

Enhanced Fast-Start Pricing

Whitney Lesnicki

Manager, Energy Market Design

Market Issues Working Group

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Agenda

- **Objectives**
- **Background**
- **Existing Fast-Start Pricing Logic**
- **Overview of FERC Order**
- **Cost Amortization**
- **Next Steps**

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Objectives

- **This presentation will:**
 1. Describe the FERC Order on fast-start pricing in the NYISO's markets, issued on April 18, 2019
 2. Review the NYISO's existing fast-start pricing logic
 3. Summarize the NYISO's compliance obligations

Background

Background

- **Fast-start resources are able to start and synchronize to the grid quickly to respond to bulk electric system needs.¹**
 - Resources that can start in 30 minutes or less are important for reliability because they can provide additional Energy and Ancillary Services on short notice.

1. Continuously dispatchable resources that are always on, such as LESRs, are not fast-start resources. For this reason, resources using the DER and ESR participation models will not be considered fast-start resources.

Background

- **On December 21, 2017, FERC found that two elements of the NYISO's existing fast-start pricing may be unjust and unreasonable in a 206 proceeding.¹**
 - On April 18, 2019, FERC issued an Order concerning fast-start pricing in the NYISO's energy markets. FERC is requiring the NYISO to:
 1. Modify pricing logic to allow fast-start resources' commitment costs (*i.e.*, start-up costs and minimum generation (no-load) costs) to be reflected in prices; and
 2. allow the relaxation of all dispatchable fast-start resources' economic minimum operating limits by up to 100 percent for the purpose of setting prices.
- **The NYISO must submit its compliance filing by December 31, 2019.**
 - Implementation must be completed by December 31, 2020.

1. See FERC Docket No. EL18-33-000.

Background

- **FERC stated that the changes described in the December 2017 Order should:**
 - i. “more accurately reflect the marginal cost of serving load in periods when dispatching a fast-start resource is the next action taken to meet load;
 - ii. provide price signals that better inform investment decisions; and
 - iii. provide more accurate and transparent price signals that better reflect the cost of serving load, minimize production costs, and reduce uplift.”¹
- **In its Initial Brief, the NYISO agreed that such benefits could be realized as a result of the FERC’s proposed market design changes.**
- **The Market Monitoring Unit (MMU) also expressed support in its Initial Brief.**

1. See FERC, *Order Instituting Section 206 Proceeding*, December 21, 2017 (p. 15), in Docket No. EL18-33-000

Background

- The NYISO's MMU also stated that the proposed changes to the NYISO's fast-start pricing would improve:
 - “The performance of the day-ahead market and commitment of resources;
 - The incentives to import and export efficiently, and
 - The incentives to offer competitively and perform reliably.”¹

1. See Potomac Economics, *Reply Comments of the New York ISO's Market Monitoring Unit*, March 2018, in FERC Docket No. EL18-33-000

Existing Fast-Start Pricing Logic

Fast-Start Pricing - Today

- **The NYISO currently applies special pricing logic (“fast-start pricing”) to eligible Fixed Block Units in the Day-Ahead and Real-Time Markets.**
 - A Fixed Block Unit is “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.” (MST 2.6)
- **Fixed Block Units have inflexible minimum and/or maximum operating points.**
 - Example: a simple cycle gas turbine with a fixed operating point of 50 MW cannot be dispatched above or below 50 MW.
- **Fixed Block Units do not have Minimum Generation costs.**
 - They only have one operating point, and no Minimum Generation MW, so their commitment costs are captured by their start-up cost.

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Fast-Start Pricing - Today

- **Absent special pricing logic, an inflexible resource will not set the LBMP because it could never provide or back down just one additional MW of Energy.**
 - Example: Suppose that the only resource available to provide the next MW of Energy is a fast-starting Fixed Block Unit with a minimum generation level (and UOL) of 50 MW.
 - The Fixed Block Unit can be scheduled to start up and provide 50 MW, but it cannot provide just 1 MW. Therefore, it will never be the marginal (price-setting) resource.
- **Special pricing logic enables fast-starting Fixed Block Units to set price as part of the supply stack, better reflecting the true marginal cost of Energy.**
 - Although the commitment costs of such resources are part of the short-run marginal cost of serving load, they do not influence price formation in most instances today.
 - When market prices are below the commitment costs of fast-start resources, those costs may be reflected in out-of-market payments.

Fast-Start Pricing - Today

- **Fast-start pricing logic treats eligible Fixed Block Units as flexible in both the DAM and RTM, enabling them to set price.**
 - In the software pricing (“ideal”) dispatches of SCUC, RTC, and RTD, eligible block-loaded resources are treated as if they could be dispatched at any level between zero and their UOL.
 - This enables a Fixed Block Unit to set the LBMP as the marginal unit when that resource would be necessary to provide the next MW of Energy.
 - Fast-start resources are never physically dispatched below their economic minimum operating points.
 - Relaxation of minimum generation constraints occurs only in the ideal dispatch, not the physical dispatch.

Fast-Start Pricing - Today

For Example 1, assume the following:

- Generator A and Generator B are the only two suppliers available to provide Energy at a given location.
- Generator A is flexible and has a UOL of 500 MW
- Generator B is a fast-starting 50 MW Fixed Block Unit

Interval	Forecast Load [MW]	Gen A Offer [\$/MWh]	Gen A Schedule [MW]	Gen B Offer [\$/MWh]	Gen B Schedule [MW]	LBMP [\$/MWh]
1	499	\$25	499	\$30	0	\$25
2	501	\$25	451	\$30	50	\$30



Fast-Start Pricing - Today

- **In order to be eligible for fast-start pricing today, a resource must:**
 - i. be a Fixed Block Unit,
 - ii. be able to start and synchronize to the grid in 30 minutes or less,
 - iii. have a minimum run time of one hour or less, and
 - iv. submit economic energy offers into the market for evaluation.
- **Resources with the following characteristics are ineligible for fast-start pricing:**
 - Continuously dispatchable resources that are always on
 - Resources with a minimum run time longer than one hour
 - Resources that self-schedule (offer as self-committed)

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Fast-Start Pricing - Today

- **Certain OOM types disqualify resources from setting price. These include OOM due to:**
 - Transmission Owner (TO) Reliability
 - Generator Request
 - ISO Voltage Support
 - TO Voltage Support
 - Testing
- **The NYISO does not plan to make any changes to these exclusions.**

For more information about Generator OOM, please see Figure 18 on p. 110 of the NYISO's Transmission and Dispatch Operations Manual, at this link: https://www.nyiso.com/documents/20142/2923301/trans_disp.pdf/9d91ad95-0281-2b17-5573-f054f7169551



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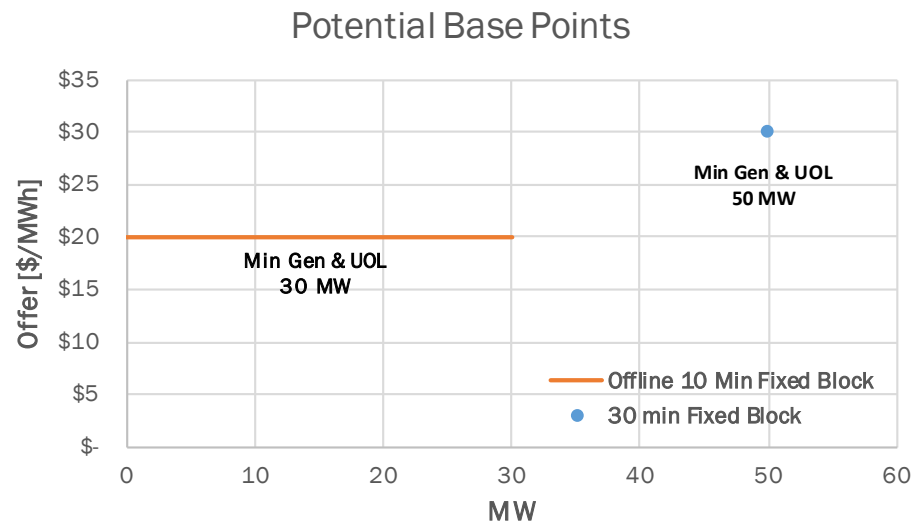
Current RTD Process:

- In RTD, fast-start pricing applies to:
 1. Eligible Fixed Block Units that were committed by RTC or are otherwise required to be online.
 2. Fixed Block Units that were not committed by RTC and are not otherwise required to be online, that:
 - i. can start and meet minimum generation levels in 10 minutes,
 - ii. have a minimum run time of one hour or less, and
 - iii. submitted economic energy offers into the market for evaluation (bid as ISO-Committed Flexible)
- The start-up costs of these resources are added to their incremental Energy offers.
- The NYISO refers to this practice as “Offline GT Pricing.”

Current RTD Process:

Physical dispatch

- Assumes that all eligible Fixed Block Units that were committed by RTC or are otherwise required to be on are operating at their UOL
 - Treats all eligible 10-minute Fixed Block Units that have not been committed by RTC as flexible.
 - Simultaneously co-optimizes Energy and Ancillary Services and produces the least bid cost dispatch.
- **Market schedules and physical base points result from this dispatch.**



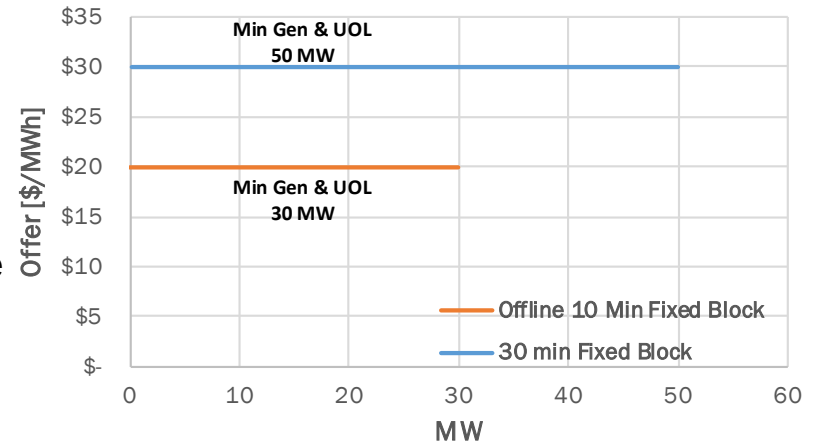
In the first (physical) dispatch of RTD, a 30-minute Fixed Block Unit can only be dispatched at its physically feasible operating point. Offline 10-minute units are treated as dispatchable.

Current RTD Process:

Ideal dispatch:

- Assumes these resource types are flexible (can be dispatched anywhere between 0 and their UOL):
 1. Eligible Fixed Block Units that were committed by RTC or are otherwise required to be on, and
 2. Eligible 10-minute Fixed Block Units that were not committed by RTC and are not otherwise online.
- Adds the start-up costs of offline 10-minute fast-start resources to their incremental offers.
- **Prices (LBMPs and Ancillary Services Prices) result from this dispatch.**

Potential Base Points



In the second (ideal) dispatch, RTD may now dispatch the 30-minute Fixed Block Unit anywhere between 0 and 50 MW for the purpose of setting price.

FERC Order on Fast-Start Pricing in the NYISO's Markets

Overview of Fast-Start Pricing Changes

Today

- Existing fast-start pricing logic relaxes minimum generation constraints of these resource types in the ideal (pricing) dispatch:
 1. Fixed Block Units that can start up and synchronize to the grid in 30 minutes or less, that have a minimum run time of one hour or less, and that submit economic offers for evaluation.
 2. In RTD, fast-start pricing logic is extended to eligible offline 10-minute GT's.
- In the ideal dispatch, RTD adds the start-up costs of eligible offline 10-minute resources to their incremental offers, which impacts the LBMP calculation.

Future

- Revised fast-start pricing will extend the existing logic to dispatchable units.
- After implementation, fast-start pricing will apply to:
 1. All resources that can start up and synchronize to the grid in 30 minutes or less, that have a minimum run time of one hour or less, and that submit economic offers for evaluation.
- Revised fast-start pricing logic will include the start-up and minimum generation costs of all fast-start resources in the LBMP calculation.
- Revised fast-start pricing logic will also apply in the withdrawal state, for fast-start resources that are eligible to withdraw energy.

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Overview of Fast-Start Pricing Changes in SCUC and RTC

Start-up Time	Type of Unit	Eligible Today?	Eligible After Changes?	Commitment Costs Included in Pricing when Injecting or Withdrawing?
N/A	Continuously dispatchable	N/A	N/A	N/A
30 min or less	Fixed Block Unit	Y	Y	Today: No Future: Yes
	Dispatchable	N	Y	

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Overview of Fast-Start Pricing Changes in RTD

Start-up Time	Commitment Status	Type of Unit	Eligible Today?	Eligible After Changes?	Commitment Costs Included in Pricing when Injecting or Withdrawing?
N/A	Always on	Continuously Dispatchable	N/A	N/A	N/A
10 min or less	Offline	Fixed Block Unit	Y	Y	Y – Today and Future
	Offline	Dispatchable	N	N	N
30 min or less	Online	Fixed Block Unit	Y	Y	Today: No Future: Yes
	Online	Dispatchable	N	Y	

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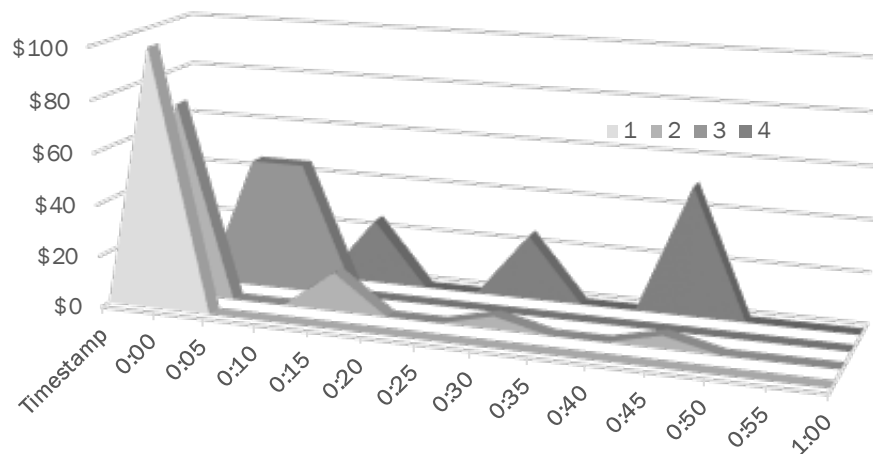
Additional Elements of FERC order

- **FERC did not order any changes to the NYISO's offline GT pricing.**
 - The NYISO and the MMU expressed concerns about expanding offline GT pricing, and recommended that it not be expanded.
 - FERC agreed to permit the NYISO to propose changes in the stakeholder process if changes are warranted in the future.
- **FERC is satisfied that the NYISO's existing uninstructed deviation penalties are sufficient to discourage overgeneration.**
- **FERC allowed the NYISO to seek stakeholder feedback on a cost amortization methodology.**
 - The NYISO will discuss approaches to amortizing commitment costs across the duration of fast-start resources' minimum run times

Cost Amortization

Cost Amortization

- The NYISO is considering how to allocate start-up costs across the minimum generation period of fast-start resources.
- Example: Generator A is a fast-start unit with a start-up cost of \$50 and a Minimum Generation cost of \$50. Its minimum run time is 1 hour.
 - How should the \$100 of commitment costs for Generator A be allocated across its minimum run time (1 hour)?
- The NYISO will analyze historical data, review the practices of other ISO/RTO's, and consider feedback from stakeholders.



Illustrative Commitment Cost Amortization

Next Steps

Next Steps

- **June 2019:**
 - Propose cost amortization methodology
 - Initial stakeholder suggestions for cost amortization methodology are requested by June 21, 2019.
 - Propose consumer impact analysis methodology
- **July/August 2019:**
 - Finalize cost amortization methodology
 - Present and discuss consumer impact analysis
 - Draft tariff revisions
- **September/October 2019:**
 - Complete tariff revisions
 - Market Design Complete presentation
- **November/December 2019:**
 - Submit compliance filing by 12/31/19

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Feedback?

- Email additional feedback to:
 - Debbie Eckels, deckels@nyiso.com

Questions?

We are here to help. Let us know if we can add anything.

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- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policy makers, stakeholders and investors in the power system



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