

#### Operating Reserves Performance – Enhanced Review of Operating Reserves Providers

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#### **Previous Presentations**

Date	Working Group	Topic/Links to Materials
August 7 <sup>th</sup> , 2024	MIWG/ICAPWG	Operating Reserves Performance
October 22 <sup>nd</sup> , 2024	MIWG/ICAPWG	Operating Reserves Performance Penalty Proposal
November 4 <sup>th</sup> , 2024	MIWG/ICAPWG	Operating Reserves Performance Penalty Proposal
November 13 <sup>th</sup> , 2024	MIWG/ICAPWG	Operating Reserves Performance Penalty Proposal and Tariff
November 21 <sup>st</sup> , 2024	MIWG/ICAPWG	Operating Reserves Performance Penalty Proposal
December 11 <sup>th</sup> , 2024	BIC	Operating Reserves Performance Charge Proposal
January 30 <sup>th</sup> , 2025	MIWG/ICAPWG	Operating Reserves Performance



### Agenda

- Project Background
- Enhanced Review of Operating Reserves Providers
- Operating Reserves Audit Overview
- Next Steps



# **Project Background**



# **Project Background**

#### • At the December 11, 2024, BIC, the NYISO proposed:

- A penalty structure for resources with a Day-Ahead schedule to provide Operating Reserves and who fail to adequately perform in Real-Time
- A process to enhance the procedure to review Operating Reserves providers and remove the qualification to provide Operating Reserves for Resources that perform poorly
  - The vote at BIC advanced the enhanced review process, and the NYISO will present associated modifications to the ISO Procedures at a BIC in 2025

#### Design Principle:

 Recover costs to consumers for Operating Reserves that were paid for but not provided while incentivizing Reserves providers to provide the scheduled Reserves

#### 2025 Deliverable: Software Design



# **Review of Operating Reserves Providers**



#### **Enhanced Review Process**

- The NYISO has identified two performance metrics for the review of Operating Reserves providers:
  - Reserve Pick-Up/Audit Performance Metric
  - Energy Performance Metric
- At the beginning of each month, the NYISO will review the last three complete months of performance data for each of the two metrics
  - i.e., after the end of June, the April, May, and June performance under each metric will be assessed for each Resource eligible to provide Operating Reserves



#### Reserve Pick-Up ("RPU")/Audit Performance Metric

- Aimed at addressing Resource response to grid conditions and audits
- Performance =  $\left[1 \frac{\sum(Expected Basepoint Energy Provided)}{\sum|Expected Basepoint|}\right] \times 100\%$  over the previous three months
  - The Energy Provided and Expected Basepoint will be calculated consistent with the process outlined in Technical Bulletin 142
  - Performance will be assessed:
    - Any time a Resource that is eligible to provide 10-minute Operating Reserves is dispatched during an RPU; and
    - During a manual audit for a Resource eligible to provide Operating Reserves
  - The Resource will be subject to a rebuttable presumption of removal if the performance for the period's RPUs and audits is below 70%



 Assume a Resource was dispatched during three RPUs during a given threemonth period with the following expected basepoints and output:

	Expected Basepoint (MW)	Energy Provided (MW)	
RPU 1	100	100	
RPU 2	70	50	
RPU 3	80	75	

- Performance =  $\left[1 \frac{(100 100) + (70 50) + (80 75)}{|100| + |70| + |80|}\right] \times 100\% = 90\%$ 
  - This resource would not fall below the RPU/Audit Performance threshold



Assume a Resource was dispatched during three RPUs during a given threemonth period with the following expected basepoints and output:

	Expected Basepoint (MW)	Energy Provided (MW)
RPU 1	100	100
RPU 2	-100	-120
RPU 3	80	75

- Performance =  $\left[1 \frac{(100 100) + (-100 (-120)) + (80 75)}{|100| + |-100| + |80|}\right] \times 100\% = 91\%$ 
  - This resource would not fall below the RPU/Audit Performance threshold



 Assume a Resource was dispatched during three RPUs during a given threemonth period with the following expected basepoints and output:

	Expected Basepoint (MW)	Energy Provided (MW)	
RPU 1	100	50	
RPU 2	70	0	
RPU 3	80	70	

- Performance =  $\left[1 \frac{(100-50)+(70-0)+(80-70)}{|100|+|70|+|80|}\right] \times 100\% = 48\%$ 
  - This resource would fall below the RPU/Audit Performance threshold



#### Energy Performance Metric

- Aimed at addressing Resources that are infrequently dispatched and do not adequately perform when dispatched
- Performance =  $\left[1 \frac{\sum(Energy Requested Energy Provided)}{\sum |Energy Requested|}\right] \times 100\%$  over the previous three months
  - The performance will be assessed any time a Resource that is qualified to provide Operating Reserves is scheduled, regardless of whether the Resource has a Day-Ahead or Real-Time schedule to provide Operating Reserves
  - The performance will not be assessed when the Resource is providing Regulation
  - The Resource will be subject to a rebuttable presumption of removal if the performance is below 50% over the period



#### Energy Performance Metric

- For a Generator comprised of a group of generating units at a single location, which grouped generating units are separately committed and dispatched by the ISO and for which Energy injections are measured at a single location, if one or more of the units falls below the Energy Performance Metric threshold, the performance of the group of generating units will be assessed
  - If the group of generating units does not fall below the threshold, the unit(s) will not be subject to a rebuttable presumption of removal
  - If the group of generating units does fall below the threshold, the individual unit(s) that fell below the threshold will be subject to a rebuttable presumption of removal



 Assume a Resource was dispatched during three RTD intervals during a given three-month period with the following Energy requested and output:

	Energy Requested (MW)	Energy Provided (MW)	
RTD 00	50	50	
RTD 05	60	50	
RTD 10	60	50	

- Performance =  $\left[1 \frac{(50-50)+(60-50)+(60-50)}{|50|+|60|+|60|}\right] \times 100\% = 88\%$ 
  - This resource would not fall below the Energy Performance threshold



 Assume a Resource was dispatched during three RTD intervals during a given three-month period with the following Energy requested and output:

	Energy Requested (MW)	Energy Provided (MW)	
RTD 00	50	0	
RTD 05	60	10	
RTD 10	60	10	

- Performance =  $\left[1 \frac{(50-0)+(60-10)+(60-10)}{|50|+|60|+|60|}\right] \times 100\% = 12\%$ 
  - This resource would fall below the Energy Performance threshold



### **Rebuttable Presumption of Removal**

- If a Resource falls below one or more thresholds established for the RPU/Audit Performance Metric or the Energy Performance Metric, the Resource will be subject to a rebuttable presumption of removal from the Operating Reserves market
  - The presumption of poor performance as an Operating Reserves provider may be rebutted by demonstrating to the reasonable satisfaction of the ISO that:
    - The metering data is incorrect, and it is not due to the Resource's metering
    - The Resource was on outage for a significant portion of the last three-month period (*i.e.*, approximately 2/3 or more of the three-month period)
    - The Resource is Out-of-Merit for Reliability, and the Resource's basepoints are not consistent with expected output
    - The Resource is a synchronous Operating Reserves only provider that fails to start up
    - Force Majeure



### **Rebuttable Presumption of Removal**

- If a Resource falls below one or more thresholds established for the RPU/Audit Performance Metric or the Energy Performance Metric, the Resource will be subject to a rebuttable presumption of removal from the Operating Reserves market
  - Resources removed from the Operating Reserves market pursuant to this design will be removed for a continuous 30-day period in the first instance and a 90day period for any subsequent instances
  - If the Resource that will be removed from the Operating Reserves market goes on outage after such determination, the days in which the Resource is on outage may be used in lieu of days in which the Resource's Operating Reserves qualification is removed
  - After the conclusion of the removal period, the Resource must retest to requalify to provide Operating Reserves



#### **Review of Historical Data**

- NYISO reviewed historical data to determine the number of Operating Reserves Supplier MWs that would have been captured under these design proposals
  - In 2024, approximately 550 MW of Operating Reserves Suppliers would have failed one or more of the thresholds and been subject to a rebuttable presumption of removal from the Operating Reserves market
    - This data is based on RPU performance, manual audit data, Real-Time Energy Schedules, Real-Time Regulation movement, and Real-Time output for Reserves providers in 2024
  - If all Resources subject to the rebuttable presumption of removal are removed from the Operating Reserves market for three months following each of the instances the Resource fell below one or both thresholds, approximately 100 MW of suppliers would be removed from the Operating Reserves market each month on average in 2024
    - This accounts for multiple Resources that may be removed from the Operating Reserves market each month as well as Resources that fall below the given thresholds more than once in 2024
    - This analysis assumes that if a Resource is removed from the market, it will be removed for three months immediately following the flagged performance (i.e., if the Resource fell below the threshold when assessing April, May, and June performance, the Resource would be assumed to be removed from the Operating Reserves market for July, August, and September)



# **Operating Reserves Audit Overview**



#### **Historical Audit Data**





#### **Historical Audit Data**

Capability Year	2022	2023	2024
Avg Any	3.61	2.80	2.78
Med Any	2.00	2.00	2.00

#### Average Distribution of Audits Received by Type (2022-2024)



-Any



# **Reserve Pick-Up in Lieu of Test**

- Under the current ISO Procedures, performance during an RPU may be used in lieu of a test of 10-Minute Reserves
  - Currently, the RPU performance may be used in lieu of a test if the Resource that is dispatched has a Real-Time schedule to provide Operating Reserves in the RTD prior to the RPU
- The NYISO is proposing to extend this procedure to any time a Resource that is eligible to provide 10-minute Operating Reserves is dispatched during an RPU, regardless of the Resource's Operating Reserves schedule
  - This extension is intended to reduce the need to schedule additional manual audits
  - Additionally, Resources are expected to respond to an RPU if dispatched, regardless of their Operating Reserves schedules
- Appropriately auditing resources while reducing the number of manual audits will reduce uplift costs and market impacts from out-of-market commitments



# **Next Steps**



#### **Next Steps**

 Present associated modifications to the ISO procedures at an upcoming MIWG



# Appendix



# RPU Assessment Methodology



## Methodology

- Resources receive a basepoint at the start of the reserve pick-up ("RPU"), which denotes the output level the unit must achieve in 10 minutes
  - It is expected that a resource of any type will reach its basepoint in 10 minutes
  - Depending on the resource's reserves capabilities (i.e., spin vs. non-sync reserves providers), resources are assessed using different methodologies if an RPU ends prior to 10 minutes
    - More details on the treatment and calculations may be found on the following slides



### Methodology, cont.

- For resources capable of providing spin reserves, an expected basepoint is calculated using a linear rate between the resource's basepoint before the RPU and the new basepoint issued at the start of the RPU based on the length of the event. The actual output value used is the maximum output at any point between the start of the event and one minute after the end of the RPU
  - For example, if a spin resource's basepoint before the RPU was 10 MW, and it receives a new basepoint of 20 MW at the start of the RPU, its expected basepoint for a 5-minute RPU event is 15 MW
  - The output assessed is the highest actual generation between the start of the RPU and one minute after the end of the event
- Resources capable of providing non-sync reserves are assessed using the basepoint received at the start of the event. The actual output value used is maximum output between the start of the event and 11 minutes after the start of the RPU, regardless of the length of the RPU
  - For example, if a non-sync resource's basepoint before the RPU was 0 MW, and it receives a new basepoint of 20 MW at the start of the RPU, its expected basepoint is 20 MW
  - The output assessed is the highest actual generation between the start of the RPU and 11 minutes after the start of the event



# Methodology, Cont.

- A resource is considered to fail (in part or in whole) to respond to the RPU dispatch if its output is more than 1 MW below its expected basepoint (extrapolated based on the type of resource and length of the RPU) <u>AND</u> if its output is less than 98% of the expected basepoint
  - This provides a margin of error for both large and small basepoints
    - If a resource is dispatched to 200 MW and its output is 198 MW, it is generating at 99% of its expected basepoint despite operating more than 1 MW below the basepoint
    - If a resource is dispatched to 5 MW and its output is 4.5 MW, it is generating within 1 MW of its expected basepoint despite operating at 90% of its basepoint
- This method for determining the expected basepoint and actual output is consistent with the methodology and metrics used for resource audits

