



# 2015 State of the Market Report for the NYISO Markets: Capacity Market Highlights

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## Schedule for Review of 2015 SOM Report

- On 5/5: Report posted on NYISO website
- Presentation schedule:
  - ✓ 5/12 ICAPWG: Capacity Market Results & Recommendations
  - ✓ 5/20 MIWG: Energy Market Results & Recommendations
  - ✓ 5/25 MC: Overview of Report & Recommendations
- Comments/questions submitted by 5/25 will be posted on the NYISO website and addressed on a best-efforts basis at the 5/20 and 5/25 meetings.
  - ✓ To: [deckels@nyiso.com](mailto:deckels@nyiso.com) & [pallas@potomaceconomics.com](mailto:pallas@potomaceconomics.com)
- Comments/questions received after 5/25 will be addressed case by case.



## Highlights and Market Summary: Wholesale Market Results

### Energy Prices and Congestion:

- Mild summer weather.
- Winter conditions improved slightly from 2014 (but were still severe by historic standards).
- Natural gas prices fell 38 to 58 percent from 2014 to 2015, helping to reduce electricity prices by 32 to 49 percent over the same period.
- Congestion from west-to-east on the natural gas pipeline system led to a similar pattern of congestion in the NYISO energy markets.



## Highlights and Market Summary: Wholesale Market Results

### Capacity Market in 2015/16 Capability Year:

- ROS prices fell 40 percent to average \$2.39/kW-month.
  - ✓ 1.2 GW of capacity returned service in Southeast NY.
- Prices fell 21 and 24 percent to average \$10.68/kW-month in NYC and \$3.68/kW-month in Long Island.
  - ✓ Returning capacity in the Lower Hudson Valley alleviated the UPNY-SENY constraints, reducing the local capacity requirements for NYC and Long Island.
- LHV prices fell 24 percent to average \$6.17/kW-month.
  - ✓ The return of capacity to the Lower Hudson Valley caused its LCR to increase, partly offsetting the price effects of the additional supply.

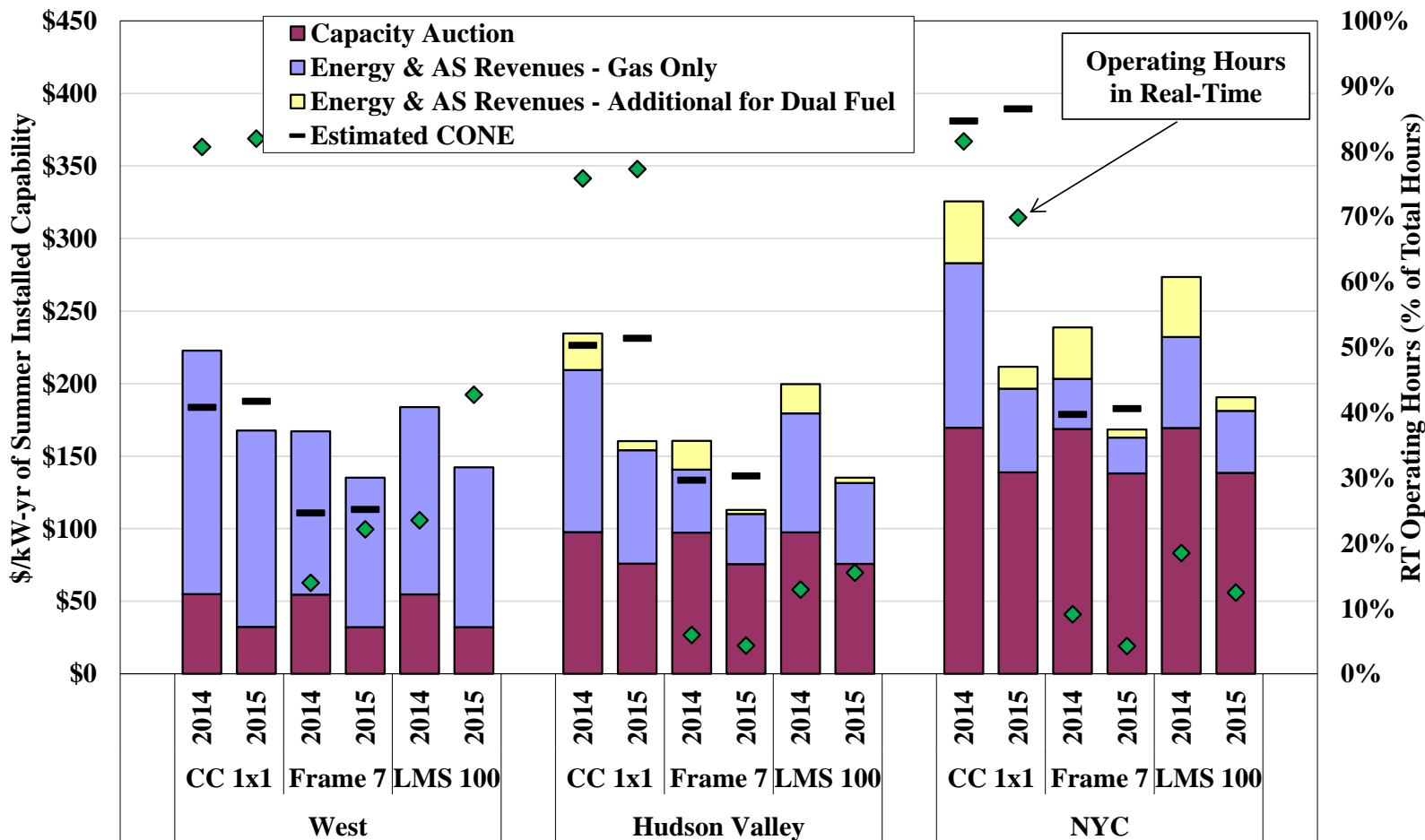


## Highlights and Market Summary: Net Revenues

- Falling energy and capacity prices reduced net revenues.
  - ✓ A new CT would not have covered its levelized entry cost in any zone (except the West Zone) in 2015.
  - ✓ Conditions in the West Zone have improved for gas-fired units because of congestion and very low natural gas prices. However, these conditions may be temporary.
- Low energy prices have reduced profits for low-CO<sub>2</sub> emitting units (i.e., existing nuclear and new renewables).
  - ✓ Nukes outside SENY are uneconomic at 2015 prices.
  - ✓ New renewables are more costly for lowering emissions than maintaining nuclear units.
  - ✓ Building a new CC to displace inefficient generation in Zone K is least costly (per ton of CO<sub>2</sub>).



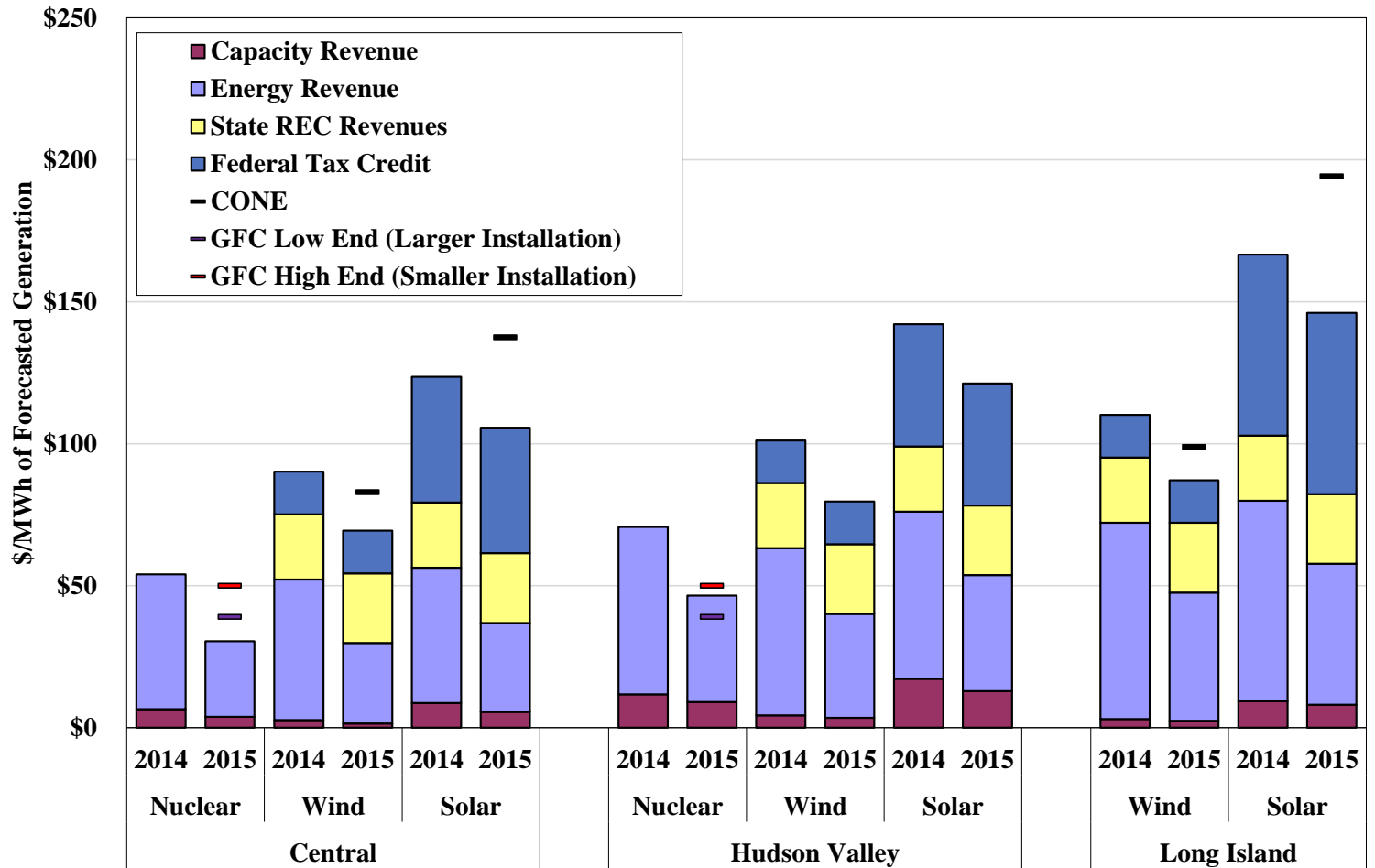
# Highlights and Market Summary: Net Revenue for New Fossil-Fuel Units



See Sections I.A & III.G



# Highlights and Market Summary: Net Revenue of Nuclear and Renewable Units



See Sections I.A & III.G



## Discussion of Recommendations

- The remaining slides provide an overview of key recommendations in the following areas:
  - ✓ Capacity prices that signal reliability value (Slides 9-10)
  - ✓ Modify treatment of capacity exports (Slide 11)
  - ✓ Compensation for transmission investment (Slides 12-13)
  - ✓ Dynamic locational framework in the capacity market (Slide 14)
  - ✓ Enhance buyer-side mitigation measures (Slide 15)
  - ✓ Reform CARIS process (Slides 16-17)
  - ✓ Full list of capacity-related recommendations (Slide 18)





# Capacity Prices as a Signal of Reliability Value: **Recommendation #1 – High Priority**

1. *Implement location-based marginal cost pricing of capacity that minimizes the cost of satisfying planning reliability criteria.*
  - Principles:
    - ✓ Price = Reliability Value
    - ✓ Minimize the costs of satisfying reliability needs
  - Approach:
    - ✓ Optimize LCRs and the IRM, while considering Zone K exports with an export limit and benefit ratio.
  - Benefits:
    - ✓ Reduce cost of satisfying resource adequacy criteria by tens of millions of dollars per year.
    - ✓ Reduce volatility of prices and requirements for investors.

# Capacity Prices as a Signal of Reliability Value: **Recommendation #1 – High Priority**

	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



## Modify Treatment of Capacity Exports: **Recommendation #8 – High Priority**

8. *Modify the capacity market and planning process to better account for capacity that is exported to neighboring control areas from import-constrained capacity zones.*
- Principle: Capacity Price/Compensation = Reliability Value
  - Approach:
    - ✓ Adjust LCRs (or equivalent) to account for the reliability benefits provided by a SENY resource that exports to another control area.
    - ✓ Compensate exporter based on local/ROS price differential.
    - ✓ Adjust planning assumptions to recognize these benefits.
  - Benefits:
    - ✓ Avoid scenario where G-J Locality prices are inflated by \$40/kW-year beginning in June 2018.
    - ✓ Reduce uncertainty regarding future prices and reliability needs.



## Compensation for Transmission Investment: Recommendation #2

2. *Grant financial capacity transfer rights between zones when investors upgrade the transmission system and help satisfy planning reliability needs without a cost-of-service rate.*
  - Principle: Compensation = Reliability Value
  - Approach:
    - ✓ Compensate transmission that helps satisfy planning reliability needs on a basis comparable to generation and demand response.
    - ✓  $\text{Comp} = \Delta\text{TTC}_i \times \partial\text{LOLE}/\partial\text{TTC}_i \times \text{Demand Value in } \$/\Delta\text{LOLE}$
  - Benefits:
    - ✓ Reduces capacity costs when a transmission solution is more economic than generation or demand response.



## Compensation for Transmission Investment: Recommendation #2 - Illustration

- The following example illustrates how a transmission owner could receive capacity payments. Suppose:
  - 1)  $\Delta\text{TTC}_1 = 100 \text{ MW}$  and  $\Delta\text{TTC}_2 = 250 \text{ MW}$ 
    - ✓ Reflects effect of adding the new facility to the as-found system on Interface 1 and Interface 2.
  - 2)  $\partial\text{LOLE}/\partial\text{TTC}_1 = 0.001$  per 100 MW on Interface 1 and  $\partial\text{LOLE}/\partial\text{TTC}_2 = 0.004$  per 100 MW on Interface 2
    - ✓ Reflects marginal value of additional transfer capability for the as-found system.
  - 3) Demand Value in  $\$/\Delta\text{LOLE} = \$1.8$  million per 0.001 per year
- First year compensation = \$19.8 million =  $\{(100\text{MW} \times 0.001/100\text{MW}) + (250\text{MW} \times 0.004/100\text{MW})\} \times \$1.8\text{M}/0.001$ .



## Dynamic Locations in the Capacity Market: **Recommendation #3**

3. *Establish a dynamic locational capacity framework that addresses future potential deliverability constraints to allow prices to reflect the locational value of capacity and quickly adjust to changes in market conditions.*
  - Principle: Resource locations that provide different reliability values should receive different prices.
  - Approach: Define locations in the capacity market based on the interfaces modeled in the planning process.
  - Benefits:
    - ✓ Reduces cost of satisfying planning criteria.
    - ✓ Lowers barriers to entry.
    - ✓ Enables market to respond promptly to future retirements.



## Enhance Buyer-Side Mitigation Measures: Recommendations #4 & #5

4. *Enhance Buyer-Side Mitigation measures to deter uneconomic entry while ensuring that economic entrants are not mitigated.*
    - a) *Reform the Offer Floor for mitigated projects.*
    - b) *Modify assumptions used to forecast ICAP prices and net revenues, especially relating to the treatment of existing generation and potential new entrants.*
  5. *Evaluate the need to expand buyer-side mitigation measures to address other actions that can suppress capacity prices.*
- Principle:
    - ✓ Allow investment that is not designed to suppress capacity prices below competitive levels.



## Reform CARIS Process: **Recommendation #7**

7. *Reform the CARIS process to better identify and fund economically efficient transmission projects.*
- Principle: Fund transmission projects when that are more economic than potential generation and DR projects.
  - Approach:
    - ✓ Recognize value of transmission for satisfying planning criteria (as is done for generation and DR).
    - ✓ Enhance analytical methods used to evaluate the benefits of a proposed project.
  - Benefits:
    - ✓ Provide incentives for new investment that are technology-neutral.





## Reform CARIS Process: Recommendation #7 – Specific Enhancements

- a) *Include Capacity Market Benefits* – The B/C ratio should include capacity value as estimated in discussion of Recommendation #2.
- b) *Revise Retirement and New Entry Assumptions* – Remove “Compensatory MWs” and base new entry assumptions on the demand curve reset model.
- c) *Enhance Gas System Modeling* – The value of future electric transmission investment will depend heavily on the gas market. NYISO should evaluate options for enhanced modeling.
- d) *Enhance Electric System Modeling* – The simulation model should be enhanced with a better representation of outages and real-time contingencies and other events.
- e) *Reduce 80 Percent Voting Requirement*
- f) *Eliminate \$25 Million Minimum Threshold*

# List of Recommendations: Capacity & Transmission Planning

RECOMMENDATION	Discussed in	Current Effort	High Priority	Scoping/Future
<b><u>Capacity Market Enhancements</u></b>				
(1) Implement location-based marginal cost pricing of capacity that minimizes the cost of satisfying planning reliability criteria.	VIII.C	X	X	
(2) Grant financial capacity transfer rights between zones when investors upgrade the transmission system and help satisfy planning reliability needs without a cost-of-service rate.	VIII.D			X
(3) Establish a dynamic locational capacity framework that addresses future potential deliverability constraints to allow prices to reflect the locational value of capacity and quickly adjust to changes in	VIII.F			X
(4) Enhance Buyer-Side Mitigation measures to deter uneconomic entry while ensuring that economic entrants are not mitigated.				
(a) Reform the Offer Floor for mitigated projects.	IV.C.2			
(b) Modify assumptions used to forecast ICAP prices and net revenues, especially relating to the treatment of existing generation and potential new entrants.	IV.C.2	X		
(5) Expand buyer-side mitigation measures to address other actions that can suppress capacity prices.	IV.C.2	X		X
(6) Modify the pivotal supplier test to prevent a large NYC supplier from circumventing the mitigation rules by selling capacity in the forward capacity auctions (i.e., the strip and monthly auctions) to avoid being designated as a pivotal supplier for NYC.	IV.C.4			
<b><u>Economic Transmission Planning Process</u></b>				
(7) Reform the CARIS process to better identify and fund economically efficient transmission investments.	VIII.E			X
<b><u>Broader Regional Markets</u></b>				
(8) Modify the capacity market and planning process to better account for capacity that is exported to neighboring control areas from import-constrained capacity zones.	VIII.B		X	