

*The Brattle Group*

# Options for Extending Forward Certainty in Capacity Markets

Presented at:  
**EUCI Conference on  
Capacity Markets: Achieving Market Price Equilibrium**

Presented by:  
**Kathleen Spees**

**November 9, 2011**

Copyright © 2011 *The Brattle Group, Inc.*

[www.brattle.com](http://www.brattle.com)

Antitrust/Competition   Commercial Damages   Environmental Litigation and Regulation   Forensic Economics   Intellectual Property   International Arbitration  
International Trade   Product Liability   Regulatory Finance and Accounting   Risk Management   Securities   Tax   Utility Regulatory Policy and Ratemaking   Valuation  
Electric Power   Financial Institutions   Natural Gas   Petroleum   Pharmaceuticals, Medical Devices, and Biotechnology   Telecommunications and Media   Transportation

# Contents

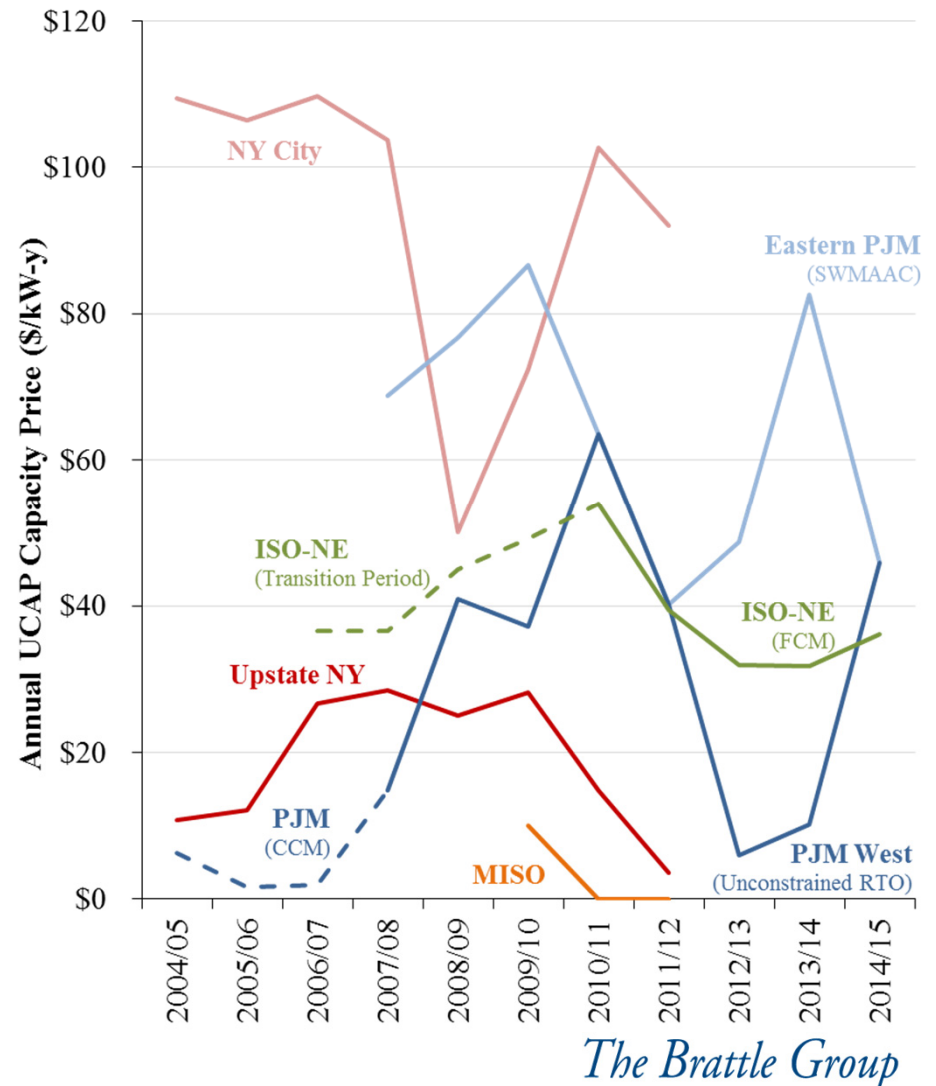
- ◆ **Pressures to Extend Forward Certainty**
  - Price Volatility and Uncertainty Are Driving Concern
  - Lack of Long-Term Contracting to Support New
  - Not All Complaints Are Supported by the Facts
  
- ◆ **Options for Extending Forward Visibility and Certainty**
  - Forward Term of the Current Capacity Markets
  - Mandatory Forward Options
  - Voluntary Forward Options
  - State Procurement and Default Service

## Pressures to Extend Forward Certainty

# Price Volatility and Uncertainty are Driving Concern

- ◆ Example from our recent RPM review:
  - Single biggest concern for all stakeholder sectors was price volatility and uncertainty
  - Related concerns about the lack of long-term hedging options
- ◆ Several contributing factors:
  - **Market Fundamentals** – not a concern, prices should move with market fundamentals
  - **Previous Design Changes** – one-time design changes contribute to volatility, but not a persistent concern
  - **Ongoing Administrative Uncertainties** – importance of uncertain administrative parameters is an ongoing concern

## Capacity Price Comparison Across RTOs



# Lack of Long-term Contracting to Support New Plants

## Lack of Contracting Largely Driven by Fundamentals

- ◆ Generators, states, and lenders state that long-term contracts are unavailable but are needed to support new generation plants
- ◆ Lack of contracts is mostly explained by the existing capacity surplus:
  - New generation is not needed under current surplus conditions
  - Surplus also drives prices below Net CONE (long-run marginal cost)
  - Long-term contracts can reduce financing costs, but shift the market risk to the buyer (uncompetitive unless contract price is appreciably lower than market forecast)
- ◆ Munis/Coops have the opposite concern that long-term sellers are unavailable
  - Existing gen is unwilling lock in low current prices through long-term contracts, while buyers are unwilling to pay for cost of expensive new capacity

## Contracting Also Discouraged by Default Service

- ◆ Competitive retail providers and LSEs with captive customers may have a portfolio of physical assets and supply contracts of various durations, likely representing a “healthy” amount of long-term contracting
- ◆ Portfolio contracting is inconsistent with state default service auctions
  - Default service contracts procured at auction are for short-term supply (1-3 years)
  - May result in sub-optimal levels of long-term contracting

## ...but Not All Complaints Are Supported by the Facts

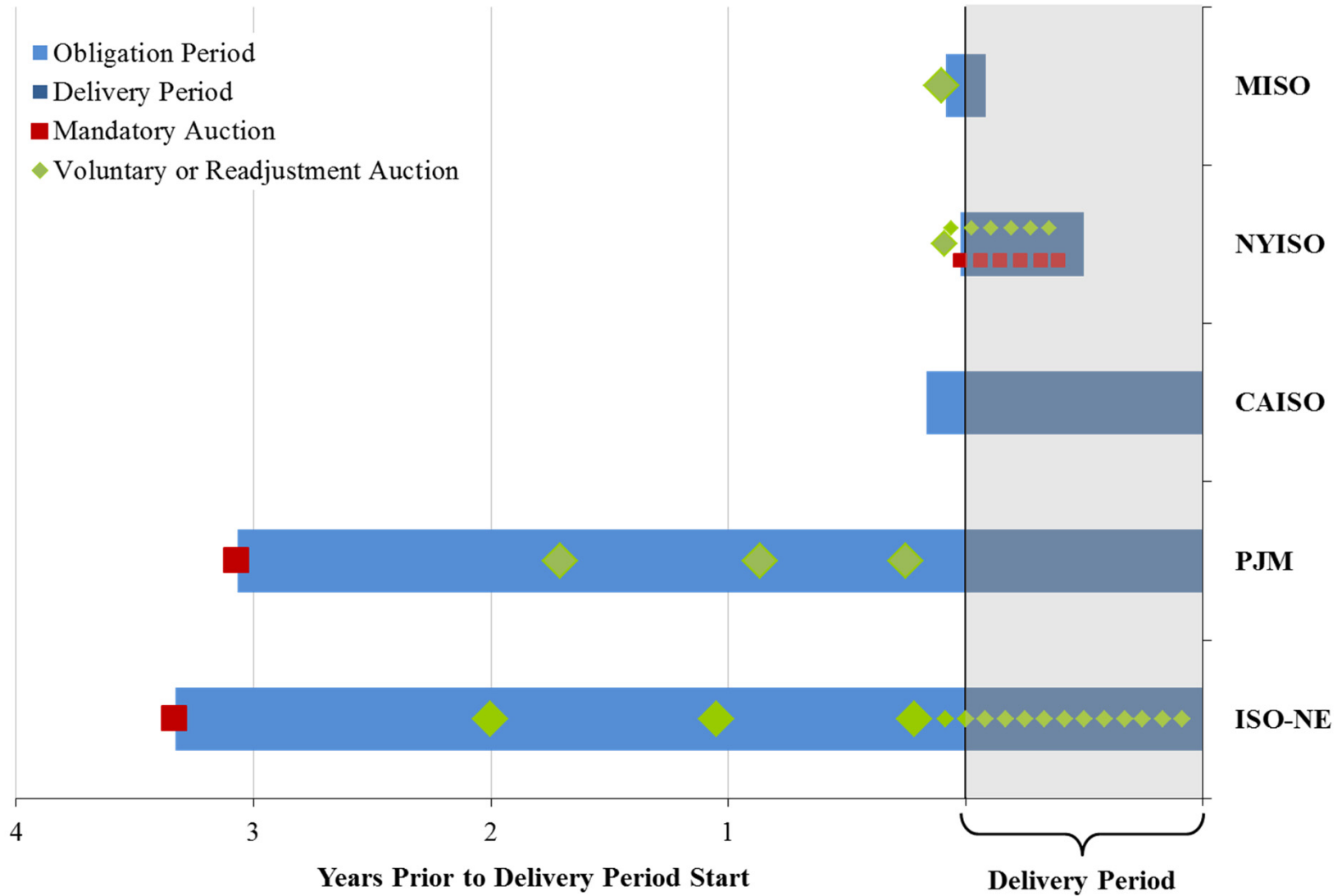
### Concern

- ◆ “Capacity prices are too high (or too low)”
- ◆ “Capacity markets have not attracted new generation”
- ◆ “Capacity markets cannot maintain reliability under environmental regulations”

### Reality

- ◆ Prices have been consistent with the fundamentals, mostly below Net CONE (reflecting surplus)
- ◆ ISO-NE exception, with price floor contributing to supply excess
- ◆ New generation has not been needed in most places, and cheaper alternatives have been available (DR, uprates, reinvestment)
- ◆ 4.8 GW of new gen added in RPM
- ◆ PJM and ISO-NE 2014/15 auctions cleared excesses despite NESHAP
- ◆ Some new safeguards needed (e.g. for co-located retirements)

# Forward Term of the Current Capacity Markets



# New Entry Price Lock-ins

- ◆ One frequently proposed option is to expand price lock-ins:
  - Guarantees the price from the initial auction where the new entrant first clears
  - Developers propose to expand the lock-in period to 7 or 10+ years
  - Incumbents propose to expand the lock-in for existing supply
- ◆ Substantial inefficiencies make the option unattractive, although select suppliers would benefit

### Advantages

- ◆ Possibly useful in limited circumstances, e.g. small subzones where one plant can crash the price

### Disadvantages

- ◆ Price distortion due to new gen bidding as if for a 7-10 year contract (other suppliers still bid for a 1-year contract)
- ◆ Price discrimination favors costlier new gen over cheaper alternatives can attract new gen when unneeded (e.g., right before transmission lines will eliminate need)

## Mandatory Forward Design Options

# Extending Forward Period or Delivery Period

- ◆ Other options involve moving the mandatory RTO procurement forward:
  - Forward procurement timeline extended from 3 years to 5+ years forward (but delivery period obligation kept at one year), or
  - Expanding delivery period of obligation to 3-10 years
- ◆ New Italian capacity market proposal will be a valuable example to watch (staggered 3-10 year contracts, 4+ years forward)

### Advantages

- ◆ Closer alignment with transmission planning
- ◆ Greater price certainty aids investment decisions
- ◆ Can be structured to (imperfectly) compensate for lack of portfolio procurement

### Disadvantages

- ◆ Higher load forecast and parameter uncertainty will cause higher error and greater costs (risk shifted to load)
- ◆ Higher supply risks disadvantage DR and aging generators
- ◆ Design flaws “baked in” for 10+ years
- ◆ RTOs or states less likely to develop optimal portfolio of long-term contracts than private load interests



## Voluntary Forward Design Options

# Voluntary Bilateral, Exchange-Traded, or Auction

- ◆ Voluntary forward options are valuable with relatively little downside:
  - **Bilateral:** create standard forward product (e.g. MISO forward PRC proposals)
  - **Exchange-Traded:** create exchange platform for forward capacity for continuous trading, w/ publicly posted prices, volumes, and bid-ask spread (e.g. gas futures)
  - **Voluntary Auction:** RTO conducts voluntary forward auctions for longer-term or farther-forward commitments (e.g. NYISO strip and monthly auctions)

### Advantages

---

- ◆ Greater forward liquidity; exchange trades not tied to RTO schedule
- ◆ Greater price visibility if not bilateral (even if only bid-ask spread)
- ◆ Standard product reduces transaction costs
- ◆ RTO credit requirements (enables more and smaller transactions)
- ◆ Market determines the amount of forward contracting that is useful

### Disadvantages

---

- ◆ Risk that nature of traded product could change over many years (e.g. who bears risk of new zones?)
- ◆ Likely that volumes on the scale of a large new plant will still be mostly bilateral
- ◆ Must not sidestep MOPR

# State Procurement and Default Service

## Concerns

- ◆ Short-term default service auctions may contribute to sub-optimal levels of long-term contracting
- ◆ RFPs for new generation distort market signals
  - Excluding DR and existing gen results in higher cost procurement
  - Price suppression strategies may work in the short-term, but market response and price convergence into larger competitive markets will mute longer term impact
  - Can leave customers stuck with above-market contracts for many years

## Workable Options

- ◆ Careful integrated resources planning for load obligation
- ◆ Revisions to default service provisions:
  - Assign a portion of the capacity procurement responsibility to a single LSE, utility, or retailer for longer durations (e.g., 10 years)
  - Reduce reliance on default service auctions in favor of traditional default service
- ◆ Non-discriminatory long-term RFPs (publicly posted price results)

# Take Aways

- ◆ Lack of forward contracting
  - Explained by fundamentals (some impact from state default service)
  - Forward contracting likely to increase as prices rise to Net CONE
- ◆ Does the RTO need to do long-term contracting?
  - Second-best alternative with considerable disadvantages
  - Only advisable if strong evidence of design shortcomings emerged (e.g. persistent capacity shortages despite prices above Net CONE)
  - Better to let market participants develop desired portfolio
- ◆ Voluntary forward options
  - Possibility of low volumes 3+ years out
  - Would be informative to have a variety of options (multi-year vs. single year, auctions vs. exchange)
  - Bid-ask spread can provide price visibility even w/ low volumes
  - Some design risks (e.g. changing capacity product, changing zones, MOPR sidestep)

# Additional Reading

- Pfeifenberger, Newell, Spees, Hajos, Madjarov, "Second Performance Assessment of PJM's Reliability Pricing Model: Market Results 2007/08 through 2014/15," August 26, 2011.
- Spees, Newell, Carlton, Zhou, Pfeifenberger, "Cost of New Entry Estimates for Combustion Turbine and Combined-Cycle Plants in PJM," August 24, 2011.
- Spees, Pfeifenberger. "Evaluation of Market Fundamentals and Challenges to Long-Term System Adequacy in Alberta's Electricity Market," April 2011.
- Newell, Spees, Hajos, "The Midwest ISO's Resource Adequacy Construct: An Evaluation of Market Design Elements," *The Brattle Group*, January 19, 2010.
- Hesmondalgh, Pfeifenberger, Robinson, "Resource Adequacy and Renewable Energy in Competitive Wholesale Electricity Markets," BIEE, September 2010.
- Pfeifenberger, Spees, "Best Practices in Resource Adequacy," PJM Long Term Capacity Issues Symposium, January 27, 2009.
- LaPlante, Chao, Newell, Celebi, Hajos, "Internal Market Monitoring Unit Review of the Forward Capacity Market Auction Results and Design Elements," ISO New England and *The Brattle Group*, June 5, 2009.
- Newell, Bhattacharyya, Madjarov, "Cost-Benefit Analysis of Replacing the NYISO's Existing ICAP Market with a Forward Capacity Market," *The Brattle Group*, June 15, 2009.
- Pfeifenberger, Spees, Schumacher, "A Comparison of PJM's RPM with Alternative Energy and Capacity Market Designs," *The Brattle Group*, September 2009.
- Pfeifenberger, Newell, Earle, Hajos, Geronimo, "Review of PJM's Reliability Pricing Model (RPM)," *The Brattle Group*, June 30, 2008.
- Reitzes, Pfeifenberger, Fox-Penner, Basheda, Garcia, Newell, Schumacher, "Review of PJM's Market Power Mitigation Practices in Comparison to Other Organized Electricity Markets," *The Brattle Group*, September 2007.

# Presenter Bio and Contact Information

Kathleen Spees is an associate of The Brattle Group with expertise in electric resource adequacy and capacity market design. Her project work for RTOs has included independent market design reviews and market design development related to resource adequacy in energy-only markets, capacity market design, and energy and capacity market seams. For market participants and regulators, she has developed market models for wholesale energy, capacity, and ancillary price projections; energy and ancillary dispatch; asset valuation; and coal fleet retirement risk analysis.

Kathleen earned a B.S. in Mechanical Engineering and Physics from Iowa State University. She earned an M.S. in Electrical and Computer Engineering and a Ph.D. in Engineering and Public Policy from Carnegie Mellon University.



## **Kathleen Spees**

*The Brattle Group*  
Cambridge Office

[Kathleen.Spees@brattle.com](mailto:Kathleen.Spees@brattle.com)

P: 1.617.234.5783

F: 1.617.864.1576