



Review of GT Start-Up Performance & NYISO Auditing Process


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Introduction

- MMU has published GT performance metrics since the 2016 SOM.
 - ✓ In 2016 & 2017, approximately 30 percent of GTs were “poor performers” (i.e., reached <70 percent of UOL on average).
 - ✓ In 2018, just 9 percent were poor performers.
- In April 2019, NYISO presented its random audit results at a MIWG.
 - ✓ Only 7 percent of random audits have resulted in failure since 2016.
 - ✓ All units passed upon a re-test.
- NYISO and MMU committed to return to MIWG with additional details.
- This presentation addresses:
 - ✓ Summary of MMU performance ratings and NYISO audit results
 - ✓ Explanation for differences between MMU performance ratings and NYISO audit results
 - ✓ Areas for improvement in the audit process

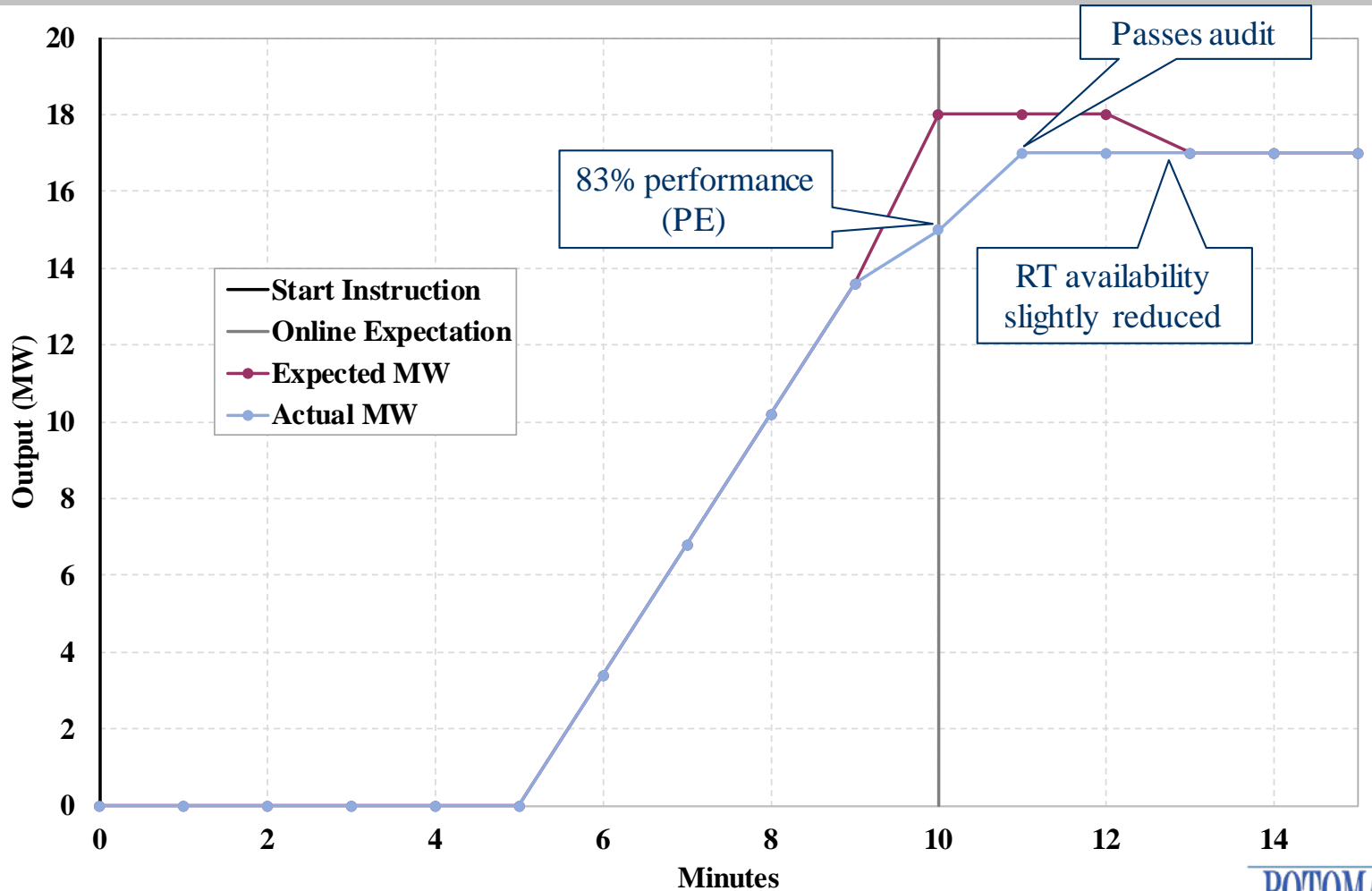


MMU Analysis of Performance vs. NYISO Audit Process

- The MMU analysis:
 - ✓ Considers RTC starts only (excluding self schedules and units that started in less than five minutes since these likely reflect prior expectation of start-up)
 - ✓ Measures Actual MWs at the precise expected online time (i.e., 10 or 30 minutes from instruction, whichever applies to given unit)
 - ✓ Averages MWs across multiple starts for each unit
- NYISO audit results consider:
 - ✓ Actual MWs during audit start only
 - These are a type of OOM start-up
 - ✓ Performance at expected online time *plus* tolerance
 - Greater of 2 percent or 1/2 MW for 10/30-minute resource
 - 1/3-Minute tolerance for 10/30-minute resource



MMU Analysis of Performance: Illustrative Example

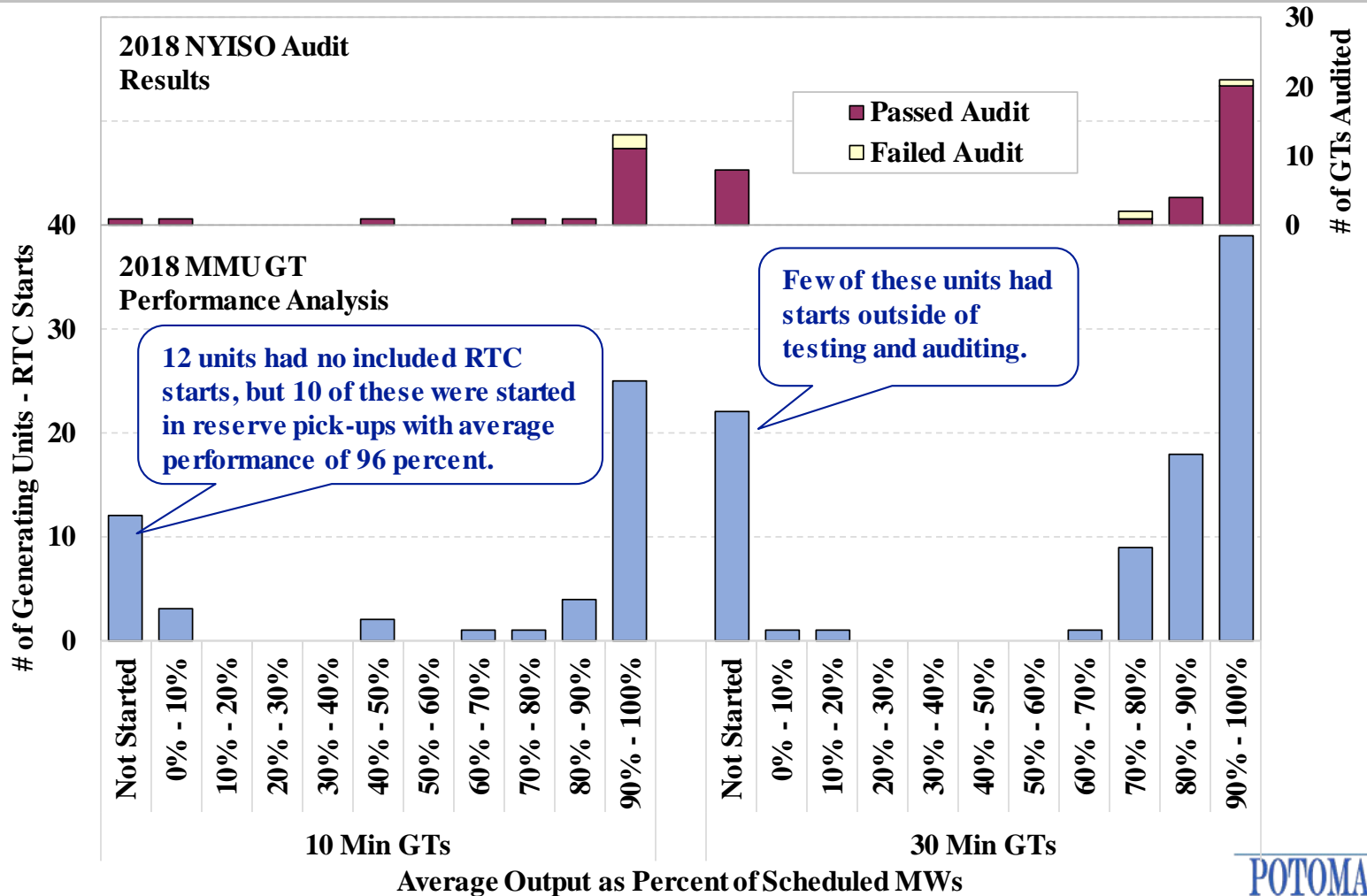




NYISO Audit Results versus MMU Analysis: Chart Descriptions for 2016-2018 Results

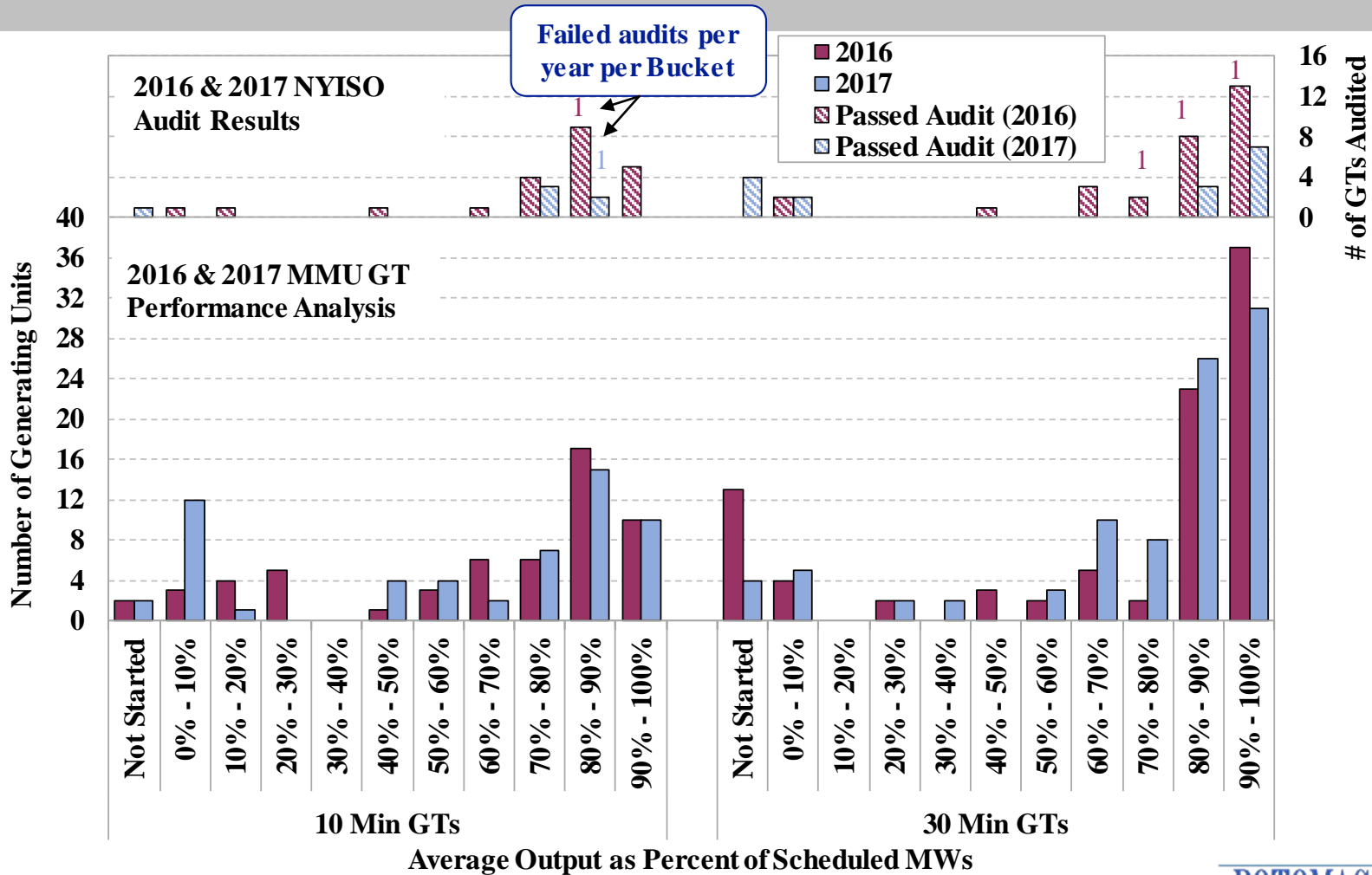
- The next two slides summarize the MMU analysis and the NYISO audit results from 2016 through 2018.
- Bottom portion of charts show the MMU GT performance analysis results by year.
 - ✓ Columns show the number of generators whose average performance across a year falls within a given bucket.
 - ✓ For example, a generator with 10 starts in 2018 and performed at 92% on average would have a value of 1 in the 90% - 100% column.
 - ✓ Results are shown separately for 10-Minute and 30-Minute resources.
- Top portion shows NYISO audit results.
 - ✓ It shows the number of audits that resulted in pass and fail.
 - ✓ Audit results are “bucketed” based on that unit’s performance in the MMU analysis.
 - ✓ For example, if the same unit as above was audited in 2018 and passed, it would populate in **red** with a value of one in the 90% - 100% column.

NYISO Audit Results versus MMU Analysis: 2018





NYISO Audit Results versus MMU Analysis: 2016 & 2017





Differences between NYISO and MMU Results

- Just 8 of 161 NYISO audits since 2016 resulted in a failure.
 - ✓ All passed on re-test.
 - ✓ Roughly 1/3 of all GTs not audited since 2016.
- NYISO audit procedure tends to select units that are started more frequently.
 - ✓ Nearly 75 percent of all audits were performed on units with >80 percent performance in 2018.
 - ✓ No very poor performing (i.e., <10%) 10-Minute GTs audited in 2017.
- Units flagged as poor performers by MMU performed well during audits
 - ✓ However, just 3 of 9 units (10- and 30-Minute GTs) from < 70 percent buckets were audited in 2018.
- MMU analysis shows significant improvement from 2017 to 2018 because of:
 - ✓ Retirements and IIFOs of poor performing units, and
 - ✓ Moderate improvement for a significant number of units.



Potential Enhancements to GT Start-Up Auditing

- NYISO will begin to:
 - ✓ Audit each unit at least once per year.
- SOM Recommendation 2016-2: “Consider means to allow reserve market compensation to reflect actual and/or expected performance.”
 - ✓ Since 2017, performance among GTs has improved
 - ✓ However, a few chronic poor performers remain
 - At a minimum, we recommend the NYISO should disqualify consistent poor performers
- Allow use of data from reserve pick-ups and other unanticipated starts in lieu of audits.
- Increase re-test window from 48 hours:
 - ✓ A short window removes element of surprise.



Conclusions

- Summary of NYISO audit results and MMU performance analysis:
 - ✓ NYISO audits typically show strong performance
 - However, many poor-performing units infrequently/inconsistently audited
 - ✓ MMU analysis shows performance has improved since 2017.
 - However, some chronic poor performers still in the market.
- NYISO is enhancing its audit procedure:
 - ✓ Test each unit at least once per year.
- MMU recommends disqualifying units that consistently perform poorly (even if they perform well during audits)
- MMU and NYISO will continue to track performance of reserve providers and evaluate enhancements moving forward.