



2022 State of the Market Report for the NYISO Markets: Energy & Ancillary Services Market Highlights

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Introduction

- As the Market Monitoring Unit for NYISO, we produce an annual State of the Market (SOM) Report to:
 - ✓ Evaluate the performance of the markets;
 - ✓ Identify market flaws or market power concerns; and
 - ✓ Recommend improvements in the market design.
- Given the breadth of the report, this presentation covers only highlights from our 2022 SOM Report related to energy and ancillary services markets, including:
 - ✓ A summary of E&AS market outcomes;
 - ✓ Recommended market enhancements for the:
 - Energy and ancillary services markets



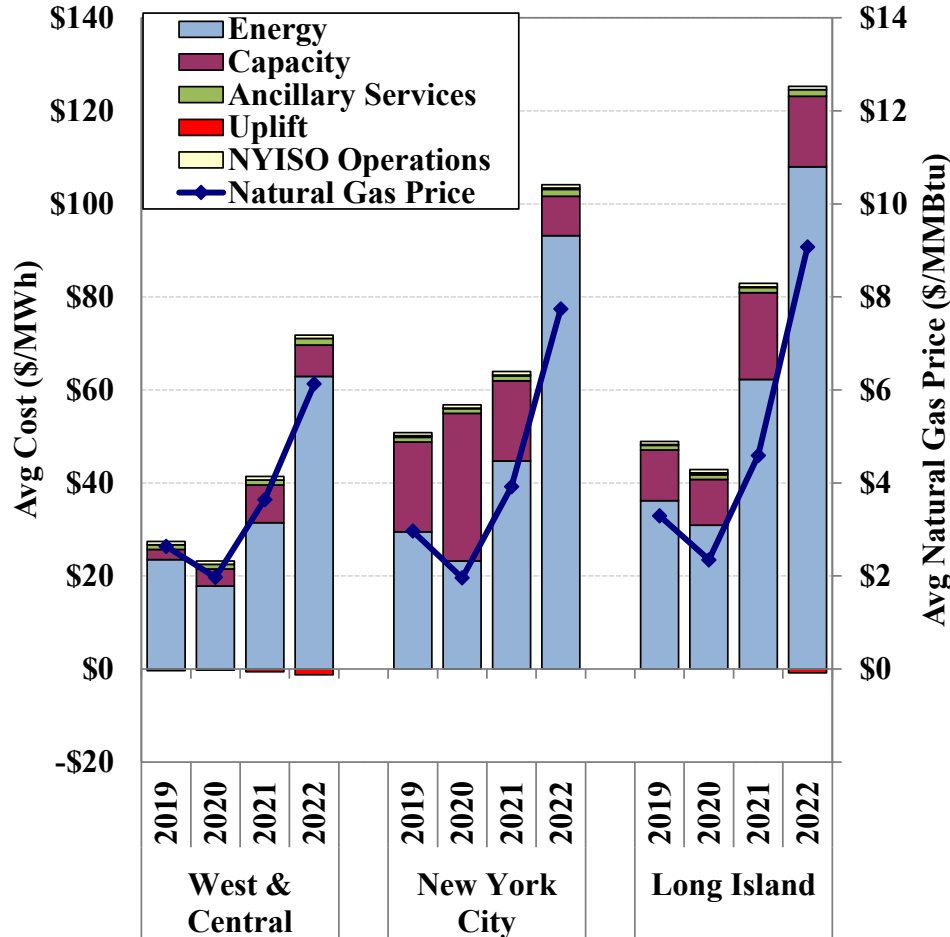
Schedule

- The 2022 SOM Report was posted [here](#) on May 17.
- The report is being presented at several meetings:
 - ✓ May 25: MIWG
 - Energy and Ancillary Services focus – 90 minutes
 - ✓ May 31: Market Committee
 - Overview – one hour
 - ✓ June 6: ICAPWG
 - Capacity Market & Policy focus – 90 minutes
 - ✓ Plan to stay on schedule for each presentation – Additional slots can be scheduled if there is interest.



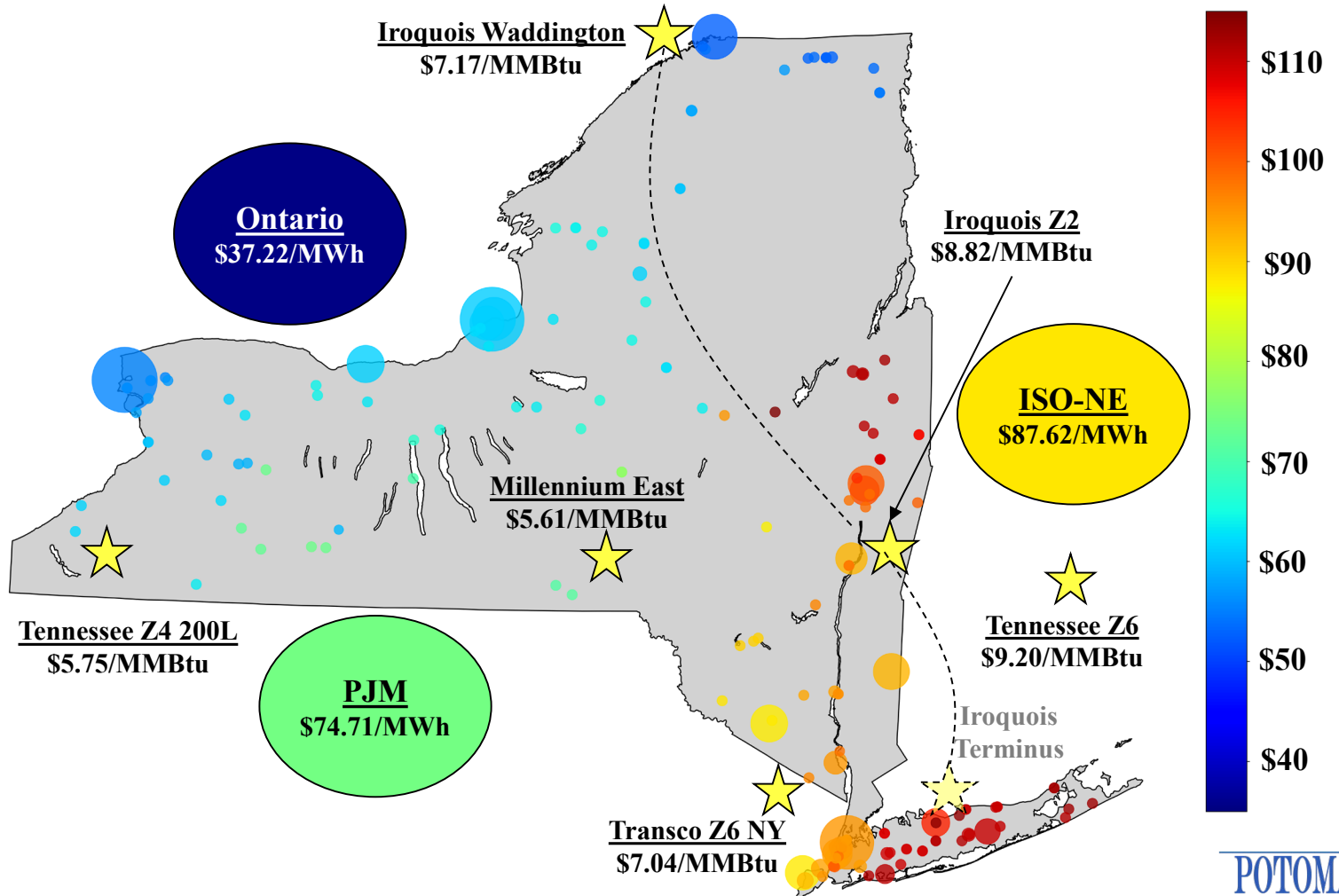
Market Outcomes

Market Outcomes: All In Price Trends

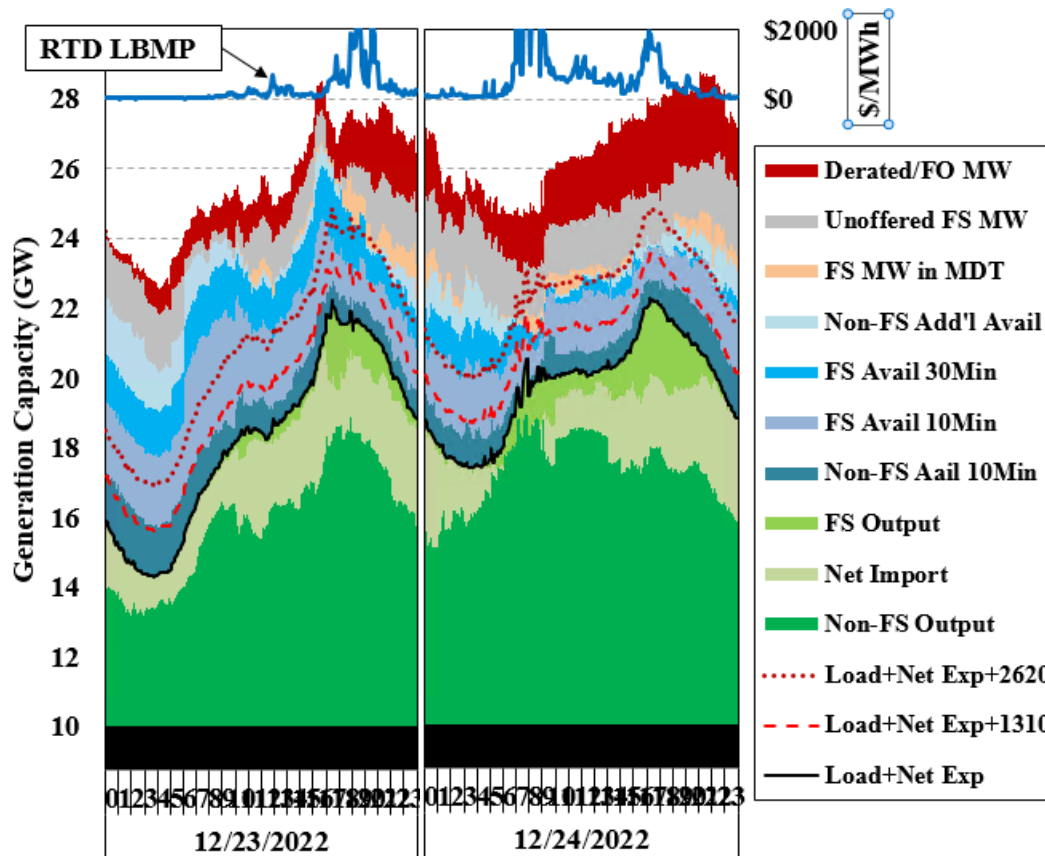


- Energy prices rose in 2022 because of:
 - ✓ Gas prices
 - ✓ Retirement of fuel secure units in NY/NE (e.g., IP3)
 - ✓ Planned and forced transmission outages on Central-East and Into Long Island
- Capacity prices still low in 2022 ahead of expected retirements in NYC

Market Outcomes: Congestion Patterns

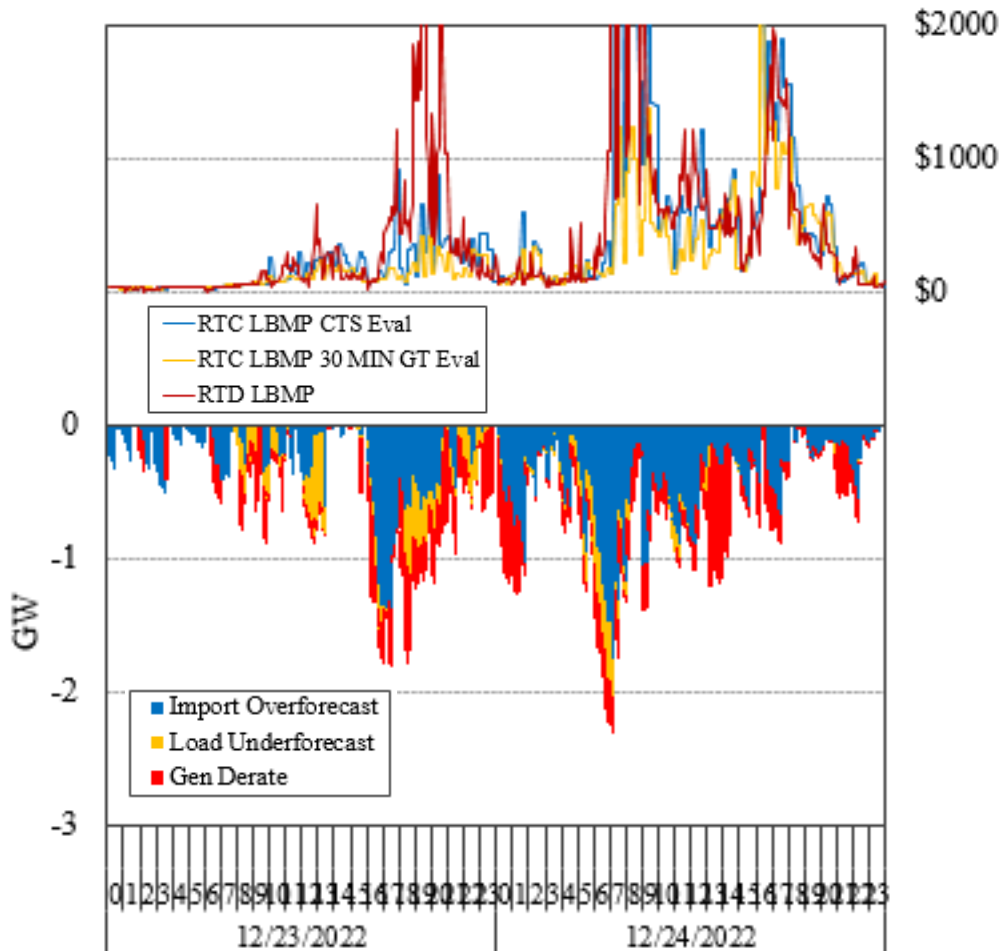


Utilization of Supply during Winter Storm Elliott



- NY: 8 hours of reserve shortages
- PJM: 23 PFP hours
- NE: 1.3 PFP hours
- Key drivers:
 - ✓ Forced outages
 - ✓ Duration limits
 - ✓ Curtailed imports
 - ✓ GT scheduling
- CTS suspended at 9:00am on Dec 24

Transaction Cuts and RTC Performance during Winter Storm Elliott



- High volume of cuts on Dec 23-24
- No PFP charges to exports by PJM/NE
- Depressed RTC forecasted prices
 - ✓ GTs uncommitted or shut-down
 - ✓ CTS suspended
- Cut frequency up in winter months:
 - ✓ 7% in 2021
 - ✓ 24% in 2022

Conclusions from Winter Storm Elliott

- Increased 30-min ORDC led to better scheduling outcomes
 - ✓ However, stronger incentives in NE & PJM led to high exports from NYISO → See Recommendation #2017-2
- Low-cost import offers to NYISO were too good to be true:
 - ✓ RTC would schedule low-cost import instead of peaker → Operators would cut import → Peaker was no longer available → Reserve shortage
- Implications:
 - ✓ PFP rules provide perverse incentives to schedule exports from PJM/NE that are often cut → Increase costs to New York
 - ✓ Schedule additional reserves when curtailment is likely?
 - ✓ Is Emergency Assistance limit of 3.5 GW appropriate for winter resource adequacy?



Recommended Market Enhancements

Prioritizing Market Enhancements

- Unprecedented levels of policy-driven investment are expected over the coming decade
- The NYISO should focus on enhancements that:
 - ✓ Guide renewable investment to where it is most deliverable
 - ✓ Provide incentives for investment in flexible resources that help integrate intermittent renewables while maintaining reliability
 - ✓ Encourage retirement of existing generators that have:
 - Inflexible characteristics, and/or
 - Limited availability during gas supply constraints
- Accomplishing this will require prudent improvements to better value energy and ancillary service providers.

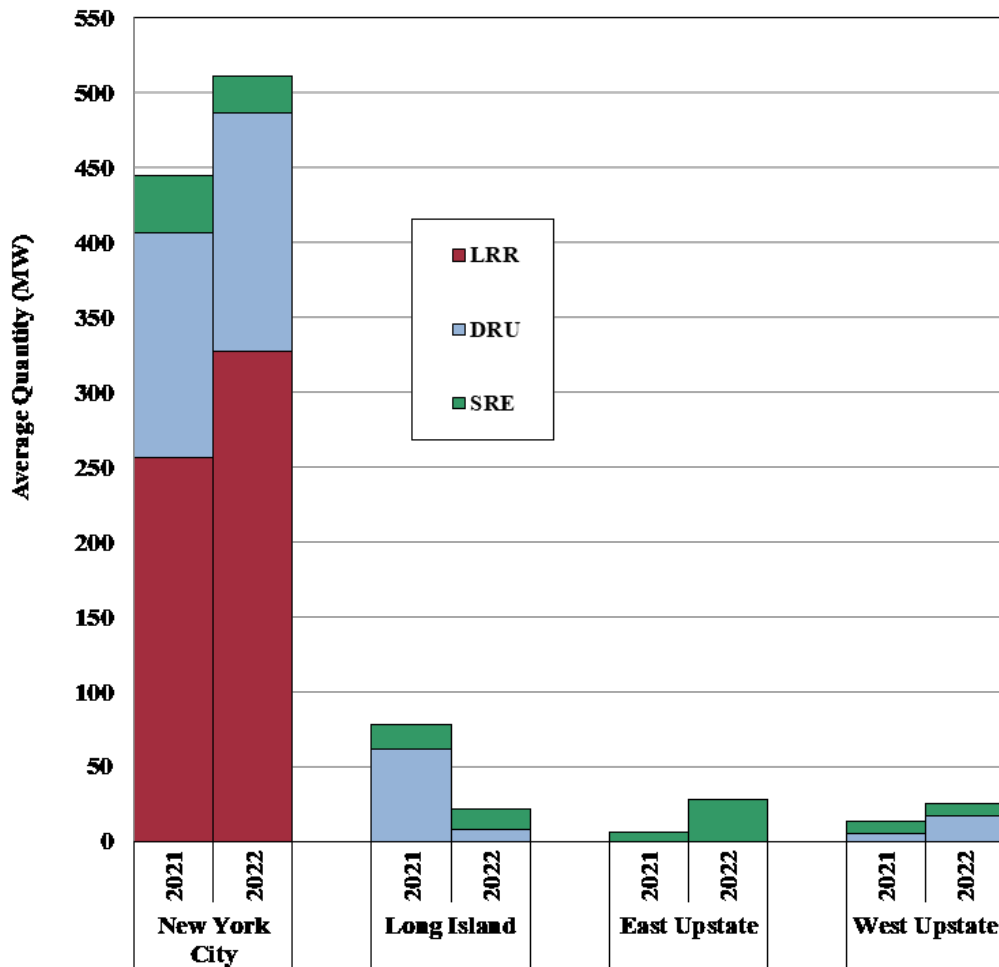
Investment Signals: Enhancing Incentives for Key Attributes

- Increasing E&AS net revenues for flexible units would:
 - ✓ Reduce the capacity revenues needed to maintain reliability
 - ✓ Encourage older inflexible units to retire
 - ✓ Become more important as intermittent penetration rises
- NYISO is working on addressing five recommendations:
 - ✓ 2015-17 & 2020-2: Enhanced transmission shortage pricing and treatment of offline fast start units (2023 & 2024)
 - ✓ 2015-16: Dynamic reserve requirements (2026)
 - ✓ 2019-1: Set price using Long Is. reserve requirements (2026)
 - ✓ 2017-1: NYC locational reserve requirements (2027)
- We recommend three other enhancements to E&AS markets:
 - ✓ 2017-2: Reserve demand curve increases for statewide
 - ✓ 2021-2: Model full Long Island reserve requirements
 - ✓ 2016-1: Compensate reserves that increase transfer capability

Energy Market Enhancements: Dynamic Reserve Requirements

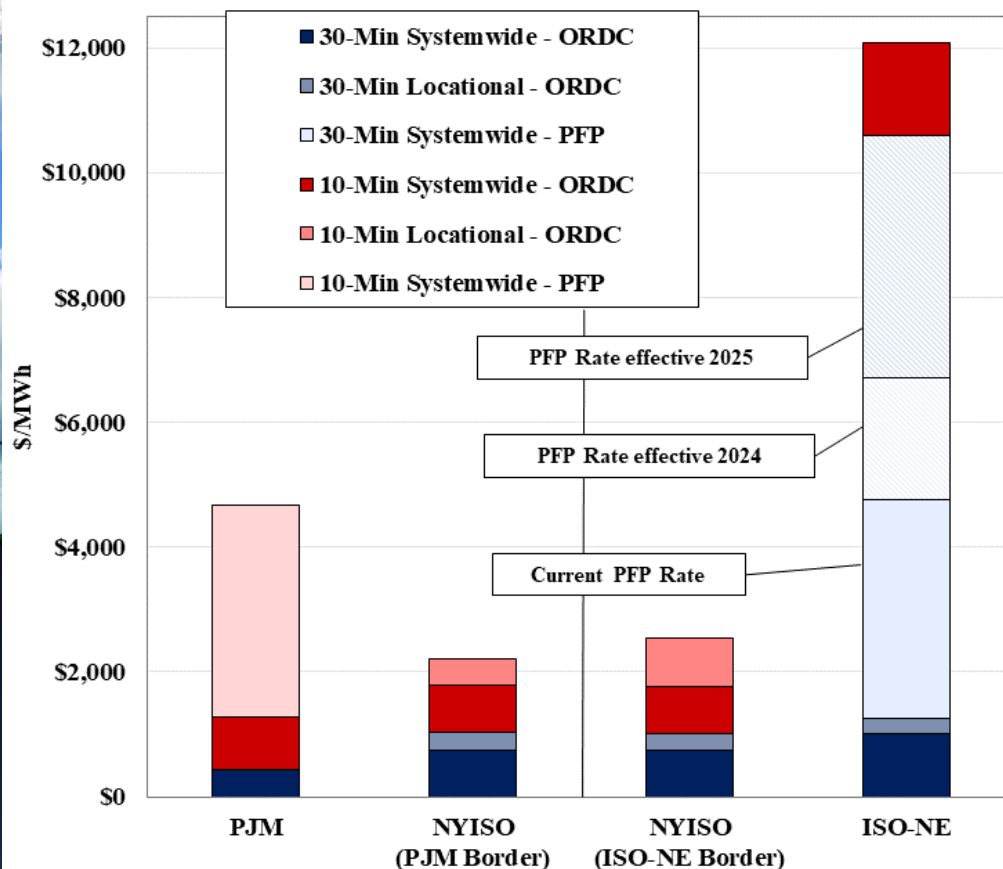
- Dynamic reserves would facilitate improved modeling of:
 - ✓ *Long Island* – allow larger amounts of LI reserves to support the requirements in broader regions
 - ✓ *East NY and SENY* – allow holding reserves on the interfaces to more efficiently satisfy regional reserve requirements
 - ✓ *HQ-NYCA imports* – would increase energy schedules significantly above the level currently allowed
 - ✓ *NYCA* – allow higher reserve requirement to account for under-scheduling of energy
 - ✓ *NYC Load Pockets* – allow holding some of local reserves on the interfaces into NYC and its load pockets
 - ✓ *Operator Reserve Adjustments* – avoid OOM actions under temporary conditions
- Local reserve needs are emerging in upstate NY

Energy Market Enhancements: Supplemental Commitments for Reserves



- Frequent DARU/LRR for NYC reserves, account for:
 - ✓ ~50% of NYC ST run hours and ST energy
- OOM commitments for local reserves:
 - ✓ Long Island - 27 days
 - ✓ Capital – 35 days
 - ✓ North – 67 days
- Local energy and reserve prices are understated because they do not reflect these costs
- Model reserve constraints that drive these commitments

Energy Market Enhancements: Shortage Pricing Disparities and Associated Risks



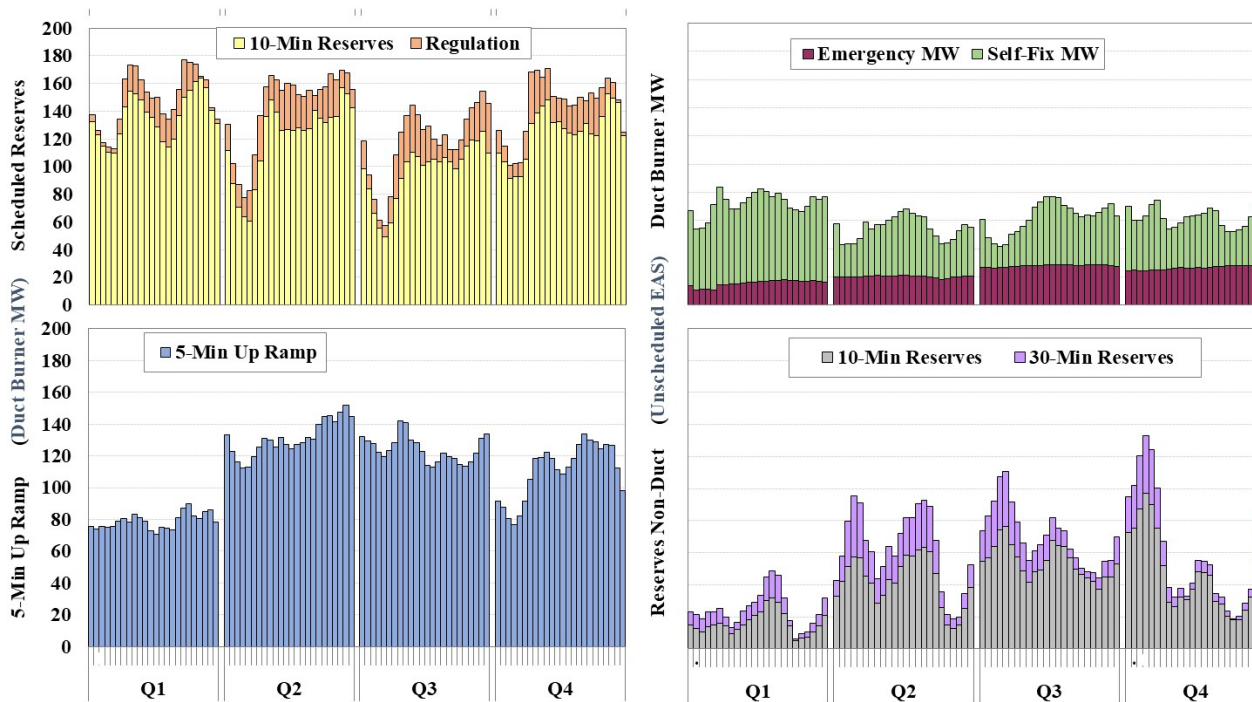
- Range of 30-min shortage adders:
 - ✓ ~\$450 to \$10,500
- Range of 10-min shortage adders:
 - ✓ ~\$2,450 to \$12,000
- Consistent shortage pricing needed to reduce OOM actions to maintain reliability
 - ✓ #2017-2
 - ✓ Recommendations re PFP to PJM/NE/ FERC

Energy Market Enhancements: Reserves for NYC Congestion Management

Transmission Facility		Average Constraint Limit (MW)			Additional Reserves	
		N-1 Limit Used	Seasonal LTE	Seasonal STE	Above LTE	Percent Increase
345 kV	Goethals-Gowanus	917	739	1235	179	24%
	Motthavn-Dunwodie	1047	842	1302	206	24%
	Motthavn-Rainey	1199	833	1298	366	44%
	Farragut-Gowanus	1126	898	1355	228	25%
138 kV	Greenwd-Vernon	248	232	263	16	7%
	Foxhills-Greenwd	309	245	375	64	26%
	Kentave-Vernon	258	237	277	21	9%

- 73 percent of RT NYC congestion on constraints with post-contingency flows > LTE
- We will analyze GE-MAPS simulations from the PPTP process to estimate the future impact of #2016-1 → stay tuned

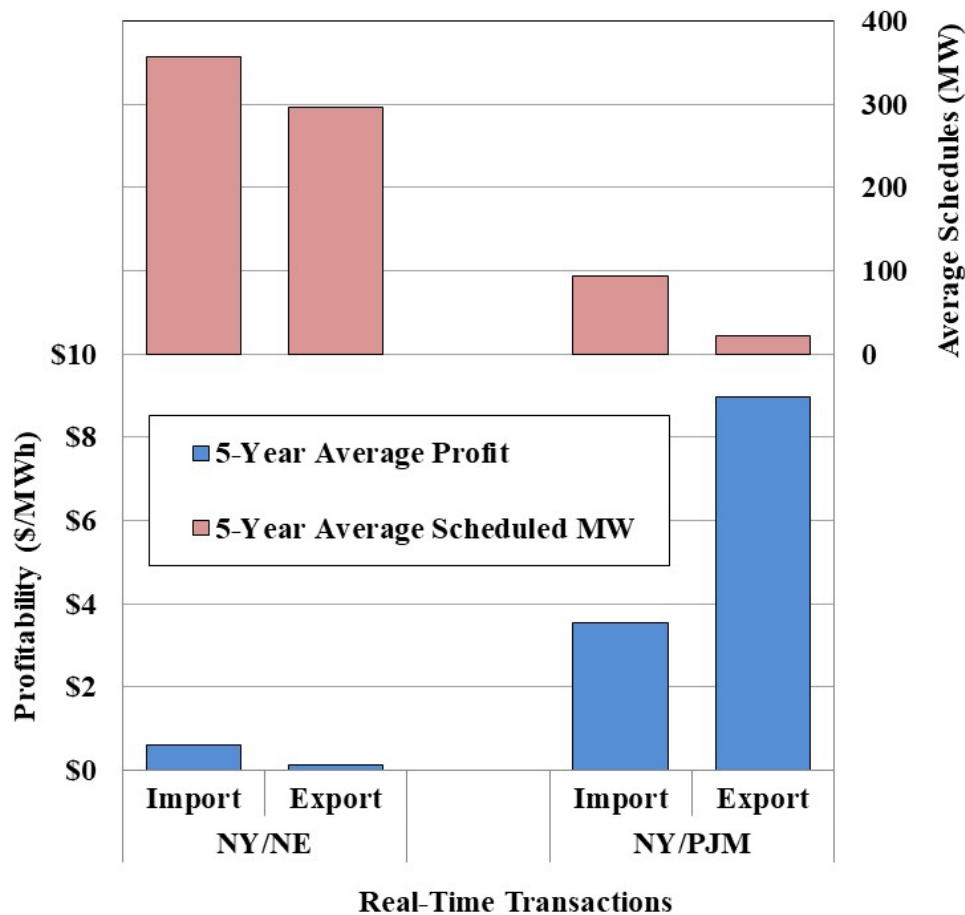
Energy Market Enhancements: Consider Duct Burner Modeling Enhancements



- Duct burners include ~900 MW Summer Capacity.
- Currently considered 10-minute and regulation capable.

- Current ISO proposal for 2024 would address: (a) slower ramp rate and (b) when limited flexibility prevents use for AGC and spinning reserves
- However, the proposed solution may be unworkable because of inflexible response rate offers

Energy Market Enhancements: CTS Transactions Profitability



- #2015-9 would eliminate fees for CTS transactions at NY-PJM border.
- CTS exports to PJM:
 - ✓ Are less firm than network load
 - ✓ Do not drive Tx investment costs
- Lower fees would:
 - ✓ Encourage price-sensitive scheduling
 - ✓ Potentially increase revenue collection
 - ✓ Help integrate renewables