2014 State of the Market Report for the NYISO Markets: Overview of Report & Recommendations

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Schedule for Review of 2014 SOM Report

- On 5/13: Report posted on NYISO website
- Presentation schedule:
  - ✓ 5/20 MIWG: Energy Market Highlights & Recommendations
  - ✓ 5/27 MC: Overview of Report & Recommendations
  - ✓ 5/28 ICAPWG: Capacity Market Highlights & Recommendations
- Comments/questions submitted by 5/26 will be posted on the NYISO website and addressed at the 5/28 ICAPWG.
- Comments/questions received after 5/26 will be addressed case by case.

Highlights and Market Summary: Energy Market

- The energy markets performed competitively and price variations were driven primarily by fundamentals (i.e., demand, fuel prices, supply availability).
- Average "all-in" prices ranged from $63/MWh in Western NY to $98/MWh in NYC and $90/MWh in Long Island in 2014.
- Unusual weather patterns led to sizable changes in natural gas prices and electricity prices from 2013 to 2014.
  - ✓ In the first quarter, abnormally cold weather led to record natural gas prices, increasing energy prices 55 to 119 percent from 2013 at different locations.
  - ✓ Over the last three quarters, mild summer weather and very low natural gas prices caused electricity prices to fall 14 to 34 percent from the previous year.
- Congestion from west-to-east on the natural gas pipeline system led to a similar pattern of prices in the wholesale electric market.
  - ✓ Flows through western New York and across the Central-East Interface accounted for 64 percent of the $573 million in day-ahead congestion revenue.



Highlights and Market Summary: Capacity Market & Uplift Charges

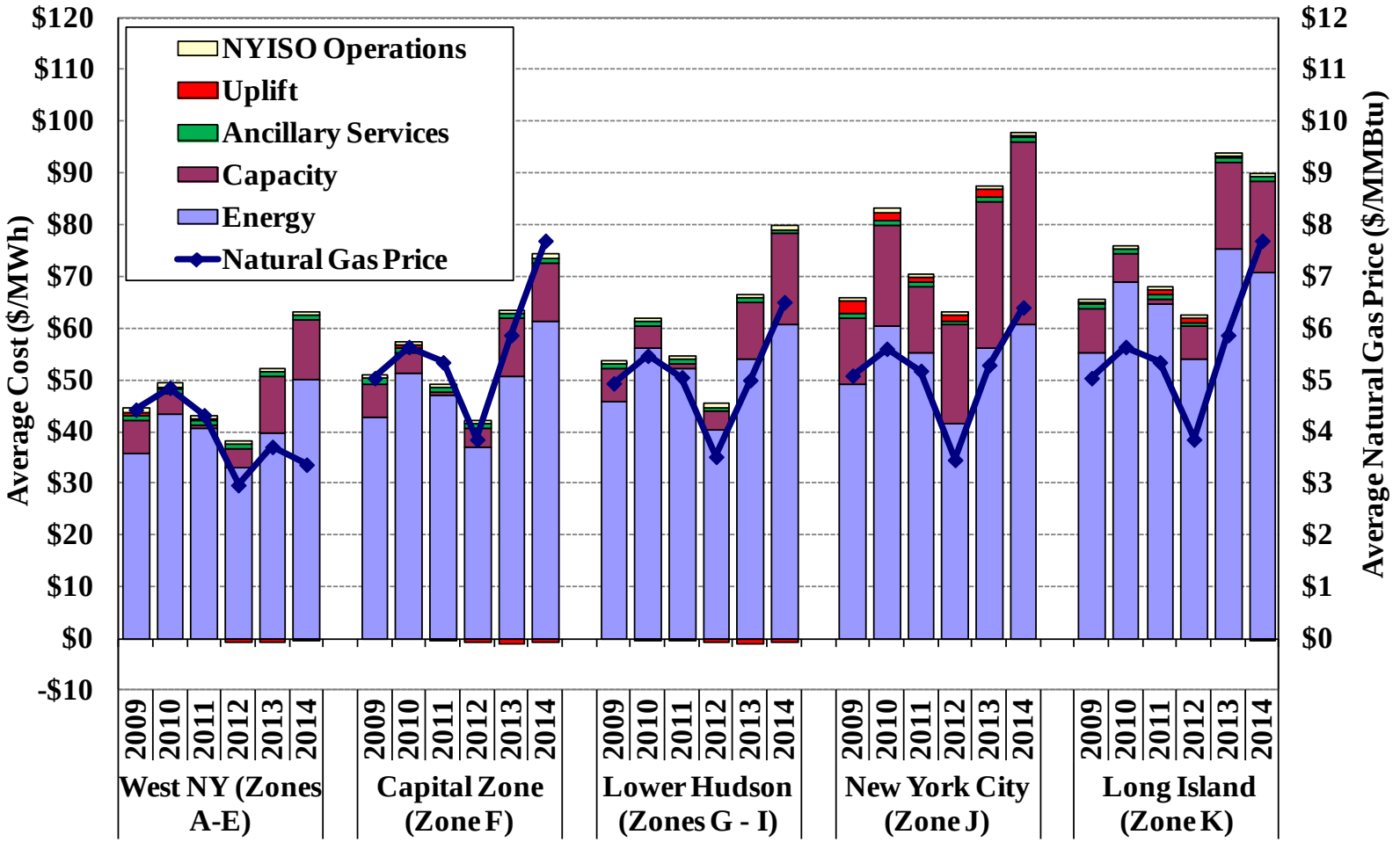
Capacity Market:

- Capacity prices rose 24 percent in 2014 to average $13.96/kW-month in NYC.
- Prices in Long Island and in the Rest of State areas rose roughly 5 percent to average $4.98 and $4.51/kW-month, respectively.
- The increases in these areas were due to increased requirements due to higher peak load forecasts.
- A new capacity zone was created in Southeast New York that caused prices in that area to rise 59 percent in 2014 to average $8.08/kW-month. This change is facilitating capacity additions that will lower local NYC requirements in the future.

Uplift Charges:

- Uplift charges continue to decline from past years -- guarantee payments fell 10 percent to $147 million as transmission upgrades in the North Country and Long Island required less out-of-merit dispatch and commitment.
- Day-ahead congestion shortfalls totaled $69 million, most of which were caused by transmission outages scheduled during the Polar Vortex. $71 million was allocated to the responsible transmission owners.
- Balancing congestion shortfalls were very low ($5 million), reflecting good operating performance, fewer TSAs, and the benefits of M2M coordination.

Highlights and Market Summary:
Average All-In Price by Region



See Sections I.A & III.A

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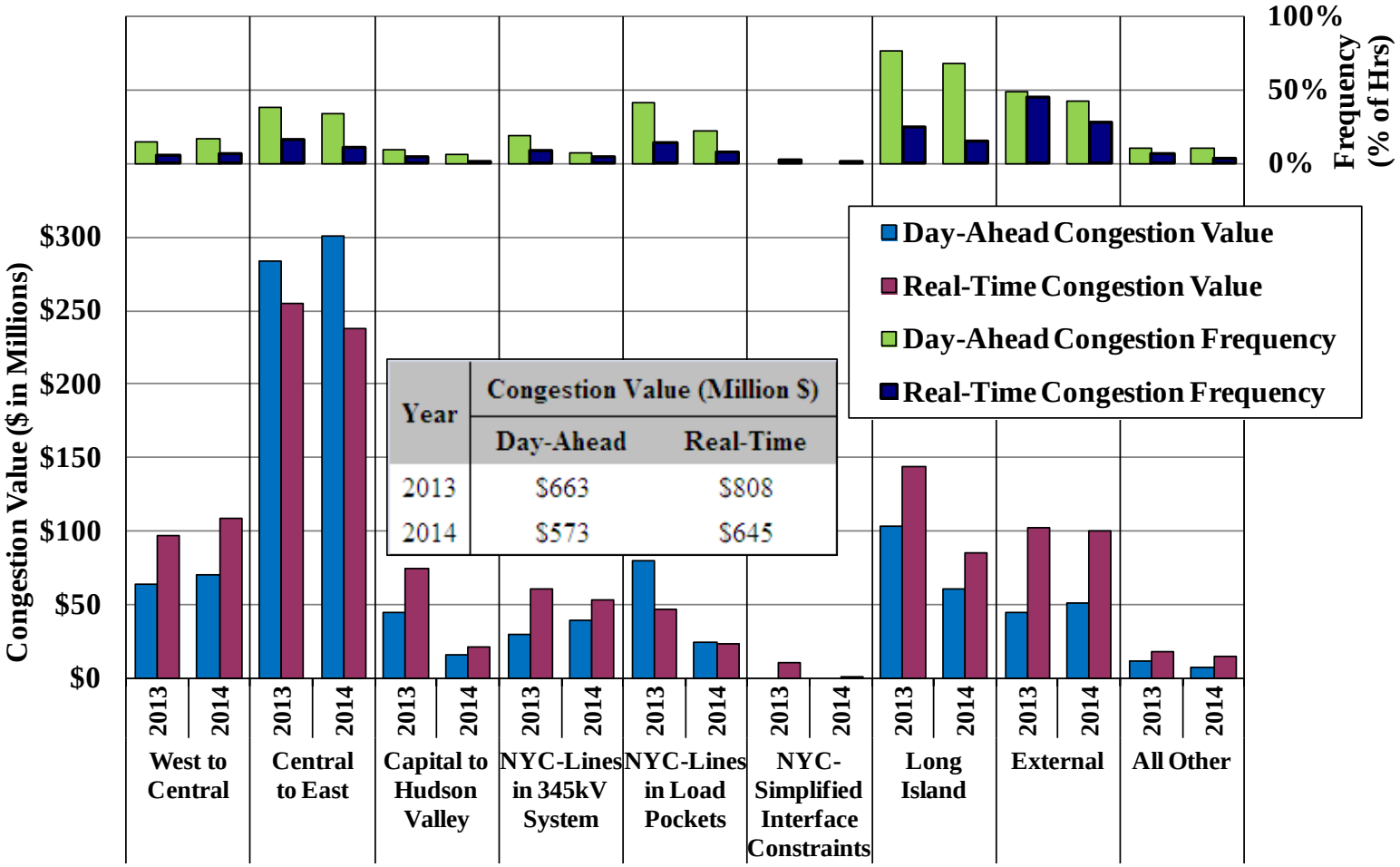
Highlights and Market Summary:
Fuel Prices and Energy Prices by Region

	Annual Average			Q1 Average			Q2 - Q4 Average		
	2013	2014	% Change	2013	2014	% Change	2013	2014	% Change
Fuel Prices ($/MMBtu)									
Ultra Low-Sulfur Diesel Oil	$21.70	$20.21	-7%	$22.53	$22.36	-1%	$21.43	$19.50	-9%
Fuel Oil #6	$16.44	$15.59	-5%	$17.95	$18.43	3%	$15.93	$14.64	-8%
NG - Dominion North	$3.51	$3.18	-9%	$3.49	$4.59	32%	$3.52	$2.71	-23%
NG - Tx Eastern M3	$3.93	$5.13	31%	$4.16	$11.78	183%	$3.85	$2.91	-24%
NG - Transco Z6 (NY)	$5.13	$6.21	21%	$8.30	$15.72	89%	$4.07	$3.05	-25%
NG - Iroquois Z2	$5.69	$7.54	33%	$8.54	$17.85	109%	$4.74	$4.11	-13%
Energy Prices ($/MWh)									
West New York (Dominion)	$39.72	$50.32	27%	$43.74	$95.71	119%	$38.29	$33.06	-14%
Capital Zone (Iroquois)	$50.94	$61.38	20%	$74.03	$134.24	81%	$43.24	$35.21	-19%
Lw. Hudson(TxEastern/Iroq.)	$54.14	$60.83	12%	$68.02	$128.27	89%	$49.75	$37.26	-25%
New York City (Transco)	$56.25	$60.89	8%	$74.12	$133.70	80%	$50.85	$37.57	-26%
Long Island (Iroquois)	$75.42	$70.97	-6%	$97.26	$150.56	55%	$68.78	$45.40	-34%

See Sections I.A & III.B

Highlights and Market Summary:
Congestion in the DA & RT Markets



Year	Congestion Value (Million $)	
	Day-Ahead	Real-Time
2013	$663	$808
2014	$573	$645

See Sections I.A & III.E

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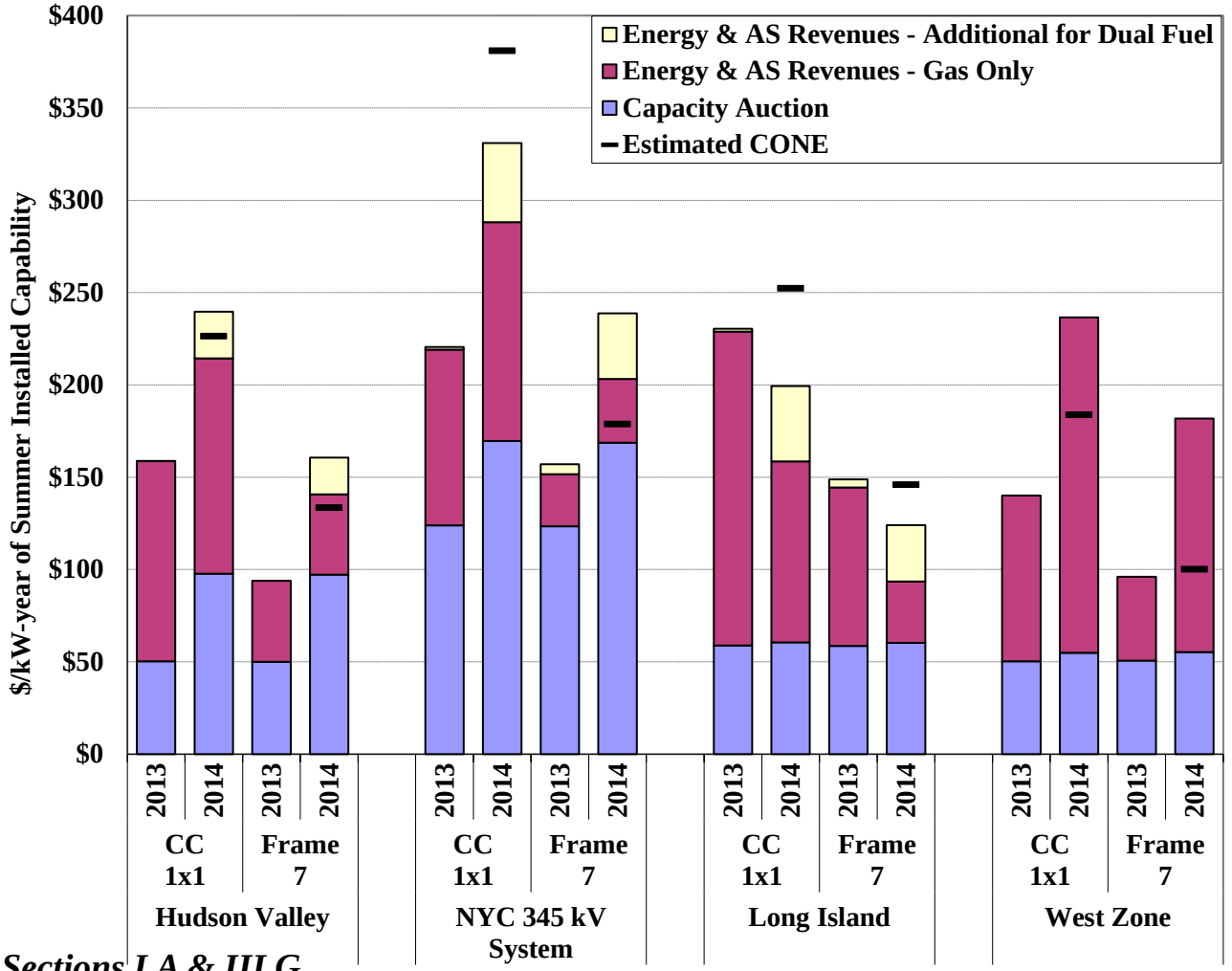
Highlights and Market Summary:
Guarantee Payment & Congestion Shortfall Uplift

Year	BPCG By Region (Million $)						
	New York City	Long Island	East Upstate	West Upstate	Imports	EDRP/ SCR	Total
2014	$58	$23	$14	$50	$2	$0.01	$147
2013	$65	$51	$5	$40	$3	$0.3	$164

	2013	2014
DAM Cong. Revenues (1)	$664	$578
DAM Cong. Shortfalls (2)	$72	$69
Payments to TCC Holders (1)+(2)	$737	$647
Balancing Cong. Shortfalls	$22	$5

See Sections I.E, VI.A, & IX.G

Highlights and Market Summary:
Long-Term Price Signals – Net Revenue



See Sections I.A & III.G

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Discussion of Recommendations

- The remaining slides provide an overview of key recommendations in the following areas:
  - ✓ Enhancing coordination with adjacent markets (Slide 11)
  - ✓ Reducing capacity costs through efficient procurement (Slides 12-13)
  - ✓ RT pricing and performance incentives (Slides 14-15)
  - ✓ Reducing unnecessary RT price volatility (Slide 16)
  - ✓ Modernizing grandfathered wheeling agreements (Slide 17)
  - ✓ Full list of recommendations (Slides 18-20)

Coordination with Adjacent Control Areas:
Recommendation 6 – High Priority

Work with adjacent ISOs to better utilize the transfer capability between regions by coordinating intra-hour transactions.

- Principle:
  - ✓ Maximize the economic utilization of external transmission capability to lower production costs.
- Approach:
  - ✓ Facilitate efficient intra-hour changes in external transactions based on current and projected market conditions.
- Market Enhancements:
  - ✓ 2013-Q1: M2M Congestion Management with PJM
  - ✓ 2014-Q4: CTS with PJM
  - ✓ 2015-Q4: CTS with ISO New England

See Sections I.D, VII.C, VII.D, IX.E, & XI (#6)

Lower Capacity Costs through Efficient Procurement:
Recommendation 1 – High Priority

Implement location-based marginal cost pricing of capacity that minimizes the cost of satisfying planning reliability Criteria.

- Principle:
  - ✓ Price/Compensation = Reliability Value
- Approach:
  - ✓ Establish locational requirements than minimize the costs of satisfying reliability needs.
- Benefits:
  - ✓ Reduces the costs of satisfying resource adequacy criteria by tens of millions of dollars per year.
  - ✓ Increases predictability of prices and market requirements for investors.

See Sections I.F, VIII.B, & XI

Lower Capacity Costs through Efficient Procurement:
Capacity Prices as a Signal of Reliability Value

	Capacity Area				
	A-F	**G-I**	**J**	**K**	**NYCA**
Annual Cost of a 0.001 LOLE Improvement at Demand Curve Reset Conditions	$3.0M	$1.8M	$2.5M	$1.0M	
Hypothetical Shift in Capacity:					
Adjustment (MW)	-120	0	-50	100	-70
Estimated Resulting Change in LOLE	0.003	0.000	0.003	-0.006	0.000
Estimated Change in Cost of Capacity	-$10.0M	0.0	-$7.3M	+$5.9M	-$11.3M

See Sections I.F, VIII.B, & XI

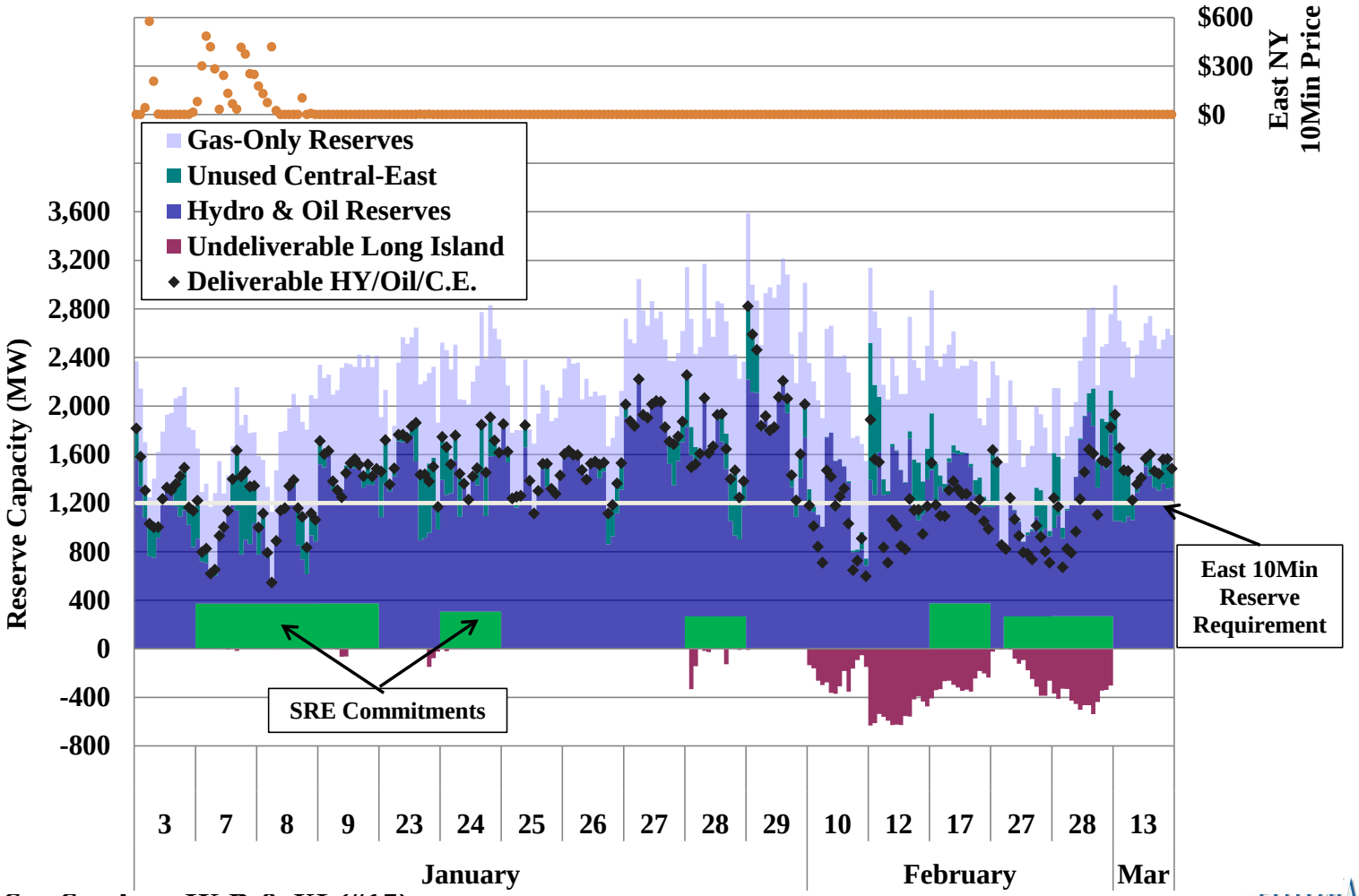
Enhance RT Performance Incentives:
Recommendations 10, 11, 12, & 15

10. *Modify criteria for GTs to set price*
11. *Adopt Comprehensive Scarcity Pricing*
12. *Model 100+kV transmission constraints in the day-ahead and real-time markets*
15. *Recognize gas system limits for reserve providers*
    - Principles:
      - ✓ Price = Cost of Maintaining Reliability
      - ✓ Compensate resources based on performance
    - Benefits:
      - ✓ Efficient scheduling of generation and imports
      - ✓ Investment in resources with flexible characteristics
      - ✓ Improve resource performance
      - ✓ Reduce reliance on capacity market

See Sections IX.A-C, IX.F.3, & XI

Enhance RT Performance Incentives:

10-Min Reserves in East NY on OFO Days & Recommendation 15



See Sections IX.B & XI (#15)

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Reducing Unnecessary Price Volatility:
Recommendations 8 & 9

8. *Adjust RTD and RTC look ahead evaluations to be consistent with external transaction ramp and GT commitment.*
9. *Consider enhanced modeling of loop flows and PAR-controlled lines to reflect the effects of expected generation, load, and PAR-controls on line flows more accurately.*
   - Principles:
     - ✓ Price volatility from unpredictable factors is efficient
     - ✓ Price volatility from poor forecasting is inefficient
   - Benefits:
     - ✓ Reduce unnecessary uplift, cycling costs, and market risk
     - ✓ Improve resource performance incentives
     - ✓ Provide incentives to invest in resources with flexible characteristics

See Sections IX.E & XI (#8 & #9)

Modernize Grandfathered Wheeling Agreements:
Recommendation 7 – High Priority

Operate PAR-controlled lines to minimize production costs and create financial rights that compensate affected transmission owners.

- Principles/Approach:
  - ✓ Use transmission to reduce production costs
- Benefits:
  - ✓ Reduce production costs (up to $15M/year) and balancing congestion uplift ($5M/year)
  - ✓ Reduce prices for Long Island customers
  - ✓ Create financial rights that benefit NYC customers

See Sections I.D, VI.A.3, IX.D, XI (#7), & Appendix III.E

List of Recommendations:
Capacity Market

RECOMMENDATION	Discussed in	Current Effort	High Priority	Scoping/Future
Capacity Market Enhancements				
(1) Implement location-based marginal cost pricing of capacity that minimizes the cost of satisfying planning reliability criteria.	VIII.B		X	X
(2) Grant financial capacity transfer rights between zones when investors upgrade the transmission system and help satisfy planning reliability needs.	VIII.C			X
(3) Pre-define interzonal interfaces or zones that address potential reliability needs and/or deliverability constraints to allow prices to accurately reflect the locational value of capacity.	VIII.D			X
(4) Enhance buyer-side mitigation measures to deter uneconomic entry while ensuring that economic entrants are not mitigated.				
(a) Reform Offer Floor for mitigated projects.	IV.C.2			
(b) Modify treatment of units being replaced, mothballed, and retired in forecasts of ICAP prices and net revenues.	IV.C.2	X		
(5) Evaluate the need to expand buyer-side mitigation measures to address other actions that can suppress capacity prices.	IV.C.2			X

See Section XI

List of Recommendations:
Broader Regional Markets and Energy Market

RECOMMENDATION	Discussed in	Current Effort	High Priority	Scoping/Future
Broader Regional Markets				
(6) Work with adjacent ISOs on rules to better utilize the transfer capability between regions by coordinating intra-hour transactions.	VII.D	X	X	
Energy Market Enhancements - RT Market Operations				
(7) Operate PAR-controlled lines to minimize production costs and create financial rights that compensate affected transmission owners.	IX.D		X	
(8) Adjust RTD and RTC look ahead evaluations to be consistent with timing of external transaction ramp and gas turbine commitment.	IX.E			X
(9) Consider enhanced modeling of loop flows and PAR-controlled lines to reflect the effects of expected generation, load, and PAR-controls on line flows more accurately.	IX.E			X
Energy Market Enhancements - RT Pricing				
(10) Modify criteria for gas turbines to set prices in the real-time market.	IX.C			
(11) Adopt Comprehensive Scarcity Pricing.	IX.A	X		
(12) Consider modeling 100+ kV transmission constraints in the DA and RT markets using economic commitment and dispatch software.	IX.F.3			X

See Section XI

List of Recommendations:
Energy Market and Gas-Electric Coordination

RECOMMENDATION	Discussed in	Current Effort	High Priority	Scoping/Future
Energy Market Enhancements - Reliability Commitment				
(13) Work with generators in NOx bubbles to ensure their RACT compliance plans use the most economic compliance option available.	IX.F.2			
Energy Market Enhancements - Fuel Assurance				
(14) Consider allowing generators to submit offers that reflect certain energy storage and fuel supply constraints in the day-ahead market.	IX.B.2	X		
(15) Enhance recognition of gas system limitations when scheduling resources to provide operating reserves.	IX.B.2			X
Gas-Electric Coordination				
(16) Require Generators to provide timely information on fuel availability (e.g., on-site inventory, scheduled deliveries, & nominations).	IX.B.2	X		

See Section XI