New York ISO
Independent System Operator

Market Mitigation Measures for Internal Controllable Lines

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Agenda

- **Project Background**
- **Review of current Energy Market Mitigation rules**
  - Automatic Mitigation Process (“AMP”)
  - Rest of State Energy Mitigation
  - Guarantee Payment Mitigation
  - Reference Level Development
  - Uneconomic Production
  - Mitigation Examples
- **Next Steps**

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Project Background

Background

- **NYSERDA's Tier 4 REC initiative has driven the prioritization of this project to develop market participation rules for ICL**
  - There are currently no internal controllable lines ("ICL") in operation within the NYCA
- **The 2022 effort reached Market Design Concept Proposed (MDCP)**
- **The 2023 project milestone is Market Design Complete (MDC)**
  - Today's presentation is intended to review the current Energy Market Mitigation as it pertains to ICLs
- **Previous MIWG October 19th:**
- https://www.nyiso.com/documents/20142/40696384/Energy%20Market%20Mitigation%20Measures%20for%20ICL.pdf/21aaae3d-6ea1-06e3-80ff-2747ff08127a

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Review of current and proposed Energy Market Mitigation rules

Automatic Mitigation Process ("AMP") for NYC Generators

- AMP is incorporated into the NYISO's Network Manager – the platform used for commitment and dispatch of NYCA Generators
- For NYC Generators, AMP applies to the Day-Ahead/Real-time market solutions as well as guarantee payment mitigation in the Day-Ahead market only
- Incremental Energy, Startup and Minimum Generation offers are subject to AMP
- Three criteria need to be met to apply mitigation
  - Trigger – Local congestion at the Generator bus > $.04/MWh
  - Conduct – Offers for Incremental Energy or Minimum Generation greater than the reference level + Load Pocket Threshold ("LPT"); Startup 50%
  - Impact – LBMP divergence at the Generator bus price greater than the most restrictive binding LPT
- AMP is *ex-ante* and is applied prior to posting of final prices

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Automatic Mitigation Process ("AMP") for ICL

- An ICL would submit an Incremental Energy offer (no Start-up or MG)
  - Up to an eleven point monotonically increasing curve with MW values and offer price, potentially covering a range from withdraw to inject for a bi-directional ICL
- AMP will review the offer to inject Energy into the load pocket against the reference level
- Not unlike the current AMP process, during periods of local congestion, if a conduct failing offer is determined to have had impact at the Generator location greater than the LPT, the offer is substituted with reference level
- Within each Load Pocket, if there are multiple Generators with Conduct failing Bids, and impact is determined, all Conduct failing Bids within that Load Pocket would be mitigated
- An ICL's conduct-failing Bids will be included in this test and mitigated with conduct-failing Generator offers.

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Rest of State Energy (LBMP) Mitigation

- Contrary to AMP, Mitigation of Energy in the Rest of State ("ROS") locale is processed "manually" (which means consultation is required before mitigation can be applied)
- The fundamental structure still applies minus "trigger"
- All Energy offers in the Day-Ahead and Real-Time markets are "screened" for conduct
- If conduct is determined, a review of market prices assesses the potential for impact.
- If price divergence is found that exceeds the market impact thresholds, a Consultation with the Market Participant is initiated allowing an opportunity to substantiate the original offers made
- If conduct was found to be consistent with competitive behavior, no mitigation is applied.
- If the Market Participant is unable to substantiate the original offers made, the Generator would be restricted from submitting offers above reference level for identified conduct for a period of 6 months from the date the mitigated conduct occurred
- An ICL offer that injects power in the ROS locale, would be subject to the same form of mitigation
- With bi-directional functionality, the mitigation applied would be tested for and determined at the point of energy injection e.g., if the injection bus is in NYC the offer would be subject to AMP, if the injection bus is in any other zone the offer would be subject to the ROS thresholds.

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Reference level development

- There is a tariff prescribed hierarchy preference for reference level development for all NYCA Generators
  - Bid-based (90-day avg of accepted offers with exceptions)
  - LBMP-based (90-day avg of LBMPs during hours of operations with exceptions)
  - Cost-based
  - Exceptions to the hierarchy are allowed
- Both Bid-based and LBMP reference levels exclude Bids and LBMPs below $15/MWh. This exception will not apply to ICLs
- The cost-based reference level for an ICL will be calculated as follows:
  - Operating and maintenance costs, transmission losses, risk and opportunity cost that include potential REC payments
- The Market Participant designated as the "RLS" delegate will be responsible for providing the data needed to derive these values.
- As with all other Reference Level Consultations, the Market Participant would be able to propose and justify any/all costs to be included in reference levels
- MMA in consultation with the MMU would need to approve any cost components needed to calculate reference levels
- ICL's will be able to utilize the current Opportunity cost adjustment functionality to notify the ISO of any costs not incorporated in the reference level posted at time of bidding

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Uneconomic Production

- All NYCA Generators are subject to the same conduct thresholds
- Conduct is determined by comparing a Generator's reference level to the LBMP at its location while the Generator is producing MW
- If the resource is operating while the LBMP is less than the reference level minus the greater of $25MWh/80% of the applicable reference level, then the offer fails conduct
- If conduct is identified, a market simulation is run to assess for potential market impact
- If the Market Participant is unable to substantiate why the Generator was operating in the manner identified, the mitigation applied is by way of a financial sanction
- The penalty is 1.5 * the absolute congestion component of LBMP for MW meeting the standard for mitigation

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Uneconomic Production for ICL

- Most observation of uneconomic production are as a result of Generators bidding in a fixed manner
- Bidding fixed precludes the Generator from following 5-minute dispatch instructions to lower output during low load/high supply periods
- ICLs can only bid in ISO-Committed Flexible mode
- However, an ICL could lower its offer relative to its reference level, increasing (positive or negative) congestion during these constrained periods
- MMA is proposing a new conduct test for ICL for uneconomic production
- As opposed to the current tariff defined conduct test that measures the LBMP against the Generator reference level, the new test will be a measure of the ICL's offer price against the reference level
- Conduct is defined as an Incremental Energy offer that is less than the applicable reference level minus the greater of $25 per MWh or 80% of the applicable reference level (i.e., Bid < (Applicable Reference Level – max($25, 80%×Applicable Reference Level))

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Mitigation Examples

Overview of how and why Mitigation could be applied to an ICL

- A competitive offer for Incremental Energy from an ICL into NYC would be a value reflective of its short-run marginal cost
- When upstate power is less expensive than the marginal resources in the Dunwoodie South load pocket, it's expected the ICL will be scheduled
- ONLY offers submitted that exceed the ICL's reference level by more than the applicable threshold would be subject to potential mitigation
- In the event ICL offers cause price divergence, mitigation would be applied replacing bids with reference levels; ordinarily during periods of local congestion

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Example of Bid-Based reference level development for ICL offers

Hour Beginning	Offer Price Day 1	Offer Price Day 2	Offer Price Day 3	Bid Based reference level
0	$ 4.00	$ 4.00	$ 1.00	$ 3.00
1	$ 5.00	$ 1.00	$ 2.00	$ 2.67
2	$ 4.00	$ 3.00	$ 4.00	$ 3.67
3	$ 5.00	$ 1.00	$ 4.00	$ 3.33
4	$ 5.00	$ 4.00	$ 2.00	$ 3.67
5	$ 4.00	$ 3.00	$ 3.00	$ 3.33
6	$ 1.00	$ 5.00	$ 3.00	$ 3.00

In this simplified example:

- The ICL is scheduled at full output so the entire curve would use the bid-based reference level which is a 90-day rolling average of historical accepted offers

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Details of Mitigation examples

- The x axis represents the ICL's proposed flow of MW. Right of zero represents a flow into NYC.
  - Left of zero (negative MW values) represents a flow upstate
  - The offer to flow upstate would be reflected as a negative offer price * a negative MW value
  - The product of those values would be a positive value evaluated for scheduling, representing the amount that would need to be paid to the ICL to move power from NYC to upstate
- A unidirectional ICL will not be able to submit an offer to flow upstate
- The y axis is representative of the ICL's offer price, positive or negative
- These simplified examples ignore losses on the ICL
- Legend:
  - Blue line is the offer
  - Red line is the reference level
  - Grey dotted line is the Load Pocket Threshold
  - Orange is the Target which is the Reference level plus Load Pocket Threshold

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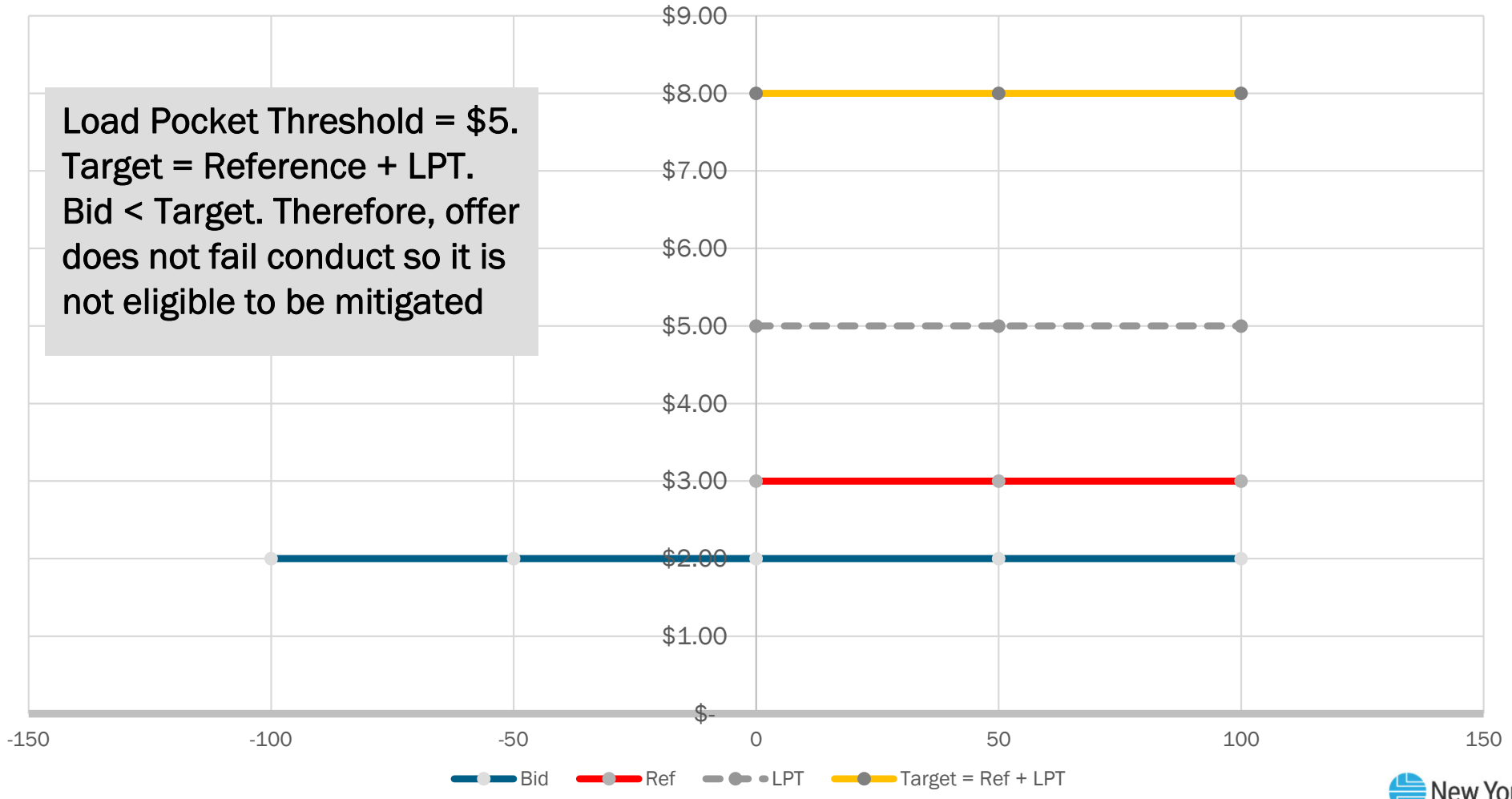
Example of ICL bid, reference, LPT, and Target for flow into NYC



Load Pocket Threshold = $5.
Target = Reference + LPT.
Bid < Target. Therefore, offer does not fail conduct so it is not eligible to be mitigated

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Example of how AMP would be applied to an ICL (presuming local congestion)

- ICL offers $15 which given a source (POW) LBMP of $30 would require a sink (POI) LBMP of more than $45 to be scheduled.
- With a reference of $2 and an LPT of $5, the offer fails the conduct test
- The pre-amp sink price is $40 so the ICL will not be scheduled to flow (Source price of $30 + $15 offer is not economic)
- Replacing the $15 offer with a $2 reference level, the post-amp LBMP is $32 so the ICL is scheduled and marginal.

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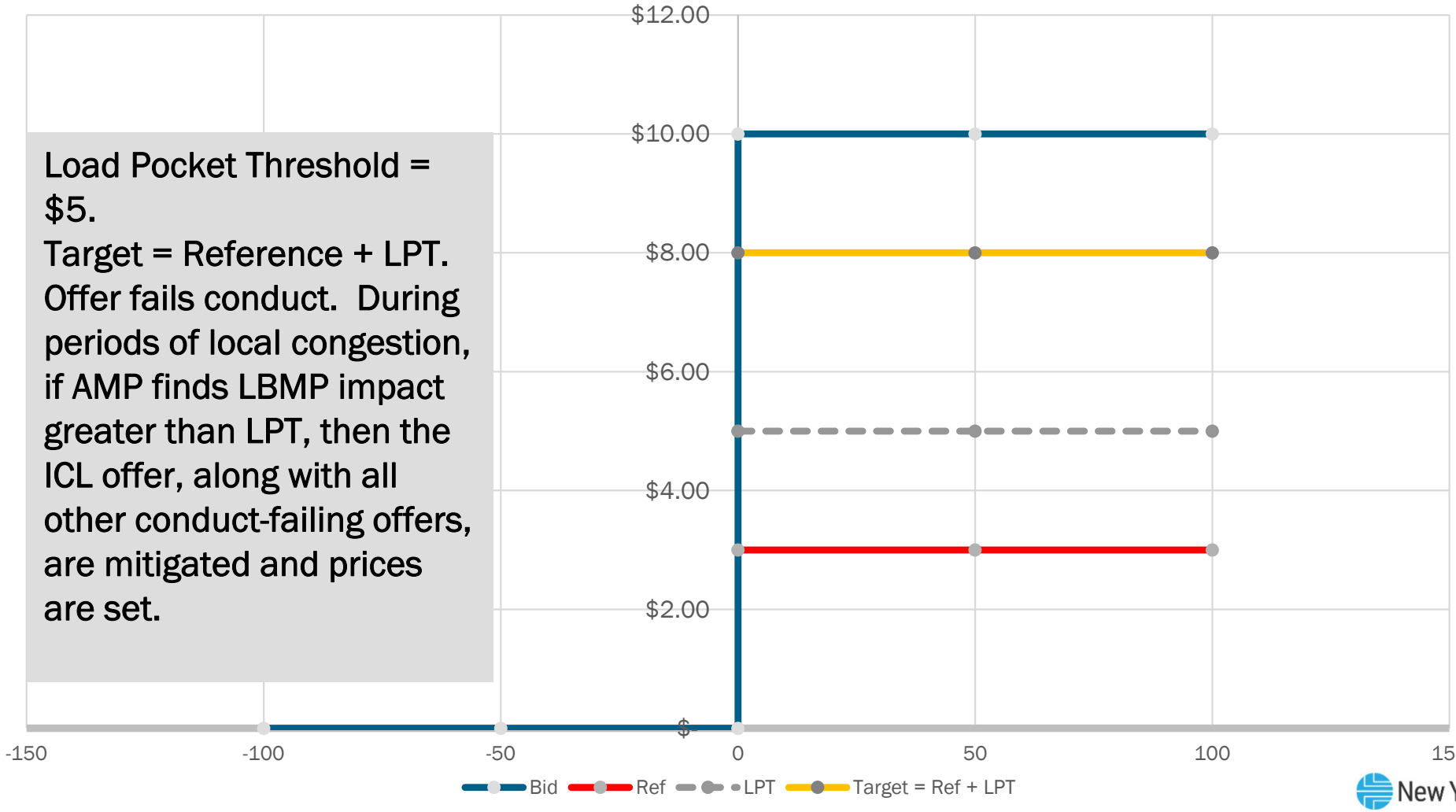
Example of ICL bid, reference, LPT, and Target for injection into NYC



Load Pocket Threshold = $5.
Target = Reference + LPT.
Offer fails conduct. During periods of local congestion, if AMP finds LBMP impact greater than LPT, then the ICL offer, along with all other conduct-failing offers, are mitigated and prices are set.

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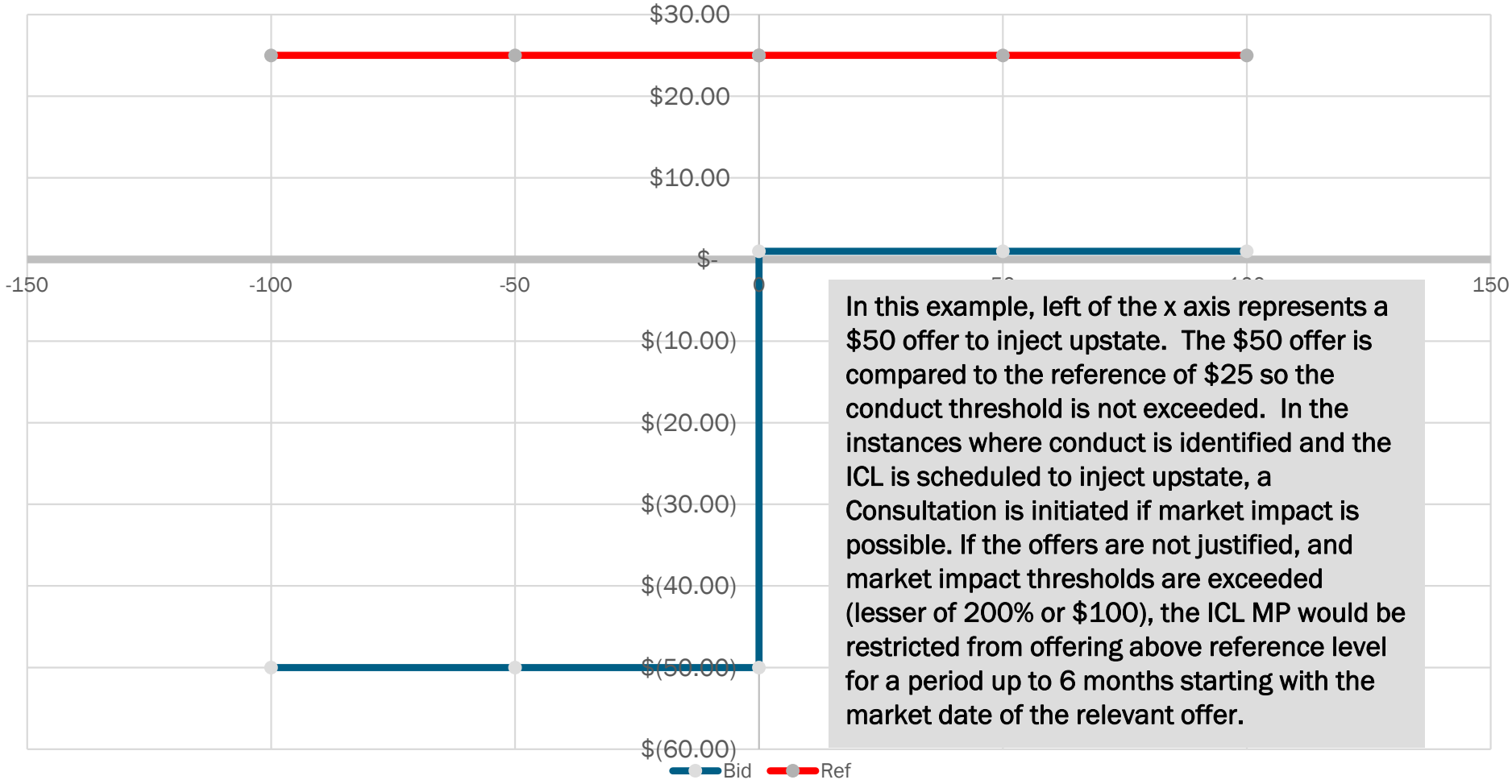
Example of ICL bid, reference for flow upstate using Statewide Thresholds



In this example, left of the x axis represents a $50 offer to inject upstate. The $50 offer is compared to the reference of $25 so the conduct threshold is not exceeded. In the instances where conduct is identified and the ICL is scheduled to inject upstate, a Consultation is initiated if market impact is possible. If the offers are not justified, and market impact thresholds are exceeded (lesser of 200% or $100), the ICL MP would be restricted from offering above reference level for a period up to 6 months starting with the market date of the relevant offer.

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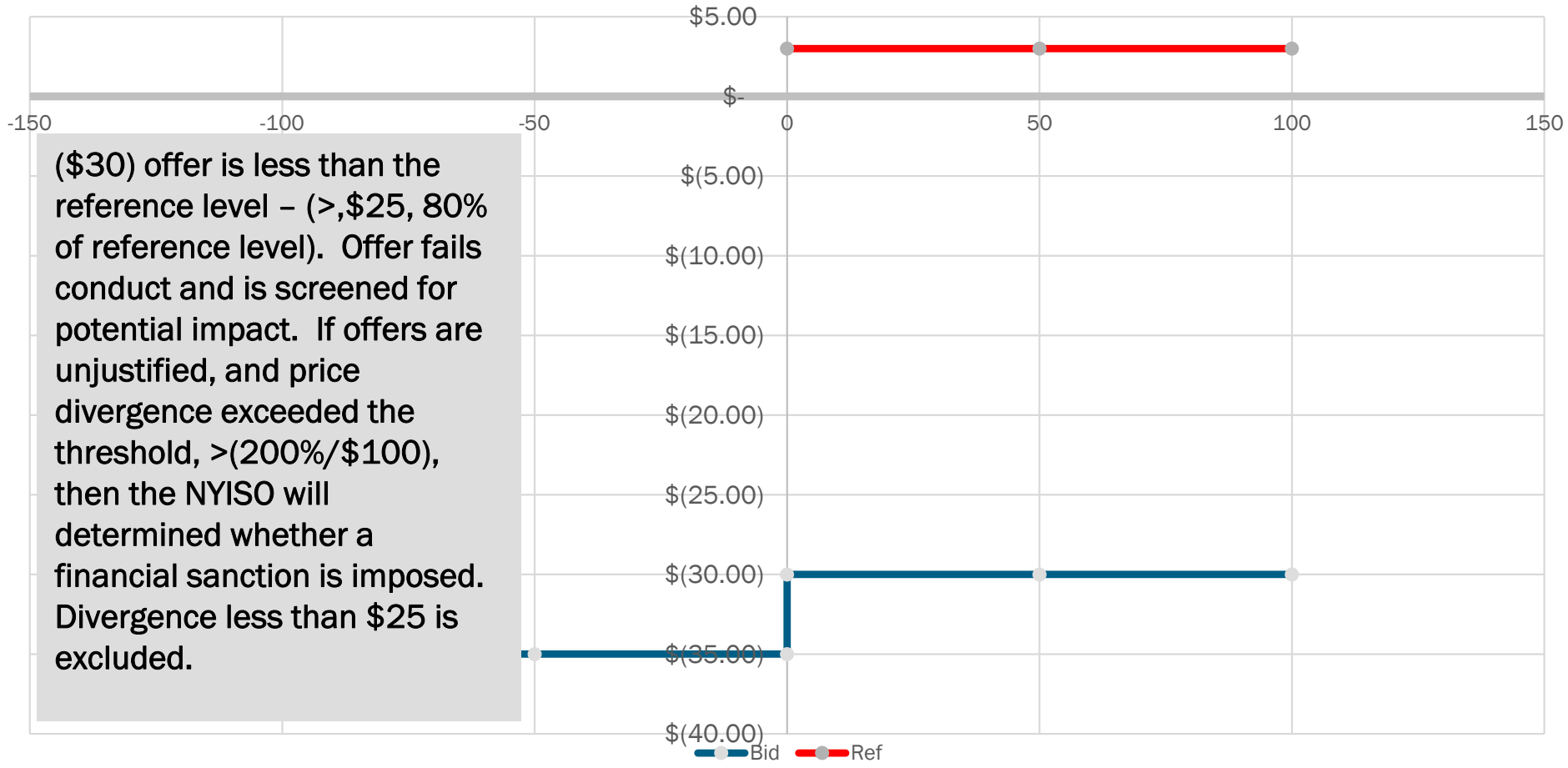
Example of ICL bid and reference level for Uneconomic Production into NYC



($30) offer is less than the reference level – (>,$25, 80% of reference level). Offer fails conduct and is screened for potential impact. If offers are unjustified, and price divergence exceeded the threshold, >(200%/$100), then the NYISO will determined whether a financial sanction is imposed. Divergence less than $25 is excluded.

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Recap of Energy Market Mitigation

- For the following reasons, the NYISO believes the current structure of all forms of mitigation are sufficient to incorporate ICL functionality
  - This recommendation is supported by the MMU
- Energy Market Mitigation is intended to protect consumers by preventing the exercise of market power
- Suppliers are required to review reference levels to ensure the offers will not be inappropriately mitigated – this is especially important for injections into NYC
- Suppliers are afforded the flexibility to report to the NYISO any anticipated cost not included in reference level
  - ICLs will be allowed to utilize the Opportunity Cost Adjustment functionality to report to the NYISO proposed costs not included in the posted reference levels
- Opportunity Cost Adjustment are reviewed, and financial sanction are applied if the adjustment was not adequately justified and LBMP impact is determined
- NYISO, MMU and the Market Party will have ample opportunity prior to market participation to discuss costs that should be included in a reference level
- All forms of mitigation, except for DAM/RT LBMP mitigation in NYC, are eligible for ex-post Mitigation Consultations where the MP has an opportunity to demonstrate that its offer was consistent with competitive behavior

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Next Steps

Next Steps

- ~~October 19th MIWG~~
- ~~October 26th MIWG~~
- November 8th MIWG with tariff changes
- BIC November 15th
- Q4 Market Design Complete
- MC Q1 2024

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Our Mission & Vision

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