## UNITED STATES OF AMERICA
## BEFORE THE
## FEDERAL ENERGY REGULATORY COMMISSION

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| Fast Start Pricing in Markets Operated by Regional Transmission Organizations and Independent System Operators | ) ) ) ) | Docket No. RM17-3-000 |

## COMMENTS OF THE NEW YORK INDEPENDENT SYSTEM OPERATOR, INC.

In accordance with the *Notice of Proposed Rulemaking* issued by the Federal Energy

Regulatory Commission ("Commission") on December 15, 2016 in the above-referenced

proceeding (the "NOPR"), the New York Independent System Operator, Inc. ("NYISO") hereby

submits its comments in response to the NOPR.[1] The NYISO generally supports the

Commission's objective to establish fast-start pricing for a defined set of fast-start resources that

aligns Locational Based Marginal Prices ("LBMPs")[2] with the actual marginal cost of serving

load.[3] The NYISO's pricing logic already incorporates energy offers from fast-start resources

and the NYISO recognizes that including start-up costs for these resources may be relevant to the

marginal cost incurred by the system. The Commission should permit regional implementation

flexibility to permit ISOs and RTOs to account for the differing market structures that exist in the

various ISO/RTO markets across the country. Market-specific, tailored proposals are the best

way to achieve the NOPR's goal of setting prices that: (1) accurately reflect the marginal cost of

serving load, (2) reflect the value of fast-start resources, (3) do not create unnecessary uplift

payments, and (4) provide incentives for market participants to make efficient investments.

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[1] NOPR at P 66.

[2] Capitalized terms not otherwise defined herein shall have the meaning specified in Section 1 of the NYISO's Open Access Transmission Tariff ("OATT") and Section 2 of the NYISO's Market Administration and Control Area Services Tariff ("Services Tariff").

[3] NOPR at P 2.

## I.    NYISO'S EXISTING FAST-START PRICING

The NYISO's pricing logic has long incorporated the energy pricing impacts of block-loaded,[4] fast-start resources.[5] The NYISO's design strives to accurately reflect the marginal cost to serve the next increment of load and encourages consistency between schedules and prices. Pricing outcomes should, to the maximum extent practicable, align with the physical commitment and dispatch that resources are instructed to follow.

The NYISO's existing fast-start pricing rules, first implemented in 2001 ("Hybrid Pricing")[6] and most recently revised in 2017 ("Online Fast-Start Pricing"),[7] are designed to incorporate energy offers into price setting and to align physical schedules with prices to the maximum extent possible. The NYISO's pricing logic considers the energy offers from block-loaded, fast-start resources that are capable of starting and reaching their Upper Operating Limit ("UOL") within ten or thirty minutes. Start-up costs are considered in the NYISO's economic evaluation; however, they are not included in the LBMP determination. No-load costs are not included in the NYISO's fast-start evaluation or price setting because none of the eligible block-loaded, fast-start resources have no-load costs. Although the NYISO's existing fleet of fast-start resources is mainly block loaded, the NYISO recognizes that with existing public policy goals changes to its market design will be necessary to accommodate other types of resources that are expected to enter its markets in the future. Potential market design changes will be identified by performing studies of how best to integrate public policy goals and to forecast penetration of

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[4] *See* Services Tariff § 2.6. Fixed Block Unit: A unit that, due to operational characteristics, can only be dispatched in one of two states: either turned completely off, or turned on and run at a fixed capacity level.

[5] *New York Indep. Sys. Operator, Inc.*, 95 FERC ¶ 61,121 (2001).

[6] *See New York Independent System Operator, Inc.*, 95 FERC ¶ 61,121 (2001). The NYISO's Hybrid Pricing applies to Real-Time Market pricing. For the purposes of the Day-Ahead Market, block-loaded resources are treated as flexible (*i.e.*, treating the resource as if it could be dispatched at any level between zero and the resource's maximum capability) and, thus, eligible to set pricing to the extent they are economically committed to serve load.

[7] *See New York Independent System Operator, Inc.*, Letter Order in Docket No. ER17-549-000 (January 31, 2017).

renewable generation.  The NYISO believes it is important to compensate resources

appropriately for the services they are providing, which could include future changes to price

setting eligibility rules.

From 2001 until February 28, 2017, real-time energy offers submitted by block-loaded,

fast-start resources were eligible to set the LBMP when the units were economically committed

or dispatched to meet load, but *not* when the resources were operating solely to satisfy a

minimum run-time requirement.[8]  In February 2017, the NYISO improved its fast-start pricing

rules to more accurately capture the cost of marginal resources that were scheduled to supply

load and manage congestion.  Since February 28, 2017, energy offers from block-loaded, fast-

start resources have been eligible to set real-time LBMPs when committed to meet load *even*

when they are only operating to satisfy a minimum run-time requirement.

The LBMP set by block-loaded, fast-start resources that were committed to serve load

truly reflects market conditions, as the units operate economically at the LBMPs their offers

establish.[9]  Real-time price formation and long-term investment information is improved by

including all block-loaded, fast-start resources in the supply curve based on their respective

energy offer prices.

The NYISO also allows offline fast-start resources to be eligible to set price.  Offers from

offline 10-minute, block-loaded gas turbines ("GTs") are eligible to set the real-time LBMP, on

some occasions, in the Real-Time Dispatch ("RTD").  LBMPs set by offline GTs include start-up

costs.  The start-up costs of each offline fast-start resource are added to the resource's energy

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[8] New York Indep. Sys. Operator, Inc., Aug. 25, 2000 Request for Partial Rehearing, Docket No. ER00-3038-002, *et al.*, at 11; New York Indep. Sys. Operator, Inc., May 7, 2001 Compliance Filing Containing Tariff Sheets in Order to Implement the Hybrid Fixed Price Pricing Rule Approved by the Commission on Apr. 26, 2001, Docket No. ER00-3038-004, *et al.*

[9] *New York Indep. Sys. Operator, Inc.*, 95 FERC ¶ 61,121 (2001).

offer costs. Combining start-up costs with energy offer costs ensures that the LBMPs reflect the resource's approximate commitment costs.

## II. COMMUNICATIONS AND CORRESPONDENCE

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## III. COMMENTS

### A. Fast-Start Resource Definitions and Resource Eligibility

In response to the price-setting, fast-start eligibility characteristics the Commission proposes in PP 46-48 of the NOPR, the NYISO proposes two modifications to the Commission's first criteria (able to start in 10 minutes or less). In New York, eligible fast-start resources should be block loaded and able to start up within thirty minutes or less. The NYISO supports the second and third criteria proposed in the NOPR; eligible fast-start resources should (2) have a minimum run time of one hour or less, and (3) submit economic energy offers to the market. In response to P 48 of the NOPR, the NYISO supports defining the minimum standards for each operating characteristic to allow for regional variation. Each ISO/RTO currently utilizes different software to commit, dispatch and set prices for its unique set of resources. Strictly defining minimum standards that ignore regional differences could produce unintended consequences or impose an excessive and unnecessary burden on an ISO or RTO.

### 1. Time Required to Start-Up and Resource Operating Characteristics

The NYISO proposes changes to the NOPR's definition of eligible resources to (a) increase the permissible start-up time from ten minutes to thirty minutes, and (b) require the units be block loaded, rather than also modeling the minimum generation segment of dispatchable fast-start resources as flexible. Qualified 10-minute or 30-minute fast-start resources should be able to achieve their UOL within the specified time frames. Since 2005, the NYISO has included 10-minute start and 30-minute start gas turbines in its Online Fast-Start Pricing and permitted block-loaded resources (resources that have a lower operating limit that is equal to their upper operating limit) with start-up times of thirty minutes or less to set price. The NYISO does not believe that the definition of eligible fast-start resources should be expanded beyond the block-loaded, fast-start resources described here. Including dispatchable fast-start resources, particularly resources with a sizeable minimum generation (no-load) block, could lead to large divergences between resources' energy and reserves *schedules* and the respective energy and reserve *clearing prices*. Backing down a significant number of MWs on flexible resources in order to accommodate a sizeable minimum generation block could introduce the need for potentially large uplift payments or create imbalances between energy and ancillary service requirements.

For example, including resources that are not block loaded as eligible to set price below their minimum operating point would create issues with the scheduling and pricing of Operating Reserves for the NYISO. Today, the NYISO only includes block-loaded, fast-start resources in its Online Fast-Start Pricing algorithm. These resources can only provide energy when online; they are not eligible to provide synchronous Operating Reserves. Block-loaded, fast-start resources are eligible to provide non-synchronous Operating Reserves when they are offline.

This eligibility treatment during the physical and ideal dispatches of the NYISO's day-ahead Security Constrained Unit Commitment ("SCUC"), Real-Time Commitment ("RTC"), and RTD software prevents Operating Reserve schedules in unavailable regions of a resource's operating range and minimizes any reserve swapping between the physical and ideal (price setting) dispatches. Limiting Operating Reserve schedule swapping between the NYISO's physical and ideal dispatches helps to maintain scheduling and pricing consistency for Operating Reserves and minimizes the potential for resources scheduled to provide Operating Reserves to incur lost opportunity costs.

Resources that are not block loaded and are capable of synchronizing to the transmission system in ten minutes or less are generally capable of providing 10-minute synchronous reserves. If the Online Fast-Start Pricing logic included resources that are not block loaded and the resources were dispatched below their physical minimum generation level for the purposes of price setting, those resources would appear to be capable of providing more synchronous reserves than they are actually capable of providing in the ideal dispatch. Allowing the minimum generation range of flexible resources to provide synchronous reserves would lead to both energy and Operating Reserve schedules and energy and Operating Reserve prices being inconsistent. These discrepancies could potentially undermine the benefits of co-optimizing in the first place. The described concerns also exist for scheduling and pricing Regulation Service, which is co-optimized by the NYISO every five minutes.

The NYISO requests that the Commission permit it to modify the proposed definition of fast-start resources to include only block-loaded resources that are able to start-up in thirty minutes or less.

### 2. Minimum Run Time

The NYISO operates a financial market that relies on a unique, *ex ante*, co-optimized,[10] multi-period, commitment, scheduling and dispatch process that simultaneously evaluates economic bids and offers submitted by internal resources and External Transactions to produce a least production cost solution to meet demand requirements, given current system conditions and expected future system demands (hereafter, NYISO's Real-Time Scheduling or "RTS" process).[11] A key component of RTS is the NYISO's RTC software, which optimizes commitment, scheduling and dispatch in quarter hour increments over a forward-looking, multi-period, two-and-a-half-hour optimization window. RTC evaluates and schedules resources that can start up in thirty minutes or less, as this time frame is well within RTC's two-and-a-half-hour optimization window. The RTC evaluation considers the start-up costs of all resources in the evaluation, including block-loaded, fast-start resources, and the no-load costs of resources with a minimum generation block to determine the least as-bid production cost solution, even though start-up and no-load costs are not included in the price setting logic. Optimizing resource commitment, scheduling and dispatch over two and a half hours permits the NYISO to position its system to address upcoming, anticipated system events on a least-cost basis, and all resources capable of starting within thirty minutes are considered on an equivalent basis in NYISO's look-ahead evaluation and commitment.

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[10] The NYISO's multi-period co-optimized economic solution produces a least-cost solution for simultaneously procuring Energy, Regulation Service and Operating Reserves.

[11] The NYISO's RTS is comprised of a Real-Time Commitment ("RTC") and a Real-Time Dispatch ("RTD"). RTC schedules Imports, Exports and internal (NYCA) resources every 15 minutes over a forward-looking 2.5 hour commitment window. Each RTC run requires 15 minutes to execute. Following implementation of the market improvements proposed in this filing, the RTC that runs from 00:00 (top of the hour) to 00:15 will (for example) commit and schedule resources, including Imports and Exports, for the period from 00:30 to 00:45. RTD dispatches NYCA Generators that were committed/scheduled by RTC. RTD optimizes the NYISO's dispatch every 5 minutes over a forward-looking one hour dispatch window. RTD can identify the need to start 10-minute resources and NYISO Operators can use RTD to commit these resources. RTD is not able to schedule Imports or Exports, or to change Import or Export schedules. Together, RTC and RTD optimize the NYISO's resource commitment as frequently as every five minutes, looking ahead up to two and a half hours.

NYISO supports the Commission's proposal to limit fast-start resources to resources that have a minimum run time of one hour or less.[12] In general, NYISO's RTS is limited to resources with a minimum run time of one hour or less, therefore, this element of the definition is consistent with the NYISO's existing Real-Time Market scheduling processes.

### 3. Some Resources Should Be Excluded from Price-Setting

NYISO supports excluding offers from self-scheduled Generators from the resource bids used to establish prices, as discussed in the NOPR.[13] The NYISO does not consider the start-up costs of resources that self-schedule in its economic commitment, dispatch or pricing. Resources must submit flexible, economic energy offers (*i.e.*, cannot self-schedule) to be considered during price setting in the NYISO-administered markets.[14]

The Commission needs to consider other situations when an offer from a block-loaded, fast-start should *not* be eligible to set price. Currently in the NYISO-administered markets, GTs committed out-of-merit ("OOM") for Transmission Owner ("TO") reliability are ineligible to set price.[15] These GTs may be located in areas of the NYCA where potential market power concerns exist because there is only one resource (or a small number of resources that may all be under common control) that are able to solve local constraints. In addition, GTs may be committed OOM to provide cost-based ancillary services that, due to modeling limitations, are not included in the NYISO-administered day-ahead or real-time markets, such as ISO or TO

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[12] NOPR at P 46.

[13] *Id*.

[14] In New York, a Generator that self-schedules can economically offer additional Incremental Energy to the market. If the Incremental Energy that the self-scheduled resource offers is economically dispatched, it is eligible to set the LBMP. *See* Services Tariff Sections 17.1.1 and 17.1.2.

[15] S*ee* Out of Merit (OOM) Treatment presentation, http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2017-01-31/OOM%20Treatment%20Jan%20MIWG%20FINAL.pdf.

voltage support. These resources are not eligible to set price today and should not be included in price setting in the future.

B.     Inclusion of Start-up and No-load Costs in Prices

The NYISO recognizes a potential benefit from allowing eligible fast-start resources' start-up costs to be reflected in prices that are paid to all resources.[16] Including start-up costs in LBMPs provides a price signal to the market that may better reflect the true cost to serve load in an interval. Inclusion of fast-start resources' start-up costs in prices may result in more explicitly recognizing the costs a resource incurs to supply energy, and could reduce uplift costs at times when LBMPs are inadequate to cover start-up costs. As the Commission suggests, the true cost of Energy is currently paid as uplift to certain resources at certain times.[17] This revenue stream is not published and made available to developers that are considering whether to enter the New York markets, or determining the best electrical location for a proposed new Generator.

1.     Start-up Cost Inclusion and Amortization

Start-up and no-load commitment costs are generally not accounted for in NYISO's LBMPs, although start-up costs are reflected when offline GTs are used to set the real-time price. This is appropriate under the NYISO's commitment rules because dispatched units' start-up and/or no-load costs have already been evaluated in the commitment passes. The commitment was determined to minimize production cost and, as a result, LBMPs are largely high enough to cover these commitment costs. The NYISO generally commits resources economically. This is evident from Table 1 below, which shows total Day-Ahead ("DA") and Real Time ("RT") Bid Production Cost Guarantee ("BPCG") payments made to 10-minute and 30-minute qualified

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[16] The block-loaded, fast-start resources that offer into the NYISO-administered markets do not have or submit no-load costs. All fast-start eligible resources have a minimum generation point equal to their upper operating limit.

[17] *See e.g.* NOPR at 43.

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block-loaded GT resources.  Day Ahead Margin Assurance Payments ("DAMAP") are also provided in the table.  These payments account for the major types of uplift paid to resources in the NYISO-administered day-ahead and real-time markets, including payments to recover start-up costs that are not otherwise recovered through LBMP.  Uplift amounts to only a small portion of the roughly $150 million to $230 million in total energy and ancillary service settlements paid to such resources each year.

**Table 1: Total DA BPCG, RT BPCG, and DAMAP payments to 10-minute and 30-minute block-loaded GTs by year.**

| Year | Annual Day-Ahead BPCG | | Annual Real-Time RT BPCG | | Annual DAMAP | |
|---|---|---|---|---|---|---|
| 2014 | $ | 553,728 | $ | 6,434,674 | $ | 3,666,090 |
| 2015 | $ | 164,458 | $ | 9,499,876 | $ | 2,096,685 |
| 2016 | $ | 79,536 | $ | 5,256,046 | $ | 3,561,999 |

The Commission should provide flexibility for each ISO/RTO to address the concerns discussed in PP 52 and 53 of the NOPR and to develop mechanisms for incorporating the start-up costs of fast-start resources into prices that are appropriate for its region and market design.  There are many potential approaches to include fast-start resources' start-up costs in the real-time LBMP.  The NYISO does not believe the Commission should tie the amortization period for start-up costs exclusively to a resource's minimum run time.  Spreading start-up costs over a large number of intervals makes the price signal less transparent and makes it more likely that start-up costs will continue to be present in LBMPs long after the need for the block-loaded, fast-start resource has ended.

In general, the NYISO supports the NOPR proposal to allow amortization of fast-start resources' start-up costs over a specific, to-be-defined period in real-time[18]; however, this may

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[18] NOPR at P 52.

not be the optimal solution for every region.  For the NYISO, amortizing start-up costs over the

intervals when the resource is actually needed would be extremely difficult when setting *ex ante*

prices based on the co-optimization of energy, operating reserves, and regulation service and the

forward-looking, forecasted commitment of units and Interchange schedules.  Due to the flexible

nature of fast-start resources, *i.e.*, 10- or 30-minute start up and one hour or less minimum run

time, RTC cannot predict with certainty how long a fast-start resource will remain online,

beyond the binding commitment hour.  Attempting to amortize start-up costs over the period that

the resource is needed could fail to allow full cost recovery if RTC forecasted a resource running

for two hours, but conditions change and the resource is dispatched off after its one hour

minimum run time concludes.  The Commission should provide flexibility for ISO/RTOs to

work with their respective stakeholders to determine if including start-up costs in LBMPs is the

best approach for that region and, if so, how those start-up costs can best be incorporated into

price setting.

### 2.      Market Participation by Resources that Do Not Set the Price

When fast-start resource start-up costs are included in the LBMP, ISO-committed

dispatchable resources may be dispatched down to make room for block-loaded resources during

intervals when the flexible resource's energy offer is below the LBMP.  A profit maximizing

dispatchable resource would see that its dispatch point was inconsistent with the price it was

being paid and might self-commit if such instances were predictable in the future, though such a

resource would forgo the potential for guarantee payments if it self-commits.  Alternatively, a

flexible resource may intentionally overproduce by up to 3% of its maximum operating

capability during periods of higher prices.[19]  This behavior would reduce system flexibility

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[19] The NYISO's generation fleet currently responds well to NYISO-issued base points and instructions.  The NYISO
has not identified its fast-start pricing logic as causing systemic over-generation, or providing incentives for

during periods when the grid is most strained by reducing the dispatchability of the fleet in the market. As a result, it may be necessary for the NYISO to develop and apply new incentives for such resources when the LBMP is higher than their offer because start-up costs are included in the market clearing price that the NYISO sets. Incentives and penalties may need to be revised if new fast-start pricing logic results in significant volumes of dispatchable resources switching from submitting flexible offers to self-scheduling.

For example, consider the following resources, each with a 20 MW UOL and different cost characteristics. Five of the dispatchable resources have no start-up cost, as they have already been committed.

| Resource | Variable Cost | Start-Up Cost | No Load Cost | Lower Operating Limit | Upper Operating Limit | Min Gen Cost | Adjusted Bid |
|---|---|---|---|---|---|---|---|
| Dispatchable Unit 1 | 70 | 0 | N/A | 5 | 20 | 700 | 70 |
| Dispatchable Unit 2 | 77 | 0 | N/A | 5 | 20 | 700 | 77 |
| Dispatchable Unit 3 | 85 | 0 | N/A | 5 | 20 | 700 | 85 |
| Dispatchable Unit 4 | 87 | 0 | N/A | 5 | 20 | 800 | 87 |
| Dispatchable Fast-Start Unit 5 | 88 | 0 | 13.75 | 5 | 20 | 900 | 125.5 |
| Block-loaded Fast-Start GT 1 | 90 | 1000 | 0 | 20 | 20 | 1800 | 132.5 |
| Block-loaded Fast-Start GT 2 | 95 | 750 | 0 | 20 | 20 | 1900 | 140 |
| Block-loaded Fast-Start GT 3 | 110 | 200 | 0 | 20 | 20 | 2200 | 120 |

The NYISO's physical pass, which determines resource energy schedules, respects all resource characteristics when dispatching resources. Block-loaded GTs are dispatched to their UOL, while a dispatchable unit would set the marginal price at $88/MWh.

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resources to not follow NYISO dispatch instructions. The NYISO believes that its currently effective market rules are well-designed to incent resources to follow dispatch instruction and to prevent unscheduled overproduction. First, the NYISO does not permit resources to self-commit intra-hour in order to chase prices. Second, a generator producing above its basepoint is only compensated for overproduction that exceeds the basepoint by 3% of the generator's UOL, or less.

## Physical Pass
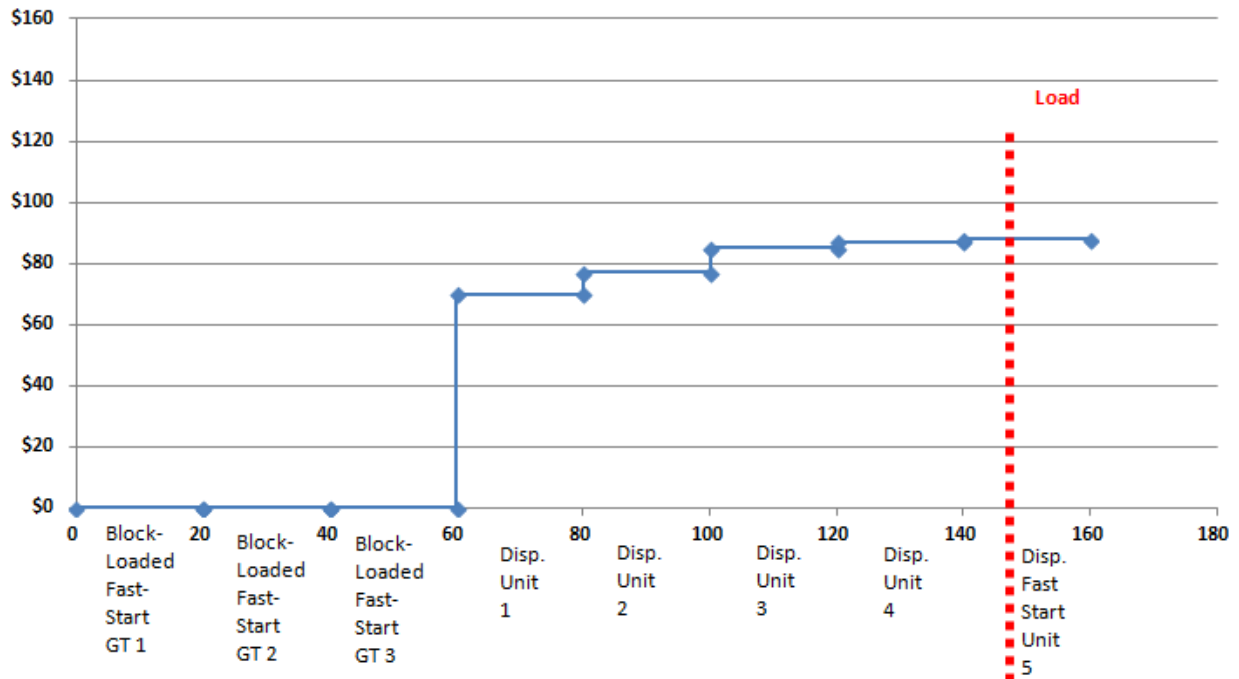


## Pricing Pass
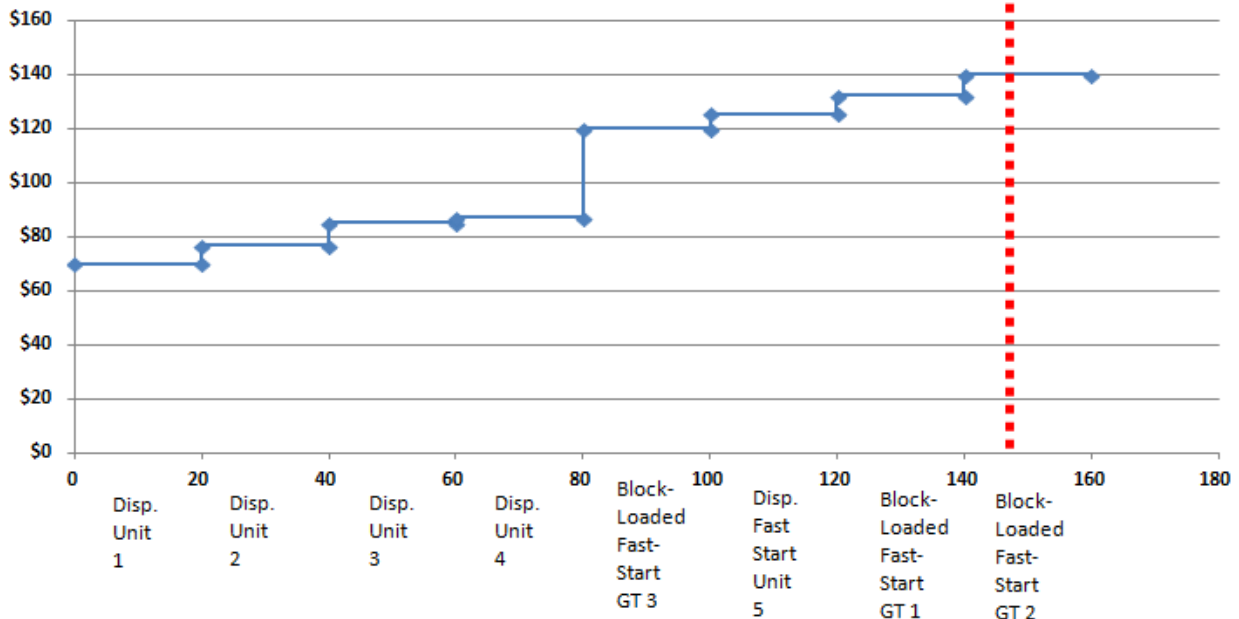


The NYISO's pricing pass, also known as its ideal pass, models the block-loaded GTs as

dispatchable between zero and their UOL to determine price.  Including start-up and no-load

costs in the fast-start unit offers significantly increases them resulting in a marginal price of $140/MWh. This LBMP reflects the true cost of both committing and dispatching Block-loaded GT 2. In the example, Dispatchable Unit 5 received a partial schedule in the physical pass. The marginal price of $140 is higher than the offer costs of Dispatchable Unit 5, but the resource is not dispatched to its UOL. Continued, predictable deviations establishing a higher price in the pricing pass relative to the physical pass might incent Dispatchable Unit 5 to self-commit in order to maximize revenues.

The physical and ideal divergence illustrated in the example above could introduce uplift concerns beyond the potential uplift that is paid under the NYISO's current rules when resources do not recover their start-up costs. As shown in Table 1 above, the NYISO's economic dispatch of all resources, including online fast-start resources, results in relatively low bid production cost guarantee payments (*i.e.*, uplift) when start-up costs are not recovered. The NYISO (and the other ISOs/RTOs) should have flexibility to work with their respective stakeholders to evaluate the trade-off between longer amortization periods, which would lead to lower LBMPs and a potential for larger BPCGs being paid to inflexible resources, and shorter amortization periods which would lead to higher LBMPs and a potential for flexible resources to incur lost opportunity costs (which could, in turn, cause flexible resources to change how they participate in the NYISO's markets). The Commission should provide the ISOs/RTOs flexibility to evaluate the need to include start-up costs in prices and the appropriate method to include start-up costs in prices.

## C. Relaxation of Economic Minimum Operating Limit

As described in P 54 of the NOPR, block-loaded resources, including the vast majority of fast-start resources in New York, would not ordinarily be included in NYISO's price setting,

absent special treatment. Block-loaded resources have a minimum generation point that is equal to their upper operating limit and cannot flexibly provide only the next incremental MW needed by the system. The NYISO's Online Fast-Start Pricing addresses this limitation by relaxing the minimum operating limits of certain fast-start, block-loaded resources to zero MW and modeling these resources as flexible to their UOL in order to permit these resources to be eligible to set price based on the incremental need that required their commitment.[20]

By allowing block-loaded resources to be eligible to set price when they are economic to serve load, the Online Fast-Start Pricing rules improve pricing transparency and allow resources to be compensated based on pricing that more accurately reflects the NYISO's least-cost solution to serve load. The pricing signals produced by the NYISO's Online Fast-Start Pricing provide appropriate incentives to available resources, including: (i) incenting the scheduling of import transactions when imports are less expensive than internal generation, and (ii) incenting price-responsive load to reduce demand during high priced periods.

Allowing block-loaded resources to be fully dispatchable to zero permits those resources to set the price whenever they are required to meet load. That is, anytime at least one MW of the resources output was necessary to meet load, the resource is eligible to set the price. Because New York has constrained load pockets where block-loaded, fast-start GTs are the only resources available to meet reliability needs when a constraint develops, it is important for the NYISO to continue to provide maximum dispatch flexibility for the pricing algorithm to set efficient prices in these constrained areas.

The NYISO is concerned that the Commission's proposal to extend the relaxation of minimum operating limits to resources other than fast-start, block-loaded resources will result in

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[20] Dispatchable fast-start resources are generally eligible to set price within their dispatchable range when they are committed. Dispatchable fast-start resources are not common in New York and the few that exist are not situated in constrained load pockets.

reserve and regulation prices that diverge significantly from actual resource output. The

NYISO's RTC uses a look-ahead functionality to optimize Energy, Regulation Service and

Operating Reserves commitments over the next ten 15-minute increments (*i.e.*, 150 minutes).

RTC's look-ahead capability allows it to determine when additional flexibility will be needed on

the system and to commit resources or modify interchange schedules to provide any needed

flexibility. Relaxation of the minimum operating limits of fast-start, block-loaded resources for

purposes of price setting can produce incongruous results if relaxation allows the pricing

dispatch to diverge significantly from the physical dispatch.[21]

Under the Commission's proposed rule, a dispatchable, fast-start resource could receive

an energy schedule for its minimum generation amount in the physical dispatch, while the

pricing dispatch could award the resource a reserve and/or regulation schedule for its minimum

generation MWs if these MWs were modeled as flexible. The potential exists for reduced

reserve and regulation prices relative to current NYISO practice as a result of the Commission's

proposed rule. The NYISO supports limiting the impacts of any pricing divergence by

restricting the relaxation of physical operating limits to block-loaded, fast-start resources that

have a minimum run time of one hour or less.

### D.     Allowing Offline Fast-Start Resources to Set Price

Offline 10-minute start resources can be started to resolve real-time needs. The NYISO

utilizes the offers of offline 10-minute block-loaded GTs in its Real-Time Dispatch ("RTD") to

set the real-time LBMP on some occasions and supports the NOPR proposal at P 56 to allow

these offline fast-start resources to set prices. The NYISO supports the Commission's proposal

to limit offline pricing to resources that can start in ten minutes. Ten-minute start-up aligns with

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[21] The physical dispatch accounts for the physical characteristics and operating parameters of supply resources.

the NYISO's RTD optimization that looks ahead approximately 60 minutes and sets schedules

and prices on a 5-minute interval basis. Resources that require thirty minutes to start could be

started by the next RTC run and do not need to be included in offline fast-start pricing.

In New York, offline 10-minute eligible resources (*i.e.*, GTs that can reach their UOL in

ten minutes or less) are qualified to set price in the pricing pass. The minimum output levels of

such fast-start resources are relaxed to zero. In other words, they are considered fully

dispatchable and are allowed to set the price if they are economic. The start-up costs of each

offline fast-start resource, divided by the generator's upper operating limit, is added to the energy

offer costs to arrive at an adjusted incremental energy offer. Combining start-up costs with

energy offer costs when allowing offline fast-start resources to set price ensures that the stated

LBMPs cover the resource's approximate commitment costs. Unlike resources that have been

committed and have an enforced minimum run time over which commitment costs can be

recovered, offline fast-start resources do not have an enforced minimum run time. Therefore, the

LBMP must immediately account for the commitment costs by enforcing a zero ramp down

constraint in the RTD look-ahead intervals and incorporating the commitment cost into the

binding RTD interval.

The NYISO requests that Commission eliminate the requirement that the fast-start

resource have a generation shift factor of no less than 5% on the applicable transmission

constraint.[22] NYISO's offline 10-minute start resource pricing currently considers all eligible

resources based on LBMPs over the full time period of the evaluation. The NYISO's operational

experience demonstrates that only limiting participation by offline resources that are unable to

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[22] NOPR at P 58.

perform due to minimum downtime constraints supports reliability and is realistic to implement without unnecessarily restricting the use of offline resources to meet all dispatch constraints.

In New York, shortage pricing provides a signal to the marketplace that the NYISO truly has very few, or inadequate, resources left to resolve a transmission constraint, provide regulation, or provide reserves. The NYISO allows offline fast-start resources to set price before it goes short of reserves, regulation, or transmission. The NYISO's current offline fast-start pricing implementation avoids unnecessary pricing volatility that results when there is a resource available to resolve a transmission constraint or provide energy, but that resource has not yet been started. Though the NYISO's implementation of offline fast-start pricing means that shortage pricing of reserve, regulation, and transmission is, at times, avoided, the prices set by utilizing offline fast-start resources' costs better reflect the operational action that would be necessary to avoid such a shortage. The Commission should allow NYISO to continue to use offline fast-start price offers (which incorporate start-up costs) before a transmission constraint violation materializes or an energy or ancillary service shortage condition exists, so long as the offline fast-start resource's adjusted incremental energy offer is lower than the administrative shortage cost.

E.    **Aligning Fast-Start Resource Treatment in the Day-Ahead Market and Real-Time Market**

The NYISO believes it is important to have pricing consistency between its Day-Ahead Market and its Real-Time Market. The NYISO supports using the same pricing and scheduling logic in its Day-Ahead and Real-Time scheduling software (*i.e.*, its SCUC and RTS) to the extent practicable. Structural differences between the methods used to set prices in the Day-Ahead Market and the Real-Time Market can lead to inefficient price signals, making it difficult for Market Participants to hedge their exposure to real-time prices through Day-Ahead Market

purchases. Inconsistency between the methods employed to establish prices and schedules in the Day-Ahead commitment software and the RTS software is likely to lead to unnecessary price volatility. Market Participants will be left to determine whether more load should be procured day-ahead, or less generation sold day-ahead, in anticipation of prices that include different or additional costs in real time.

The NYISO SCUC software evaluates and schedules 10-minute and 30-minute start-up units in the Day-Ahead Market; however, these units are reevaluated for commitment in real-time to ensure that they are still economic to serve load. Ten- and 30-minute units are not committed in real time if they are no longer economic to serve load. Instead, they are required to buy out of their Day-Ahead Market schedule.

The Commission should provide each ISO/RTO the flexibility to evaluate and determine the best price-setting method for its respective region. Establishing a method for the Real-Time Market, where block-loaded, fast-start resources may be called upon to serve load on short notice, will help the NYISO and its stakeholders develop Day-Ahead Market pricing methods that are designed to minimize structural pricing differences between the Day-Ahead and Real-Time Markets.

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

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 on all ISOs/RTOs. Each ISO/RTO employs different pricing methods, has different market rules, relies on a different mix of resources 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 which resources to include in fast-start pricing logic and if/how/when to incorporate the start-up and no-load costs of fast-start resources into price setting. The Commission has recognized that ISOs and RTOs do not (and need not) have identical software or market rules for their markets to produce compatible results.[23] The Commission has also recognized that the practical ability of each ISO or RTO to implement software changes, including the potential costs, often justifies allowing ISOs/RTOs to comply with Commission mandates in ways that accommodate regional differences rather than insisting on "one-size fits all" solutions.[24]

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 NOPR. To achieve the Commission's goals the NYISO may have to develop additional pricing rules that are compatible with the NYISO's *ex ante* pricing logic and that will achieve the NOPR's stated objectives. After the NYISO works with its stakeholders to develop appropriate pricing rules, significant additional time will be required to code, test and implement the software changes necessary to achieve compliance. The NYISO requests that the Commission provide the ISOs/RTOs 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.

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[23] *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.").

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

The NYISO is in year one of a three-year long effort to upgrade the hardware and software that runs its wholesale energy markets and monitors the reliability of the bulk electricity grid. The NYISO identifies these improvements as its Energy Management System ("EMS")/Business Management System ("BMS") Upgrade Project. The EMS/BMS upgrade will provide several important benefits. The new operating system and server hardware provides improved computational performance at significantly reduced replacement costs relative to the legacy system. This will better enable the NYISO's hardware and software to support new market designs and increasing performance demands over time. The new system is expected to have less downtime and greater reliability due to an improved high-availability and disaster recovery design. The new system will also be more secure, with enhanced cyber security protections. Functional enhancements will provide greater analytic and training capabilities for grid operators, schedulers, planners, and engineers. An updated user interface will provide enhanced visualization capabilities. Network model and database maintenance workflows will be reduced from hours to minutes. The new system will provide a solid foundation for building the next generation of innovative market designs and operational capabilities to ensure a reliable future with continuous improvement and expanded consumer benefit in the years to come.

Making significant changes to the NYISO's implementation of its pricing rules at the same time the NYISO is translating to the upgraded EMS/BMS would significantly complicate the task of implementing the EMS/BMS upgrades. For these reasons, the NYISO will need to develop and implement any software changes that are necessary to achieve the Commission's stated goals in a manner that is compatible with NYISO's implementation of its ongoing EMS/BMS project.

In addition, developing the market rules and software necessary to achieve compliance with the Commission's proposed fast-start resource pricing rules will require involvement by some of the same NYISO personnel that are heavily involved in achieving the EMS/BMS upgrades. EMS/BMS is expected to be completed with a production deployment in 2019. Due to the NYISO's ongoing EMS/BMS upgrade project, the NYISO would incur significant risk and expense if the Commission requires it to comply with a fast-start pricing Final Rule six months after compliance filings are due. The NYISO would ideally be able to begin software development on a potential compliance solution in 2019, with the earliest possible implementation date in 2020.

The NYISO therefore requests that the Commission provide regional flexibility for the implementation timeline and pricing rules contemplated in the NOPR. As discussed throughout these comments and the NOPR, existing regional differences will play a significant role in developing appropriate pricing mechanisms to achieve the Commission's objectives and the timeline necessary to implement any changes. The Final Rule should account for these conditions.

## IV.     CONCLUSION

The NYISO respectfully requests that the Commission consider these comments when developing a final rule in this proceeding.

Dated: February 28, 2017

Respectfully submitted,

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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 28th day of February 2017.

/s/ Joy A. Zimberlin

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