs used in more recent NYISO studies."[53]

The same result should prevail here. As the Consultants correctly concluded in this reset process, the Millennium pipeline neither has "…the required flexibility of supply for a peaking generator during all seasons" nor adequate liquidity given its "limited reported trading volume in years before 2019."[54] Thus, Millennium is not a viable alternative. Moreover, a review of the Consultants' chart examining natural gas price indices and Load Zone G LBMPs demonstrates that there continues to be a strong correlation between IZ2 pricing and Zone G LBMPs.[55] Indeed, IZ2 provides a stronger correlation to Zone G LBMPs than the Consultants' choice of TETCO M3. As further reflected in Attachment 8, selection of IZ2 as the gas hub for the proxy peaking plant in the G-J Zone satisfies the criteria defined by the Consultants.[56] In addition, IZ2 was included

[53] *See* Consultants 2016 Demand Curve Filing Affidavit at PP 51-52 (recommending a single gas hub (Iroquois Zone 2) for all of Load Zone G and expressly rejecting TETCO M3 based on its express determination that it was not necessary to make a distinction and identify separate gas hubs for Zone G Dutchess County and Zone G Rockland County).

[54] *See* Consultants Final Report at 95. The Consultants made similar findings in 2016. (*See* Consultants 2016 Reset Period Final Report at 77 (establishing that Millennium Pipeline crossed parts of the zone but did not reflect a reasonable expectation of the long-run equilibrium between gas and electric markets).)

[55] *Id*. at 93, Figure 16. Figure 16 measures the period from the beginning of 2016 through the end of 2019.

[56] Attachment 8 depicts the correlation between gas pricing and Zone G LMBPs by pipeline.

in the blended gas price utilized by the NYISO in its most recent planning study and addresses the geography criterion because it can be backhauled on Algonquin by paying a transportation rate.[57]

The same is true of the Algonquin Citygate gas hub. The Algonquin Citygate includes Rockland County, and thus, satisfies the geography criterion. In addition, as reflected in the Consultants' chart and Attachment 8, the Algonquin Citygate showed the highest correlation with Zone G LBMPs over the analyzed period.

Both of these hubs satisfy the Consultants' four criteria. The data supports choosing either of them. The NYISO Board thus has an adequate basis to demonstrate in its filing to FERC that the selection of either gas hub is just and reasonable. GenOn thus respectfully urges the NYISO Board to replace the TETCO M3 gas hub with either the IZ2 gas hub that is currently being utilized in the G-J Zone, or alternatively, the Algonquin Citygate gas hub for the proxy peaking plant in the G-J Zone.

D. NYISO Staff's Proposed Net E&AS Revenues for the Proxy Peaking Plant in the G-J Zone Must Be Adjusted To Account for Fuel Availability as Mandated by the NYISO's Services Tariff

The Services Tariff mandates that the Demand Curve model's commitment and dispatch logic must account for periods when fuel is not available thereby concomitantly reducing the Net E&AS Revenues assumed for the proxy peaking plant. Notwithstanding the evidence presented, if the NYISO Board nevertheless determines that the gas hub designation for the proxy peaking plant in the G-J Zone should stand – which it should not, the NYISO Board must, at a minimum, direct NYISO Staff to reduce the plant's Net E&AS Revenues due to the lack of fuel availability,

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[57] *See* New York Independent System Operator, Inc., "2019 CARIS Report – Congestion Assessment and Resource Integration Study" (dated July 2020) at 28, available at https://www.nyiso.com/documents/20142/2226108/2019-CARIS-Phase1-Report-Final.pdf/bcf0ab1a-eac2-0cc3-a2d6-6f374309e961?t=1595619194867. Of note, from a structural flow perspective, flows from east to west on the Algonquin pipeline (i.e., backhaul from IZ2) have fewer constraints than forward haul flows from west to east as would be required with TETCO M3 supply.

and correspondingly, increase the reference point price for the 2021-2022 ICAP Demand Curve in the G-J Zone.

Because the MMU (and, correspondingly, NYISO Staff) used the wrong data set to determine pipeline availability, the information provided in the correct and complete data sets must be used to determine if interruptible transportation service was actually available, and thus, the plant could actually operate each day in the three-year historic period assessed by the model. Based on data compiled utilizing the final Demand Curve model posted on the NYISO capacity markets page,[58] this differential is significant. Attachment 9 provides the monthly MWh that the proxy peaking plant is expected to generate energy using TETCO M3 prices plus a $0.27/MMBtu adder by replacing the results produced by the Consultants with the results when the correct data sets are used to eliminate hours when fuel was unavailable.[59]

Based upon this analysis, when the constraints faced by the proxy peaking plant due to unavailable interruptible transportation service and lack of pipeline capacity are properly taken into account, the total MWhs generated by the proxy peaking plant in the G-J Zone during the three-year historic period drop precipitously. Specifically, for the period September 1, 2017 through August 31, 2020 used to set the 2021-2022 ICAP Demand Curves, hours were removed where interruptible transportation service could not be scheduled. Accurately accounting for the interruptible transportation service that was actually available over this period causes the total MWh generated by the proxy peaking plant to plummet by 66.5% from the 1,269,480 MWh

[58] *See* New York Independent System Operator, Inc., Demand Curve Model (dated September 9, 2020).

[59] Attachment 9 sets forth information concerning the reductions in MWh the proxy peaking plant would run once the correct data sets are applied to identify its access to interruptible transportation service to procure TETCO M3 gas.

calculated by the Consultants to 425,480 MWh, *i.e.,* the proxy peaking plant would only operate in roughly one third of the hours currently projected in the Consultants' model.[60]

When the model is further adjusted to remove the hours to account for system capacity issues as well as when interruptible transportation service was not available, operations over nearly another 100,000 more MWh will not materialize.[61] Taken together, the proxy peaking plant would be left with roughly just one quarter of the generation levels projected by the Consultants.

The difference in the results since October 2018 when the CPV Valley facility began operations is even more significant. As Attachment 9 reveals, the total MWh produced in the market model fall by 97.5% from 347,200 MWh to 8,500 MWh when adjusted for interruptible transportation availability and for capacity constraints on the pipeline.[62]

Such substantial differentials cannot go unaddressed. Thus, even were the NYISO Board to find that TETCO M3 plus a $0.27/MMBtu transportation adder can be used as the natural gas hub designation for the proxy peaking plant in the G-J Zone, the NYISO Board must direct NYISO Staff to comply with the Services Tariff by eliminating hours where the proxy peaking plant would face fuel unavailability and, once recalculated, to repost the 2021-2022 ICAP Demand Curve for the proxy peaking plant in the G-J Zone.

II. CONCLUSION

For the foregoing reasons, GenOn respectfully urges the NYISO Board to apply the correct data sets and, upon utilizing the information that is relevant to this determination: (i) reject NYISO Staff's recommendation to designate TETCO M3 as the natural gas hub for the proxy peaking

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[60] *Id.*

[61] *Id.*

[62] *Id.*

plant in the G-J Zone; (ii) find the IZ2 and the Algonquin Citygate gas hubs both meet the criteria established by the Consultants and are just and reasonable gas hub designations; (iii) continue to designate IZ2 or designate the Algonquin Citygate as the natural gas hub for the proxy peaking plant in the G-J Zone in the final Demand Curve model for the 2021-2025 demand curve reset period; (iv) direct NYISO Staff to recalculate the 2021-2022 ICAP Demand Curve for the G-J Zone utilizing the corrected Demand Curve model; and (v) incorporate the updated Demand Curve for the G-J Zone into the NYISO's required Demand Curve filing to FERC in November.

Dated: October 9, 2020

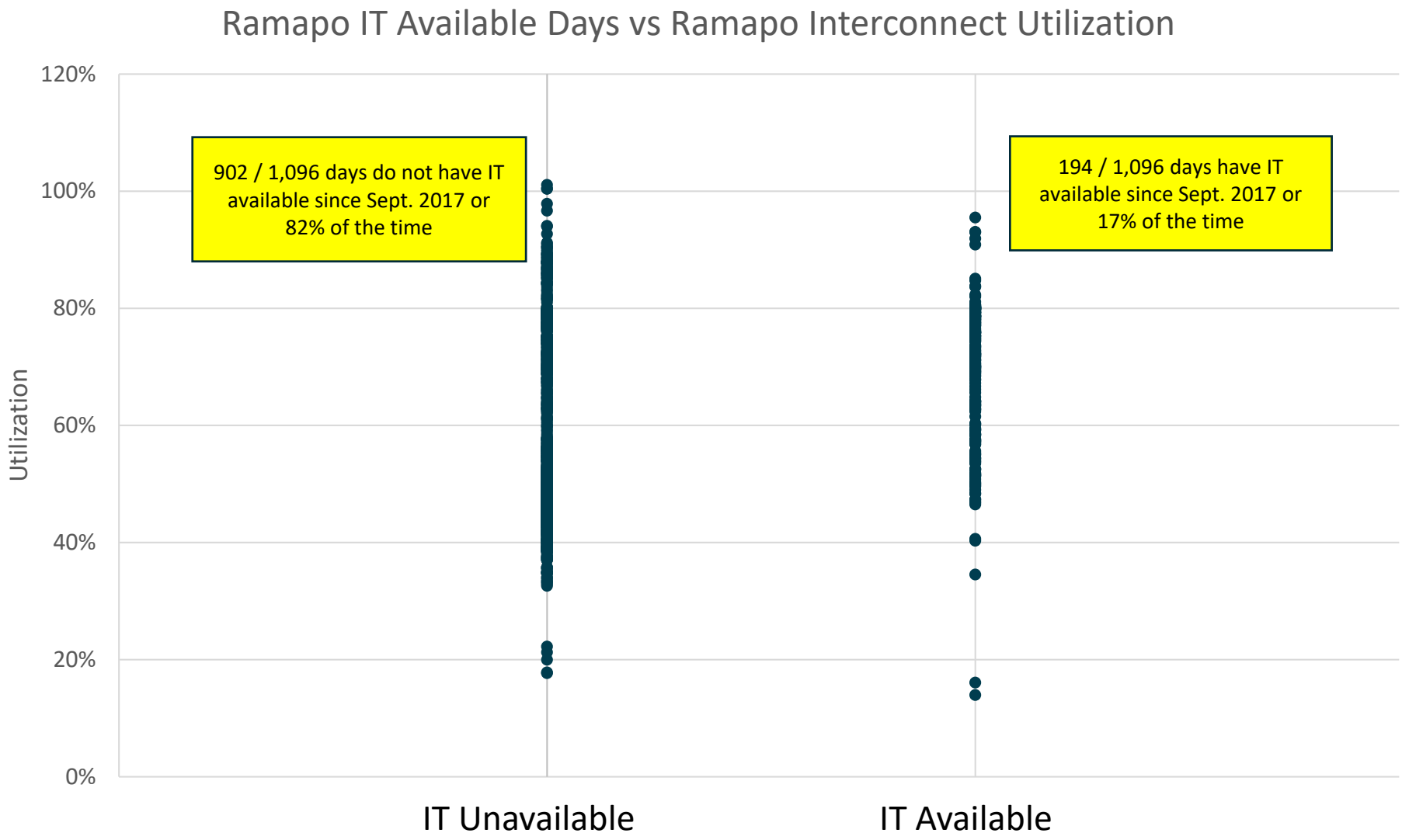
Respectfully submitted,

Jonathan A. Sacks, CFA
Vice President
GenOn Energy Management, LLC and
GenOn Bowline, LLC

ACTIVE 53077014v1

Attachment 1

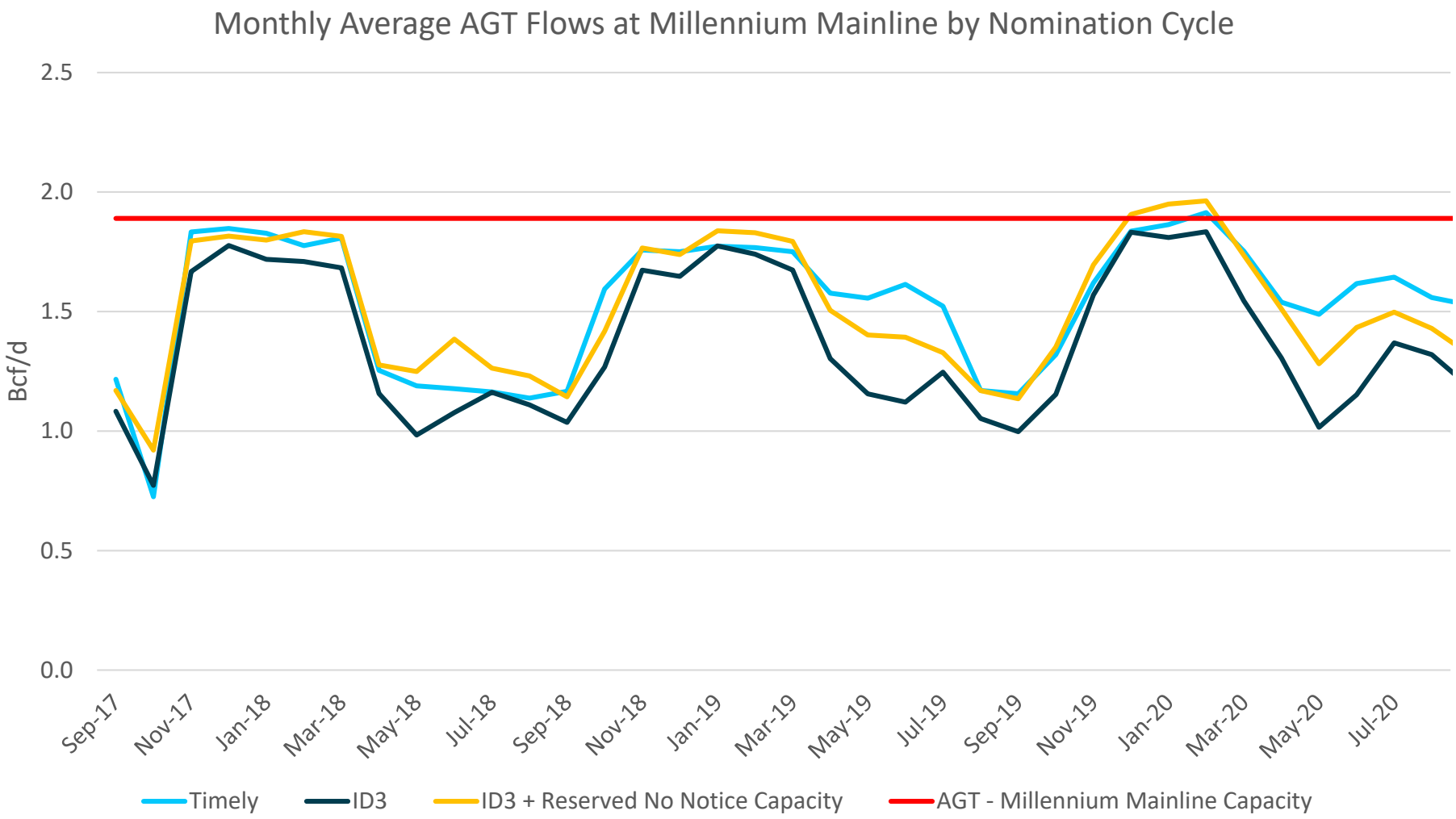
Utilization at Ramapo interconnect with Millennium vs days IT service available at same point shows that there is very little correlation between utilization and whether IT is available. Utilization not an accurate marker of whether peaking plant will be able to secure IT



Note: IT and flows from September 2017 – August 2020 in ID3 cycle
Source: BTU Analytics, Algonquin informational postings. Data as of October 7, 2020

Attachment 2

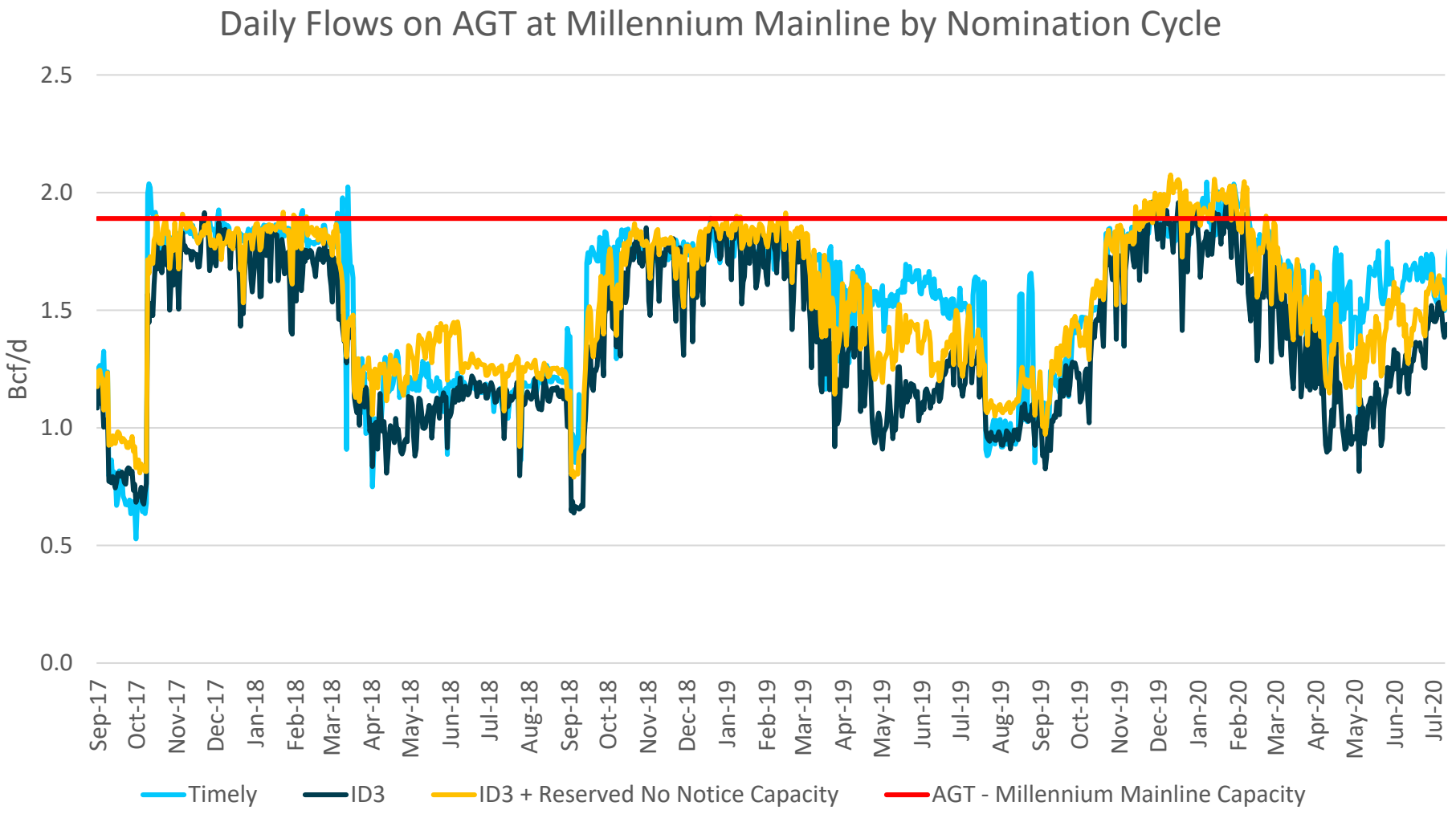
Timely nominations are higher than ID3 (end of gas day) nominations as timely reflects expectations for the next day and shippers typically over-nominate. ID3 + no-notice service best reflects the day's actual flows as no-notice is typically withheld during nomination cycles. Looking at only timely or ID3 overestimates available pipe capacity for IT service as the pipeline must reserve no-notice capacity for contract shippers



Note: Volumes above are monthly averages of daily nomination data posted by AGT Pipeline
Assumes 1,890 MMcf/d capacity at Millennium Mainline, though peak day capacity is higher, operationally available capacity is typically 1,890 MMcf/d
Source: BTU Analytics, Algonquin informational postings as of September 20, 2020

Timely nominations are higher than ID3 (end of gas day) nominations as timely reflects expectations for the next day and shippers typically over-nominate. ID3 + no-notice service best reflects the day's actual flows as no-notice is typically withheld during nomination cycles. Looking at only timely or ID3 overestimates available pipe capacity for IT service as the pipeline must reserve no-notice capacity for contract shippers

BTU ANALYTICS

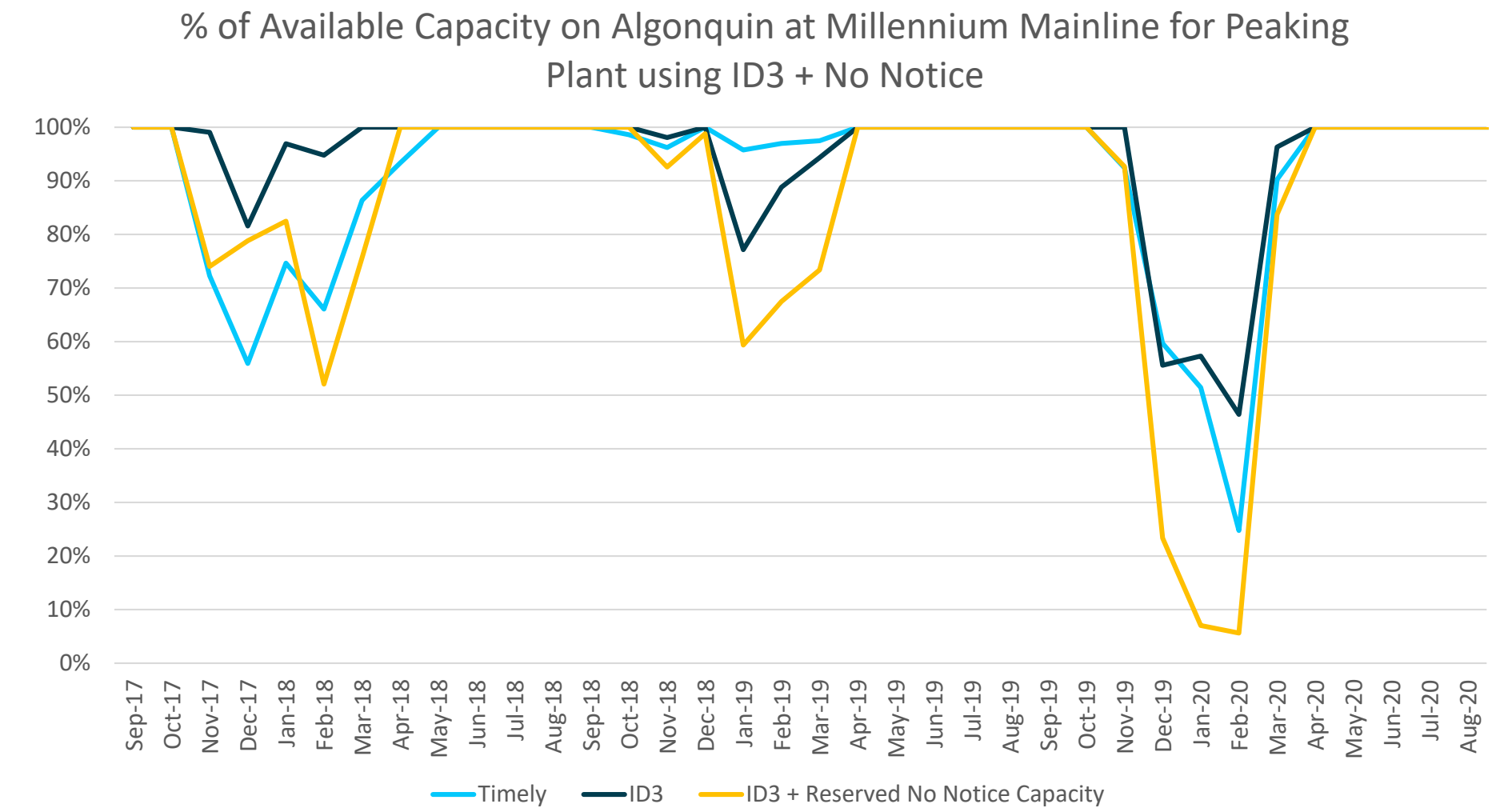


Note: Assumes 1,890 MMcf/d capacity at Millennium Mainline, though peak day capacity is higher, operationally available capacity is usually 1,890 MMcf/d

Source: BTU Analytics, Algonquin informational postings as of September 18, 2020

Using actual flows on Algonquin, adequate capacity for peaking plant is only available during the summer due to downstream no-notice service for LDCs, which take precedent over IT nominations. Actual flows on a pipe are best represented using ID3 nominations + capacity reserved for no notice service on the pipe. No-notice capacity reservations are not reflected in intraday nominations so must be added on to final nominations to show actual available capacity that could potentially by utilized for IT. Peaking plant would not have access to adequate capacity in Rockland County during the winter.

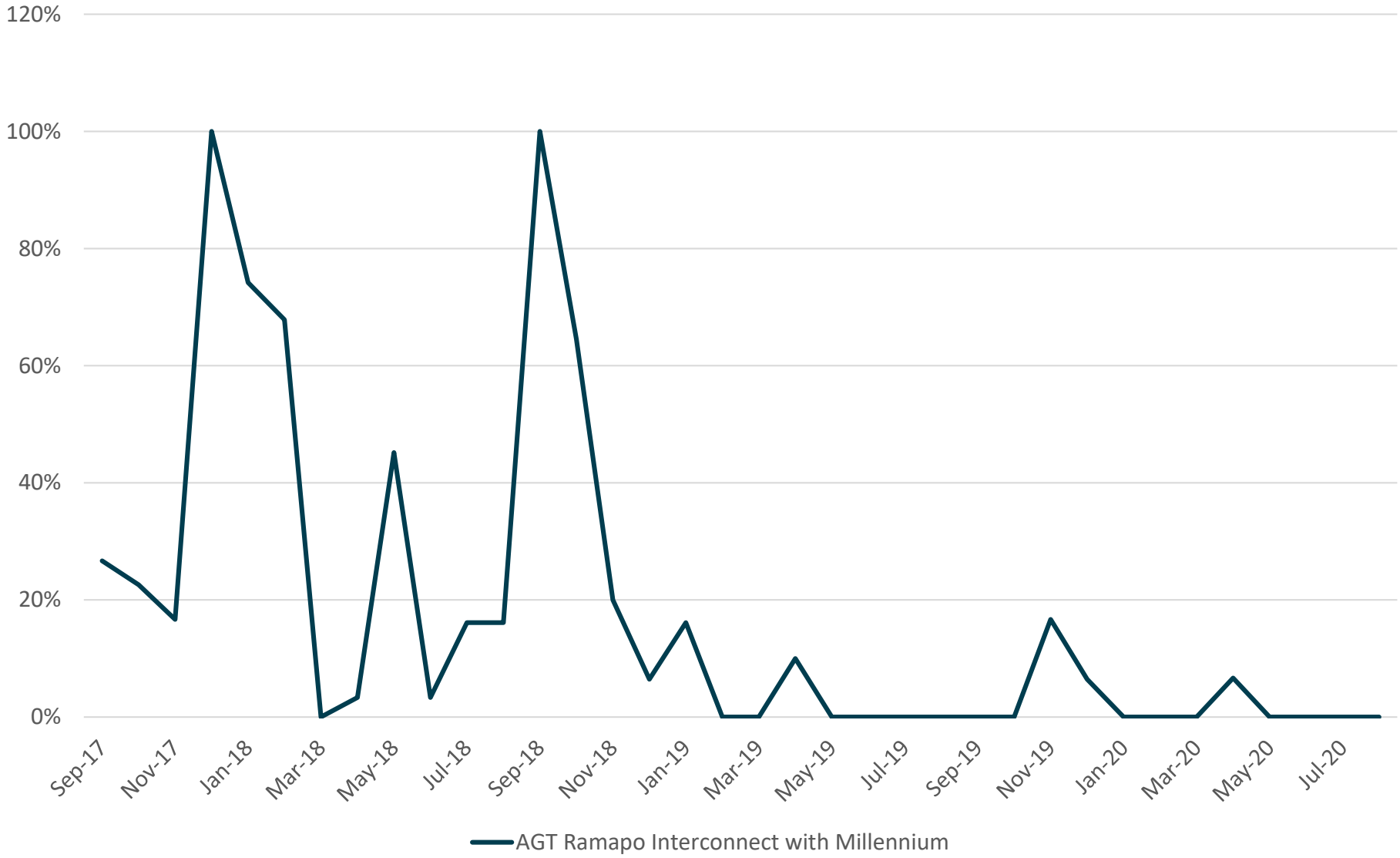
BTU ANALYTICS



Note: Available capacity calculated using Millennium Mainline compressor operational capacity less calculated flows. If more than 75 MMcf/d of capacity is left available, 100% of peaking plant demand is available. If less than 75 MMcf/d of capacity is left available, actual available percentage is shown.
Assumes 1,890 MMcf/d capacity at Millennium Mainline
Source: BTU Analytics, Algonquin informational postings as of September 18, 2020

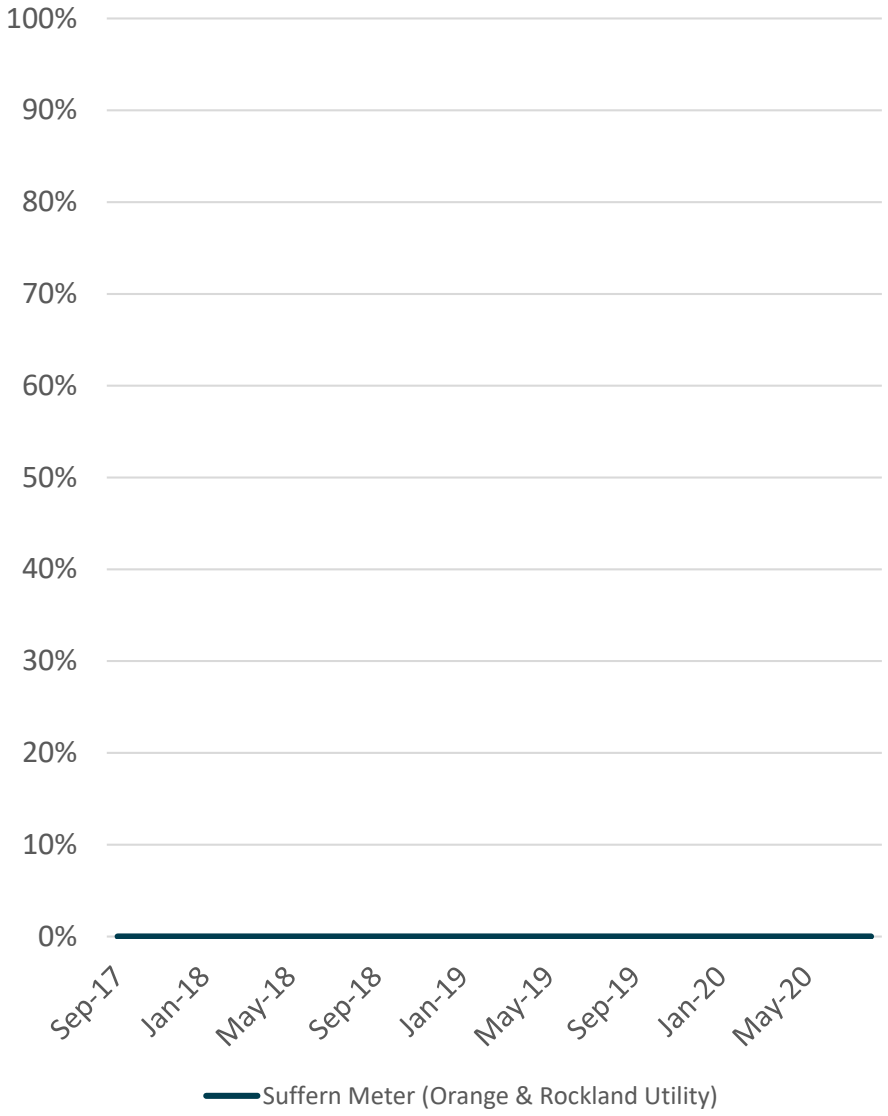
Attachment 3

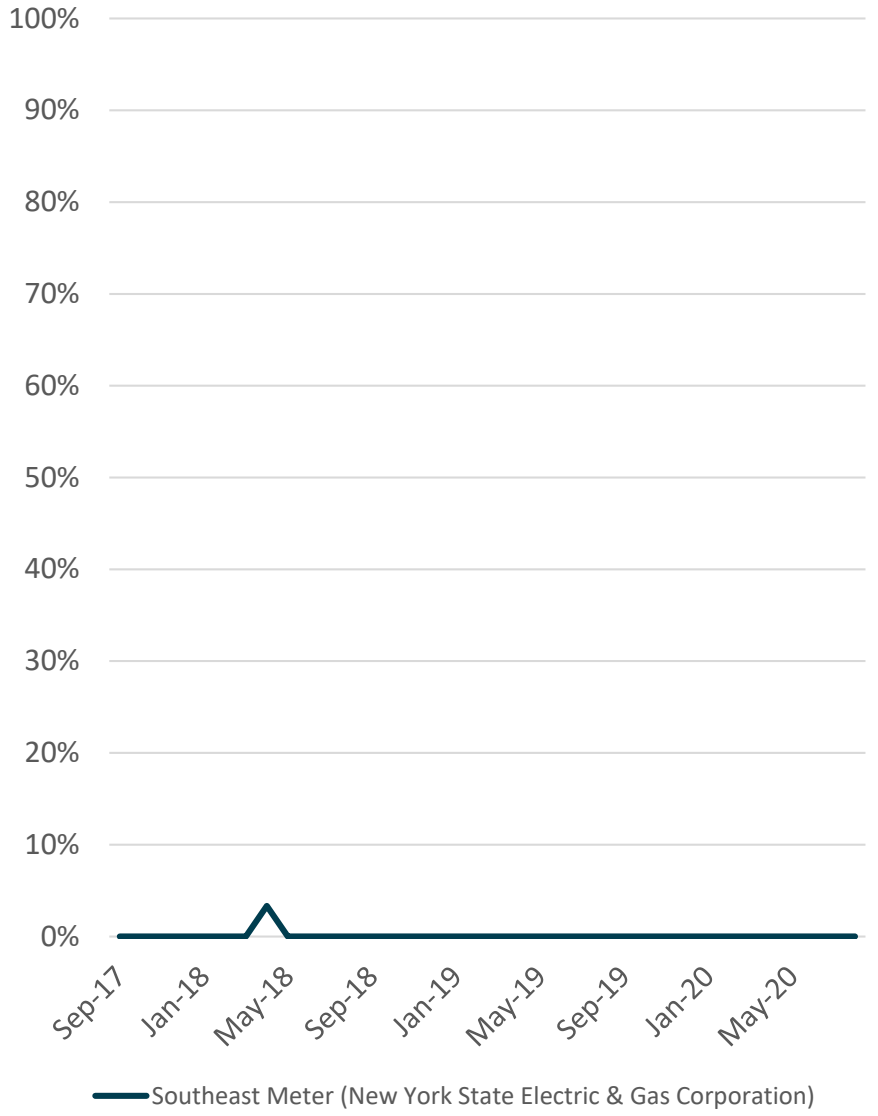
Interruptible at AGT Ramapo scarce since Q1 2019 - AGT daily interruptible percentage on a daily basis per month at the Ramapo MPC-AGT interconnect in NY



Source: BTU Analytics, Algonquin informational postings. Data as of October 7, 2020

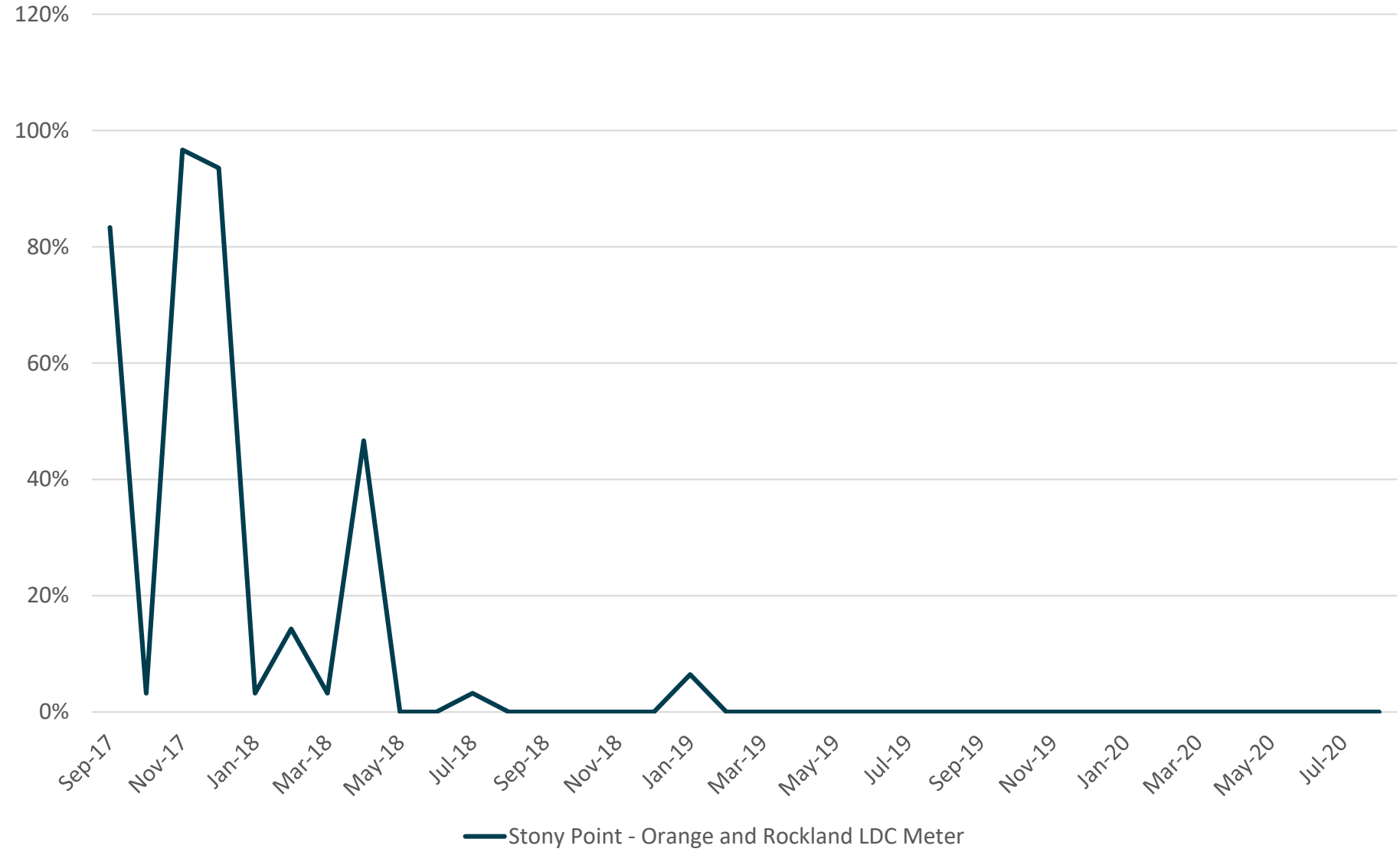
AGT daily interruptible *not available at all* for LDC in Rockland county where the modeled NYISO plant would be located - percentage on a daily basis per month at the Suffern LDC in Rockland County NY and Southeast LDC in Putnam County NY





Source: BTU Analytics, Algonquin informational postings. Data as of October 7, 2020

AGT daily interruptible not available for LDC in Rockland county since Q1 2019 - AGT daily interruptible percentage on a daily basis per month at the Stony Point LDC in NY



Source: BTU Analytics, Algonquin informational postings. Data as of October 7, 2020

Attachment 4

Prior to the start of CPV Valley, IT was generally available at the Ramapo interconnect with AGT even in the winter

Ramapo IT Availability: Winter 17 / 18

	December 2017						
	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
						1	2
Timely						Y	N
ID 3						Y	Y
	3	4	5	6	7	8	9
Timely	Y	Y	N	Y	Y	Y	Y
ID 3	Y	Y	Y	Y	Y	Y	Y
	10	11	12	13	14	15	16
Timely	Y	Y	N	Y	Y	Y	Y
ID 3	Y	Y	Y	Y	Y	Y	Y
	17	18	19	20	21	22	23
Timely	Y	Y	Y	Y	Y	Y	Y
ID 3	Y	Y	Y	Y	Y	Y	Y
	24	25	26	27	28	29	30
Timely	Y	Y	Y	Y	Y	Y	Y
ID 3	Y	Y	Y	Y	Y	Y	Y
	31						
Timely	Y						
ID 3	Y						

	January 2018						
	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
		1	2	3	4	5	6
Timely		Y	Y	Y	Y	Y	Y
ID 3		Y	Y	Y	Y	N	N
	7	8	9	10	11	12	13
Timely	Y	Y	Y	Y	Y	Y	Y
ID 3	N	Y	Y	Y	Y	Y	N
	14	15	16	17	18	19	20
Timely	Y	Y	Y	Y	Y	Y	Y
ID 3	N	N	N	Y	Y	Y	Y
	21	22	23	24	25	26	27
Timely	Y	Y	Y	Y	Y	Y	Y
ID 3	Y	Y	Y	Y	Y	Y	Y
	28	29	30	31			
Timely	Y	Y	Y	Y			
ID 3	Y	Y	Y	N			

	February 2018						
	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
					1	2	3
Timely					N	N	N
ID 3					N	N	N
	4	5	6	7	8	9	10
Timely	N	N	N	N	N	N	Y
ID 3	N	N	N	N	N	N	Y
	11	12	13	14	15	16	17
Timely	Y	Y	Y	Y	Y	Y	Y
ID 3	Y	Y	Y	Y	Y	Y	Y
	18	19	20	21	22	23	24
Timely	Y	Y	Y	Y	Y	Y	Y
ID 3	Y	Y	Y	Y	Y	Y	Y
	25	26	27	28			
Timely	Y	Y	Y	Y			
ID 3	Y	Y	Y	Y			

28 out of 31 days	23 out of 31 days	19 out of 28 days

Source: BTU Analytics, Algonquin informational postings as of September 18, 2020

Growth in demand on Millennium with the start of CPV Valley significantly reduced the availability of IT capacity on AGT driven by constraints on Millennium

Ramapo IT Availability: Winter 18 / 19

	December 2018						
	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
							1
							Y
							N
	2	3	4	5	6	7	8
Timely	Y	Y	Y	Y	Y	Y	Y
ID 3	N	N	N	N	N	N	N
	9	10	11	12	13	14	15
Timely	Y	Y	Y	Y	Y	Y	Y
ID 3	N	N	N	N	N	N	N
	16	17	18	19	20	21	22
Timely	Y	Y	Y	Y	Y	Y	Y
ID 3	N	N	Y	Y	N	N	N
	23	24	25	26	27	28	29
Timely	Y	Y	Y	Y	Y	Y	Y
ID 3	N	N	N	N	N	N	N
	30	31					
Timely	Y	Y					
ID 3	N	N					

	January 2019						
	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
			1	2	3	4	5
			Y	Y	Y	Y	Y
			N	N	N	N	N
	6	7	8	9	10	11	12
Timely	Y	Y	Y	Y	Y	Y	Y
ID 3	N	N	N	N	N	N	N
	13	14	15	16	17	18	19
Timely	Y	Y	Y	Y	Y	Y	Y
ID 3	N	N	N	N	N	N	Y
	20	21	22	23	24	25	26
Timely	Y	Y	Y	N	N	N	N
ID 3	Y	Y	Y	N	N	N	N
	27	28	29	30	31		
Timely	N	N	N	N	Y		
ID 3	N	N	N	Y	N		

	February 2019						
	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
						1	2
						Y	N
						N	N
	3	4	5	6	7	8	9
Timely	N	N	N	N	Y	N	N
ID 3	N	N	N	N	N	N	N
	10	11	12	13	14	15	16
Timely	N	N	N	N	N	N	N
ID 3	N	N	N	N	N	N	N
	17	18	19	20	21	22	23
Timely	N	N	N	N	N	N	N
ID 3	N	N	N	N	N	N	N
	24	25	26	27	28		
Timely	N	N	N	N	N		
ID 3	N	N	N	N	N		

2 out 31 days	4 out of 31 days	0 out of 28 days

Source: BTU Analytics, Algonquin informational postings as of September 18, 2020

Demand levels on Millennium this winter, eliminated IT availability for the winter of 19/20

Ramapo IT Availability: Winter 19 / 20

	December 2019						
	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
	1	2	3	4	5	6	7
	N	N	N	N	N	Y	Y
	N	N	N	Y	Y	N	N
	8	9	10	11	12	13	14
Timely	Y	Y	Y	Y	Y	N	N
ID 3	N	N	N	N	N	N	N
	15	16	17	18	19	20	21
Timely	N	N	Y	Y	Y	Y	N
ID 3	N	N	N	N	N	N	N
	22	23	24	25	26	27	28
Timely	N	N	N	N	N	N	N
ID 3	N	N	N	N	N	N	N
	29	30	31				
Timely	N	N	N				
ID 3	N	N	N				
Timely							
ID 3							

	January 2020						
	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
				1	2	3	4
				N	N	N	N
				N	N	N	N
	5	6	7	8	9	10	11
Timely	N	N	N	N	N	N	N
ID 3	N	N	N	N	N	N	N
	12	13	14	15	16	17	18
Timely	N	N	N	N	Y	N	N
ID 3	N	N	N	N	N	N	N
	19	20	21	22	23	24	25
Timely	N	N	N	N	N	N	N
ID 3	N	N	N	N	N	N	N
	26	27	28	29	30	31	
Timely	N	N	N	N	N	N	
ID 3	N	N	N	N	N	N	
Timely							
ID 3							

	February 2020						
	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
							1
							N
							N
	2	3	4	5	6	7	8
Timely	N	N	N	N	N	N	N
ID 3	N	N	N	N	N	N	N
	9	10	11	12	13	14	15
Timely	N	N	N	N	N	N	N
ID 3	N	N	N	N	N	N	N
	16	17	18	19	20	21	22
Timely	N	N	N	N	N	N	N
ID 3	N	N	N	N	N	N	N
	23	24	25	26	27	28	29
Timely	N	N	N	N	N	N	N
ID 3	N	N	N	N	N	N	N
Timely							
ID 3							

0 out of 31 days

0 out of 31 days

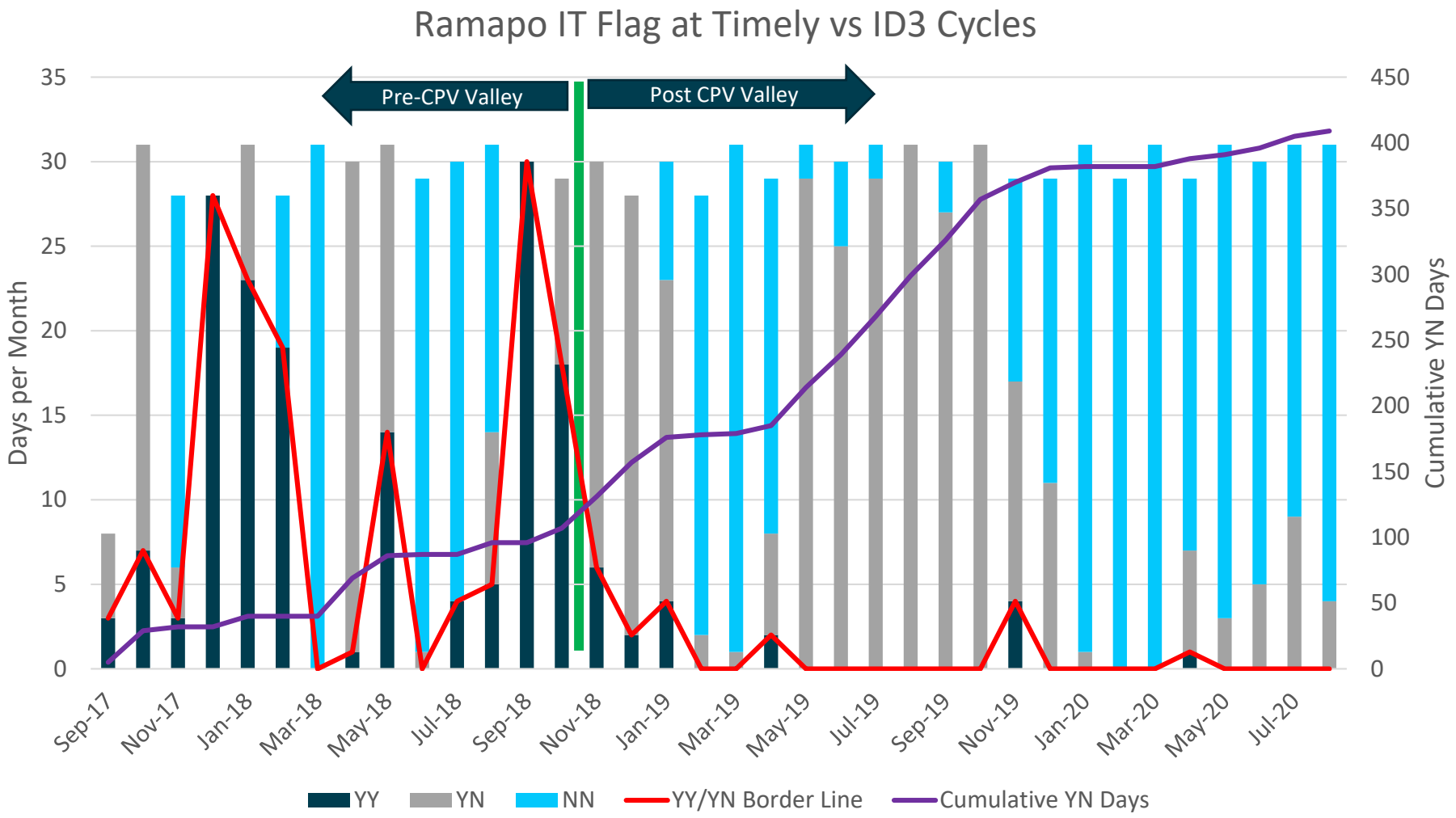
0 out of 28 days

Source: BTU Analytics, Algonquin informational postings as of September 18, 2020

Attachment 5

The start of CPV Valley Power Plant has significantly reduced the availability of IT on AGT at the Ramapo/Millennium interconnect. Since Sept. 2017, on 409 days, IT was flagged as available at timely but unavailable at ID3 meaning nominated gas would have been cut by the pipeline.

BTU ANALYTICS



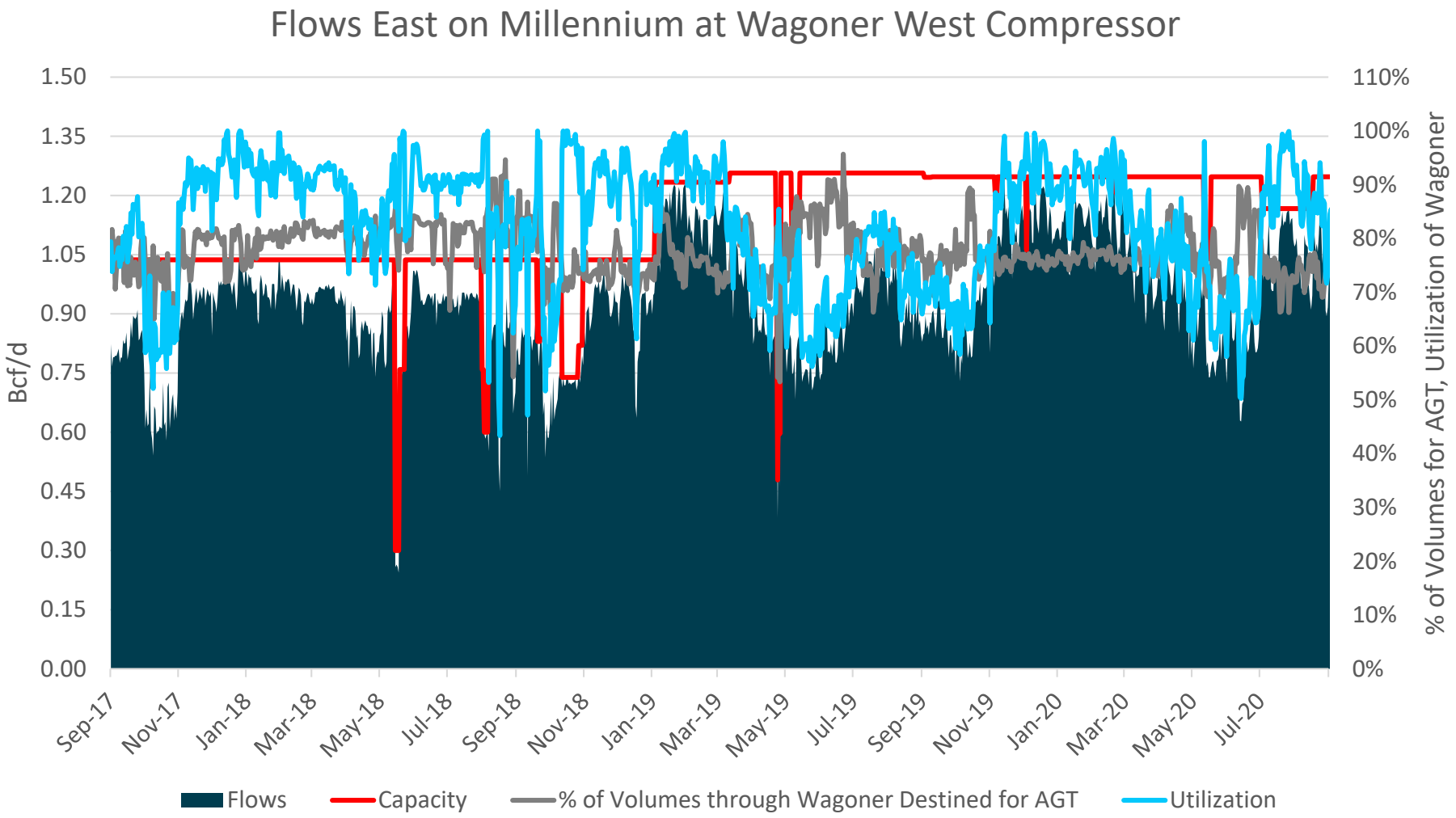
YY: IT was available at Timely and ID3
YN: IT was available at Timely but not available at ID3
NN: IT was not available at Timely nor ID3

From Nov 2018 – Aug 2020, only 19 "Y/Y" days where IT was deliverable
Apr – Oct 2019: 2 Y/Y Days; Dec 2019 – Mar 2020: 4 Y/Y Days
Apr – Aug 2020: 1 Y/Y Day

Source: BTU Analytics, Algonquin informational postings. Data as of September 28, 2020

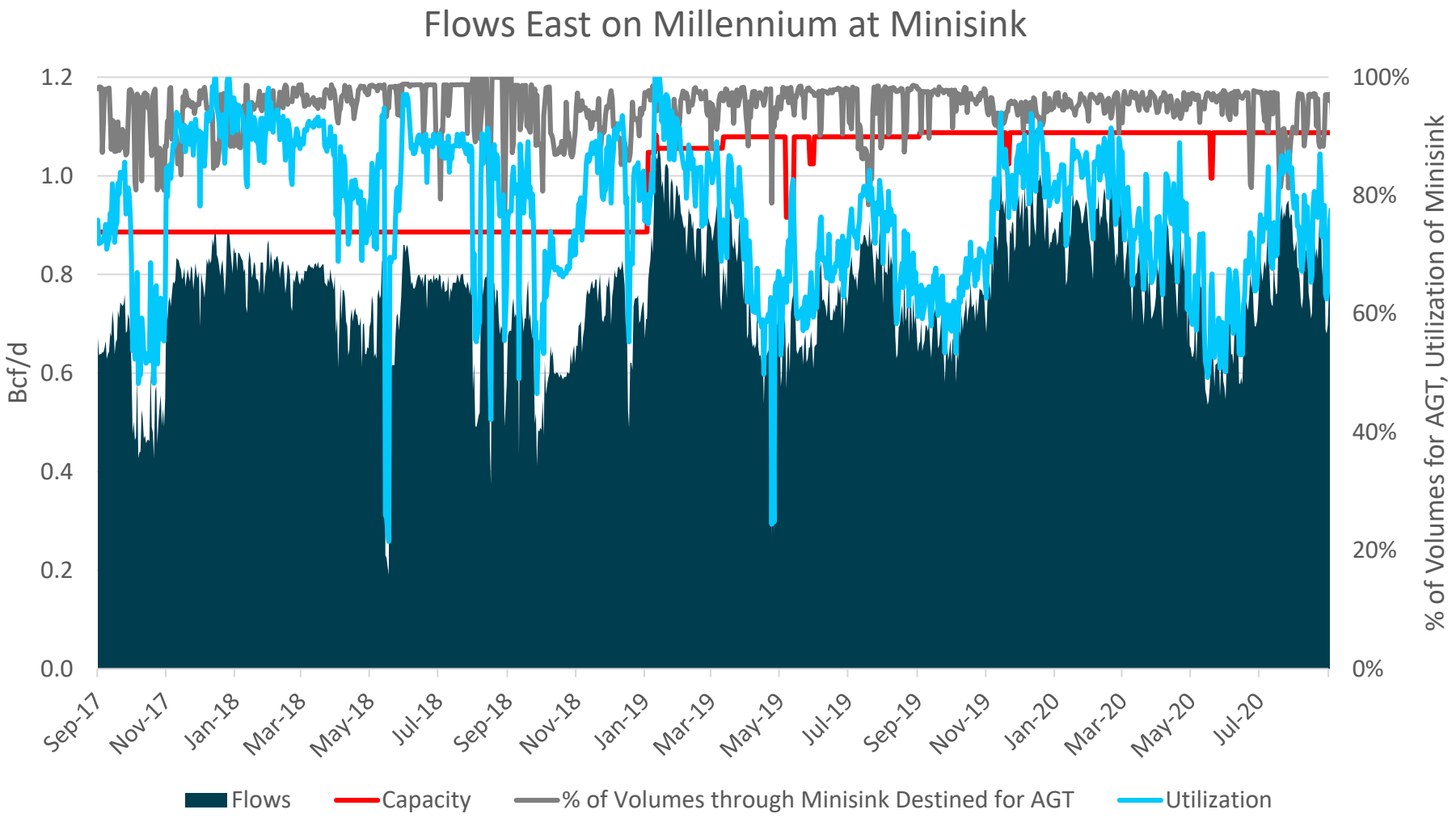
Attachment 6

Millennium is highly utilized in winter to meet demand on system as well as provide supply to AGT. LDCs and CPV own 56% of FT capacity through Wagoner West compressor station, producers own 33% of FT, Columbia Gas owns 10% of FT, and marketers own 2% of FT



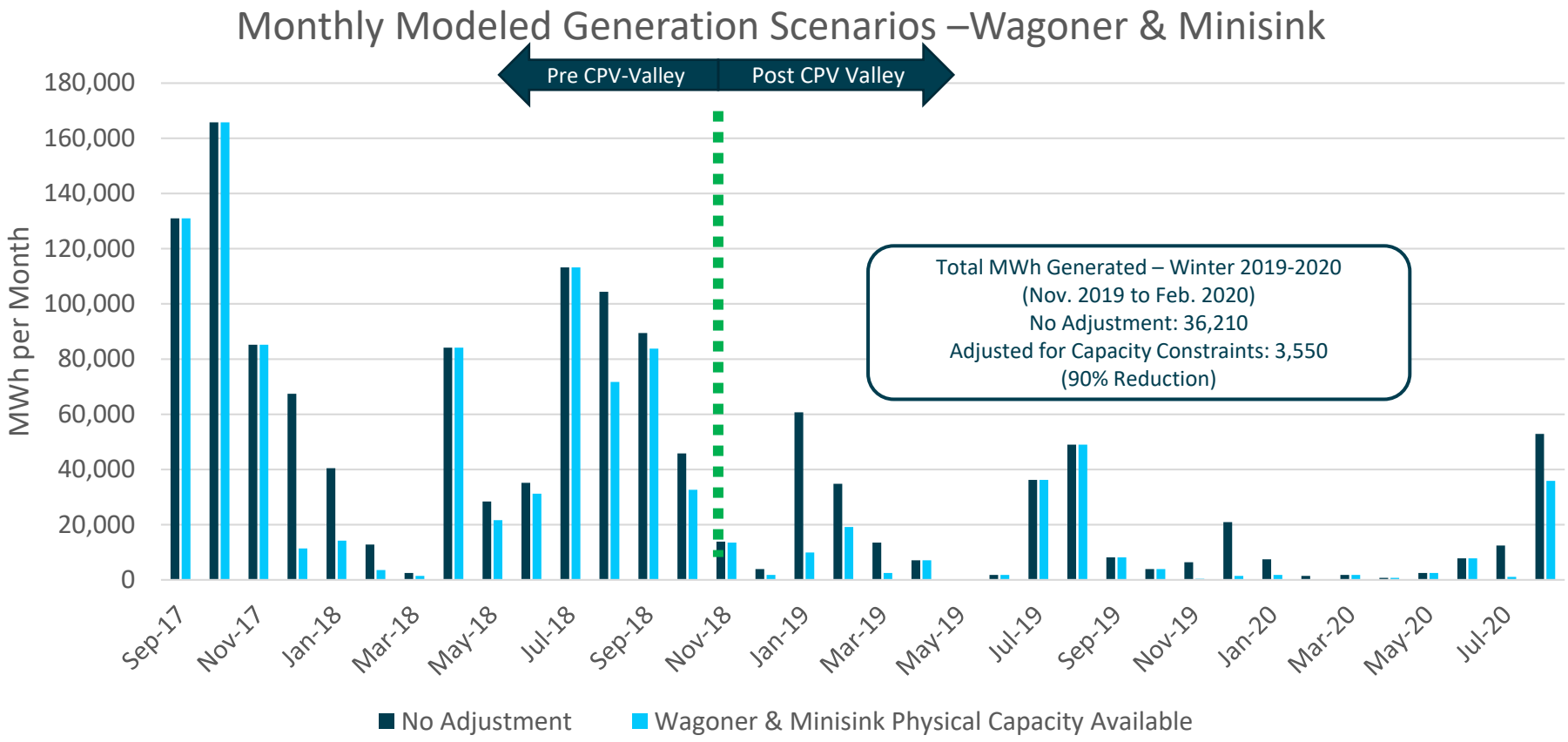
Source: BTU Analytics. Data as of October 6, 2020

Almost 100% of the gas flowing through the Minisink compressor station is destined for Algonquin Pipeline and would require a power plant to pay an Algonquin City Gate price for delivery in Rockland County.



Source: BTU Analytics. Data as of October 6, 2020

Monthly modeled generation scenarios using TETCO M3 pricing and constraints at both Wagoner West and Millennium Minisink compressors highlight significant winter capacity constraints on Millennium



Total MWh Generated – Total Period
(Sept 2017 to Aug 2020)
No Adjustment: 1,269,480
Adjusted for Capacity Constraints: 967,375 (24% Reduction)

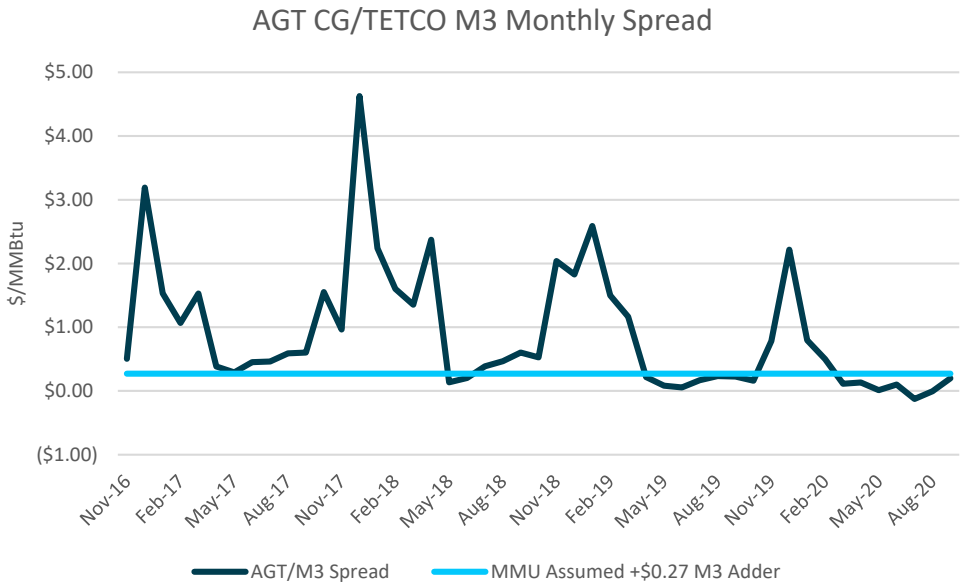
Total MWh Generated – Period Post-CPV Valley COD (Nov 2018 to Aug 2020)
No Adjustment: 347,190
Adjusted for Capacity Constraints: 206,255 (41% Reduction)

Note: No Adjustment Case Uses TETCO M3 + $0.27 pricing and no other adjustments to MMU Model. Adjusted for Wagoner & Minisink physical capacity incorporates a constraint that there must be 75,000 MMBTU of available physical capacity at both Wagoner & Minisink using Wagoner & Minisink flows and operating capacity.
Source: BTU Analytics, NYISO Net AES Model, Data as of October 6, 2020

Attachment 7

In the winter, IT capacity is rarely available due to FT and No-Notice demand service taking precedent, resulting in significantly wider spreads between AGT and TETCO M3 of $1.61/MMBtu on average reflecting the scarcity of capacity. Transport cost of $0.27/MMBtu between TETCO M3 and AGT is not representative of winter dynamics due to this scarcity and inability to secure consistent IT service.

AGT CG/TETCO M3 Monthly Average Spread ($/MMBtu)		
Winter '16/'17	$1.56	During regular demand times (summer) spread represents transport cost to move between M3 and AGT CG. During peak demand times (winter) spread reflects the scarcity of capacity on AGT due to downstream demand deliveries taking precedent on the pipe, in addition to the transport cost between M3 and AGT CG
Summer '17	$0.62	
Winter '17/'18	$2.16	
Summer '18	$0.67	
Winter '18/'19	$1.82	
Summer '19	$0.16	
Winter '19/'20	$0.88	
Summer '20	$0.05	



TETCO demand customers pay a TETCO M3 price, on average ($0.93) lower than AGT Citygate since September 2016

IT customer on Algonquin between TETCO M3 and AGT Citygate would need to pay an AGT Citygate price to secure gas that could otherwise flow downstream as a guaranteed AGT Citygate sale. Transporter would not sell at a TETCO M3+ price to Rockland County customer when gas has a downstream destination at AGT Citygate

Algonquin demand customers pay an AGT Citygate price, on average $0.93 higher than TETCO M3 since September 2016

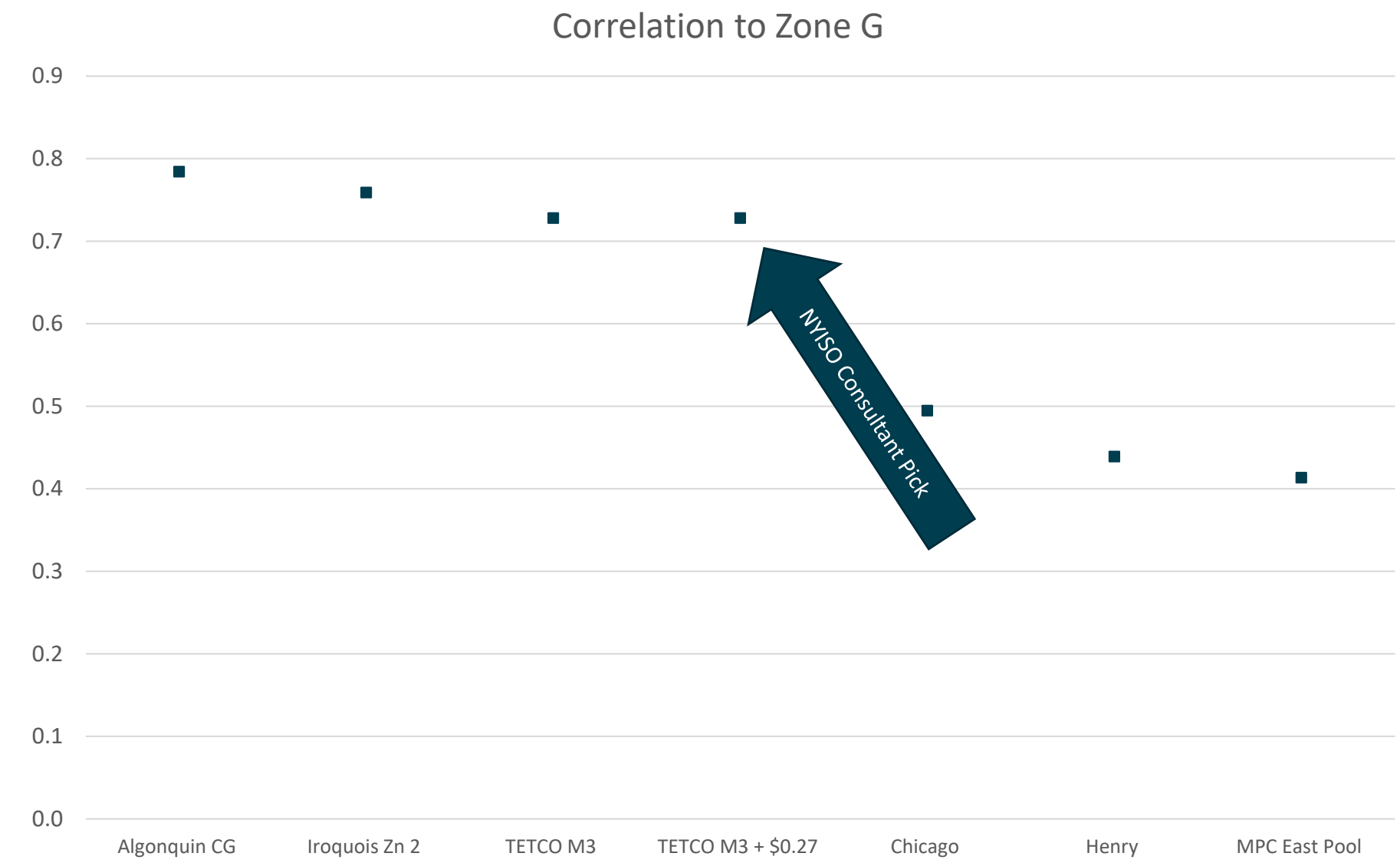
TETCO → Algonquin → Downstream demand

New Jersey | Rockland County | New England

Source: BTU Analytics, NGI historical gas prices as of September 18, 2020

Attachment 8

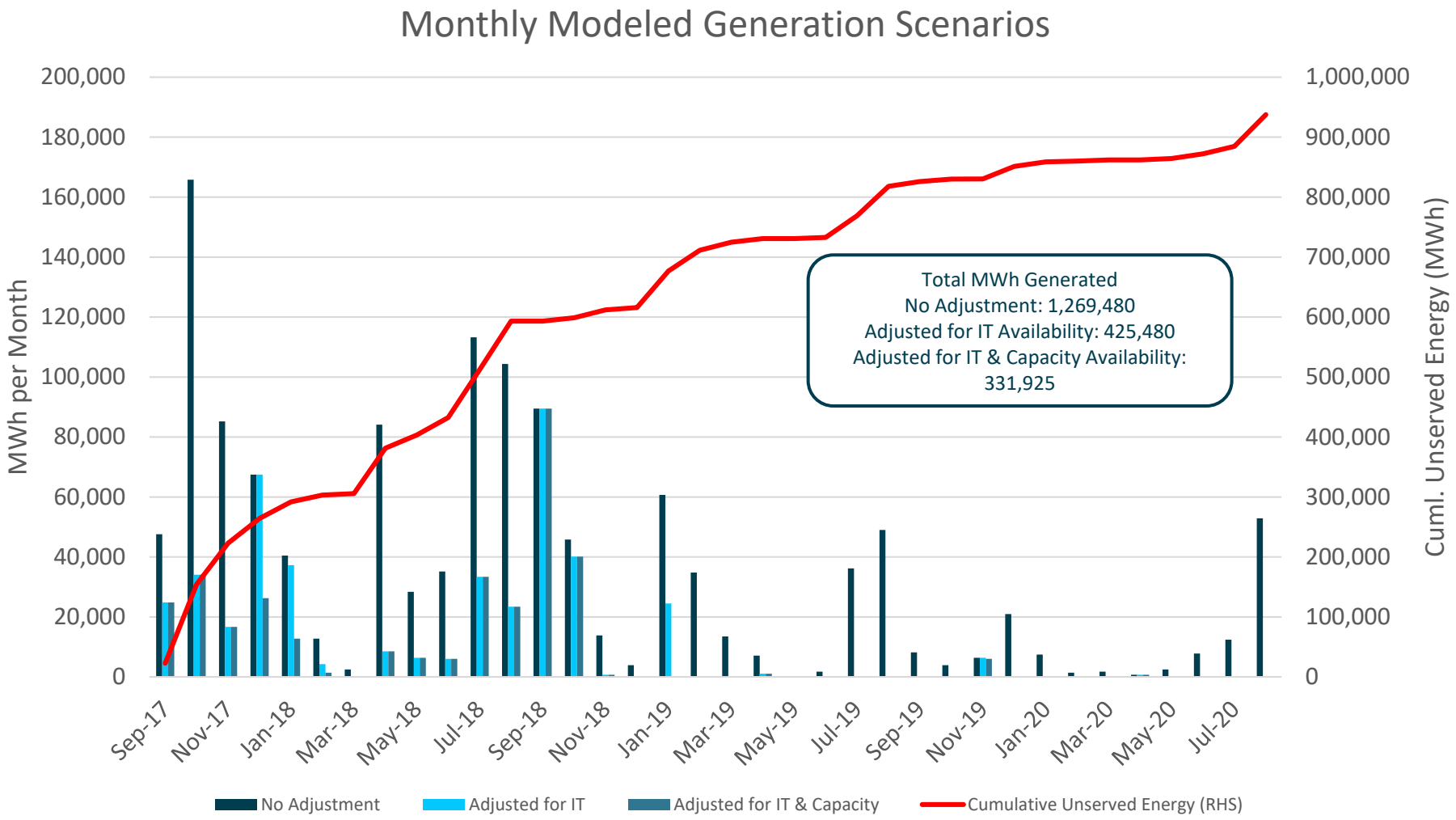
Market Dynamics: Northeast gas pricing point vs. NYISO LBMP pricing show consultant's picks based of correlation was third best pick based on this analysis



Source: BTU Analytics, NGI and NYISO – daily prices since Jan 1, 2017

Attachment 9

Ramapo – Cumulative Difference in Generation

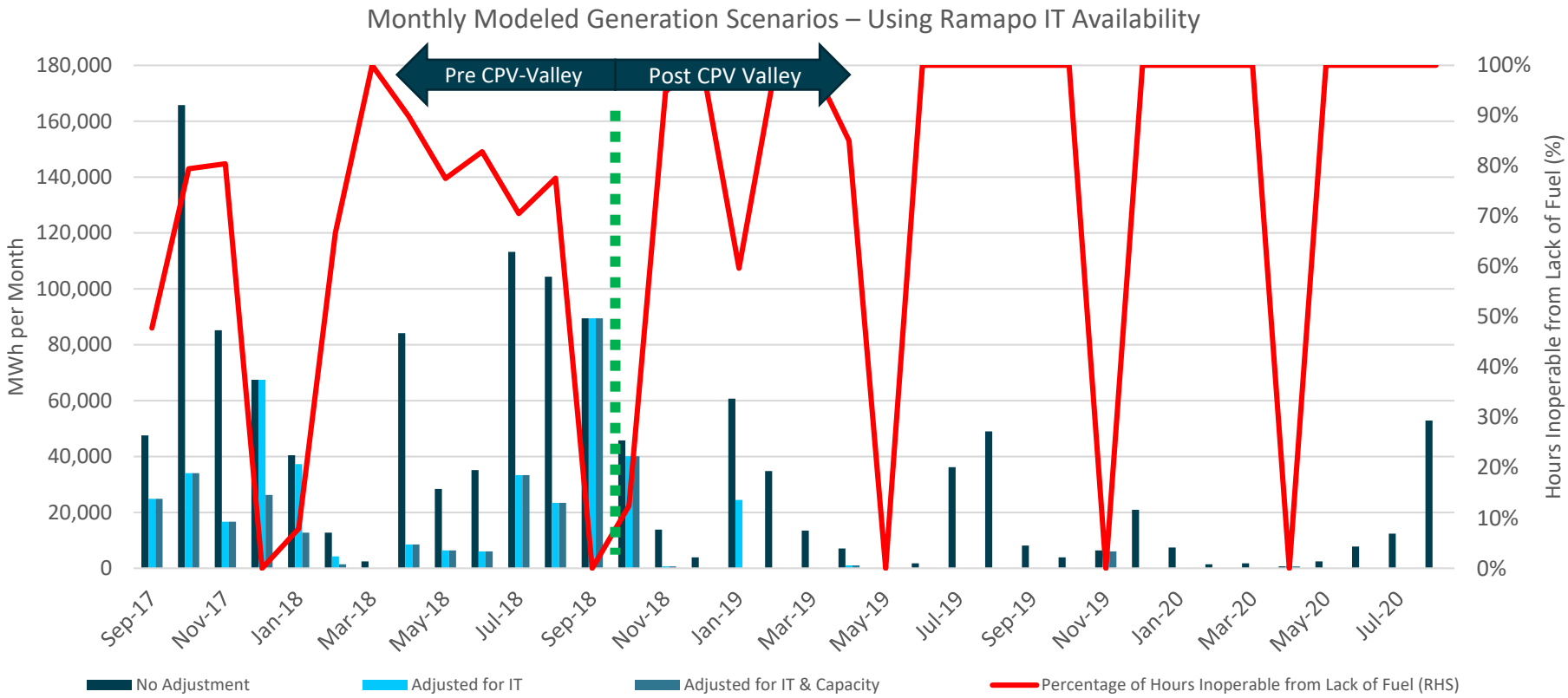


Note: Uses TETCO M3 + $0.27. Adjusted for IT Availability at Ramapo Millennium receipt interconnect. Adjusted for 75,000 Mcf/d of available capacity at Millennium Mainline using ID3 + unutilized no-notice flows

Note: September 2017 includes September 23 – September 30

Source: BTU Analytics, NYISO Net AES Model, Data as of October 6, 2020

Since the start of CPV Valley, a power plant attempting to secure IT on AGT would have seen expected generation drop by 97.5% given constraints on AGT and availability of IT compared to MMU model that assumes TETCO M3 Pricing and that IT is always available



Total MWh Generated – Total Period
(Sept 2017 to Aug 2020)
No Adjustment: 1,269,480
Adjusted for IT Availability: 425,480 (66.5% Reduction)
Adjusted for IT & Capacity Constraints: 331,925
(73.9% Reduction)

Total MWh Generated – Period Post-CPV Valley COD (Nov 2018 to Aug 2020)
No Adjustment: 347,190
Adjusted for IT Availability: 33,370 (90.4% Reduction)
Adjusted for IT & Capacity Constraints: 8,520
(97.5% Reduction)

Note: No Adjustment Case Uses TETCO M3 + $0.27 pricing and no other adjustments to MMU Model. Adjusted for IT utilizes AGT posted availability of IT at Ramapo Millennium Interconnect.
Adjusted IT & Capacity incorporates the IT availability above and a constraint that AGT must have 75,000 MMBTU of available capacity at Millennium Mainline using ID3 nominations and reserved no-notice capacity
Note: September 2017 includes September 23 – September 30
Source: BTU Analytics, NYISO Net AES Model, Data as of October 6, 2020