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NYISO ICAP 2015/2016 Demand Curve Reset

ICAP Working Group

October 19, 2015

2015/16 Demand Curve Reset ("DCR")

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TODAY:

- **Introductions – AG/Lummus team**
  - Analysis Group: Paul Hibbard, Dr. Todd Schatzki (& others)
  - Lummus Consultants: Debra Richert, Bill Frazier (& others)

- **Overview of DCR Process and Approach**
  - High level – phases/elements
  - Schedule & process

- **Initial scoping of key issues:**
  - Potential revisions to DCR periodicity
  - Potential enhancements to energy/ancillary services net revenue estimation

Analysis Group / Lummus Team

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Lummus Consultants Role

- Identify peaking units for each Locality and Rest of State ("ROS")
  - Tariff defines the peaking unit as the unit with the technology that results in the lowest fixed costs and highest variable costs among all other units' technology that are economically viable
- Establish construction cost and specifications of peaking units
  - Tariff requires that DCR assess the current localized levelized embedded cost of a peaking plant in each Locality, the ROS and any New Capacity Zone
  - Combined cycle technology will also be assessed for informational purposes

Analysis Group Role

- Estimate net energy and ancillary services ("EAS") revenues for peaking plants
  - Tariff specifies that net EAS be determined under conditions in which the available capacity is equal to the sum of the minimum Installed Capacity requirement and the peaking plant's capacity
- Develop cost of capital assumptions
- Perform demand curve modeling

DCR Phases

Phase I: Technology Choice and Construction Cost

- Identify peaking units for each Locality and ROS
- Establish cost and specifications of peaking units

Phase II: Estimation of Net Operating Revenues

- Determine methodology
- Estimate net EAS revenues for peaking plants

Phase III: Demand Curve Modeling

- Estimate (seasonal) net cost of new entry ("CONE") at tariff specified level of excess
- Assess slope, shape and zero crossing point of the ICAP Demand Curves

DCR – High-Level Schedule

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Evaluation of periodicity and any related modifications (including any potential tariff revisions), as well as initial DCR assumptions

- Q4 2015 - Q1 2016
- Targeting to seek Market Participant approval of any proposed tariff revisions related to DCR periodicity changes and related matters in March 2016

Initial development of demand curve model, data

- Q1/Q2 2016

Posting and review of draft report

- Initial draft targeted for June 2016
- Final report and NYISO staff draft recommendations targeted for August 2016
- NYISO final recommendations targeted for September 2016
- Submission of comments to NYISO Board of Directors ("BOD") by stakeholders and presentations to BOD of stakeholder positions targeted for October 2016
- Filing of demand curves approved by NYISO Board of Directors by November 30, 2016

DCR Relationship to Past DCRs

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Many aspects of the DCR will resemble past resets

- Overall approach to setting the DCR – the three phases
  - Technology choice/construction costs
  - Estimation of net operating revenues
  - Demand curve modeling
- Working with stakeholders through the ICAPWG to receive input on assumptions

The particulars of the approaches to be taken – methods and application – may differ from past approaches

- Still under review by AG, Lummus

Certain modifications to the approach could arise from new changes to the overall DCR framework (e.g., periodicity)

TODAY:

- Introductions – AG/Lummus team
- Overview of DCR Process and Approach
- **Initial scoping of key issues:**
  - Potential revisions to the DCR periodicity
  - Potential enhancements to net EAS revenue estimation (e.g., methodology and reflection of approved market rule changes, including Comprehensive Shortage Pricing and CTS with ISO-NE)

Interest in increasing the time period between DCRs

- Improve predictability of pricing and increased certainty/stability by establishing a Demand Curve framework that applies for a longer time period
- May free up resources to address other important market initiatives

Redesign could have implications for how the ICAP Demand Curve parameters are defined

- Considering change in frequency of DCR from 3 years to 4,5 or 6 years
- Potential updating of certain parameters in between full DCRs through formulaic adjustments and/or limited-scope “updates”
- Potential for changes in method for certain calculations and estimates (e.g., net EAS revenues)
- Potential effects on related processes (e.g., NCZ Study process)

DCR Periodicity & Updating Criteria

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Options for changing the periodicity of the DCR should be evaluated against a set of objectives & criteria. Examples could include:

- ***Accuracy*** – Parameters should continue to reflect "true" net CONE
- ***Predictability*** – Changes to ICAP Demand Curves from any formulaic adjustments or updating should aim for stability, and avoid introducing unpredictable price variation. For example:
  - Incremental price variation from any updating to ICAP Demand Curves (beyond what would emerge given normal market clearing) should be reasonable
- ***Flexibility*** – Net CONE and other parameter adjustments should reduce the need for more frequent DCRs and provide the ability to reflect intervening market changes
- ***Transparency and Simplicity*** – Process for adjustments between DCRs should be transparent, readily determinable and minimize use of administrative resources

Basic design issues/options

- ***Frequency*** – 4, 5 or 6 years between DCRs
- ***Approach to net EAS revenues*** (next slide)
- ***Automatic/formulaic adjustment options***
  - CONE – Potential adjustments for inflation, cyclical technology supply/demand, etc.
  - EAS prices – (next slide)
  - Adjustment mechanisms – formulas, caps, triggers, etc.
- ***Coordination with other processes*** – e.g., NCZ Study process currently conducted every three years

Various Approaches to EAS Net Revenue Estimates

Option	Basic Approach	Potential Adjustments
Historical Average Price / Margin	• Margins based on actual settlement revenues, estimated costs (for comparable units) (ISO-NE) • Margins based on estimated periods of operation (based on when prices exceed estimated variable costs) (PJM)	• Market conditions: adjust for differences in *historical* market conditions (i.e., past prices) and/or *expected* market conditions (e.g., forward prices) • "Level of Excess" resource levels: adjust net revenues to account for tariff-specified excess conditions
Econometric Analysis	• Similar to EAS approach in last reset process	• Permits adjustments for differences in actual versus expected market/load conditions, fuel prices and resource levels
Other Data Inputs, for Potential Adjustment		
Forward Prices	• Provides "market" assessment of future prices	• May capture differences between past and future prices
Production Cost Market Simulation (e.g., MAPS)	• Provides modeling assessment of future prices	• Known differences between modelled and actual prices • May capture differences in resource levels (tariff-specified "level of excess" v. historical excess level)

Several options to account for changes in shortage pricing:

- ***Historical prices***
  - Does not reflect new market rules, shortage pricing levels
- ***Detailed production cost market simulations***
  - Deterministic (e.g., GE MAPS) – ill-suited to capturing shortage pricing
  - Probabilistic – requires stakeholder review and consensus on detailed model parameters
- ***Direct Estimation of Incremental Shortage Pricing Revenues***
  - Use information on number of reserve shortage hours from planning models (i.e., GE MARS output)
  - Estimate incremental EAS revenues given incremental reserve shortage hours and shortage/scarcity pricing revenues
    - » Potential adjustments for market operations (e.g., day ahead commitment)