SMD2/RTS

Qualitative Review of RTS Price Impacts

Presentation to the

Market Structure Working Group

09/26/2003

Background

➢ **This project was designed to overcome the limitations of the NYISO's real-time legacy systems and to realize increased market efficiencies through improvements in real-time scheduling and dispatch.**

➢ **RTS is designed to increase liquidity in energy, reserves and regulation products and enhance system reliability by appropriately valuing all three products through a co-optimized solution that is consistent throughout the scheduling timeframes and reflective of system conditions from day-ahead through real-time.**

Background

➢ **Some participants have raised questions regarding the potential pricing impacts of moving to the RTS design.**

➢ **In the absence of the end-state software, price impact discussions are qualitative.**

Project Assessment - Review

➢ **The RTS design will improve market efficiency in:**

■ *Seams Improvement*

▶ Improve transaction opportunities between NYISO and its neighbors

■ *Market standardization*

■ *Price signals tied more closely to system conditions*

▶ To better provide long-run incentives for generation expansion and load responsiveness

➢ **In addition, the design will provide reductions in uplift.**

Project Assessment - Review

- **Uplift Analysis**
  - *Categories of uplift impacted include:*
    - Balancing NYISO BPCG & DAM Contract Balancing
  - *Uplift reductions result from:*
    - Price consistency between real-time scheduling and dispatch
    - Ancillary service scheduling
    - Reduced out-of-merit requests
    - ¼ hour scheduling and commitment of supply
    - Improved load forecast accuracy for Real-Time Scheduling.
  - *Annual reduction in uplift projected to be $16+M*

Market Efficiency & Uplift Improvements

➢ **All latent reserves are visible and available to the optimization programs for scheduling as energy or reserves**

- ▪ Eliminates artificial scarcity sometimes seen in hourly scheduling by BME today.
- ▪ Eliminates price inconsistencies between commitment and dispatch programs as both are operating with consistent energy, reserve and regulation constraints.
- ▪ Real-time availability bids are $0

➢ **Demand curves for Reserve and Regulation**

- ▪ Incorporates shortage cost into both the reserve and energy prices (both day-ahead and real-time).
- ▪ Except for an EDRP/SCR call, scarcity pricing is fully integrated into the pricing algorithms rather than administratively determined.
- ▪ Recognition of all latent reserves to ensure shortage conditions are valid.

Market Efficiency & Uplift Improvements

➢ **Clearing price for ancillary services more accurately reflects the true cost of acquiring these services**

- Eliminates separate Lost Opportunity Cost payments recovered as uplift via RS-1.

- Marginal LOCs incorporated into a published, and therefore more readily hedgeable clearing price.

➢ **Two settlement system for Ancillary Services**

- Loads **can** purchase full ancillary service requirement in the day-ahead market.

- Real-time balancing obligation lies with suppliers with a day-ahead schedule.

- Eliminates additional costs in today's market due to re-optimization or procurement of replacement services in real-time.

Market Efficiency & Uplift Improvements

➢ **Load forecast at ¼ hour increments**

  ▪ New more robust real-time load forecasting tool

  ▪ 15 minute versus hourly granularity allows greater refinement of forward load profile to better match scheduling and commitment of resources.

➢ **¼ hour commitment/de-commitment and scheduling of supply**

  ▪ 10 & 30 minute start resources are brought online closer to when they are actually needed.

  ▪ Minimizes delay in shutting down uneconomic resources that have run out their min-run times.

➢ **Real Time Market Power Mitigation**

  ▪ AMP style conduct and impact testing

Market Efficiency & Uplift Improvements

- **Units dispatched and responding consistent with pricing.**
  - RTD ability to re-optimize dispatch of energy, reserves and regulation every 5 minutes.

- **3-part bidding in real-time**
  - Start-Up, Min Gen Cost & Incremental Cost are part of RTD-CAM evaluation to commit fast-start resources.

- **Real-Time Demand Response for Reserves**
  - Potential to increase competition in reserve markets.
  - Provides a means for a load to be truly price responsive. Loads capable of responding to real-time prices would receive the reserve clearing price for the option to call on them and avoid high energy prices when actually dispatched.

Recent Historical BME Prices

➢ **May represent a reasonable upper bound for RTS real-time prices given that RTD, unlike SCD today will see explicit reserve and regulation constraints.**

NYISO Markets 2003 Energy Statistics

	January	February	March	April	May	June	July	August
DAY AHEAD LBMP								
Unweighted Price	$61.33	$72.81	$73.18	$51.58	$46.43	$51.45	$57.10	$63.43
Standard Deviation	$20.09	$21.12	$29.70	$12.47	$14.03	$21.27	$11.88	$17.67
Load Wtg.Price	$63.81	$75.03	$76.25	$53.14	$48.47	$55.52	$58.93	$66.16
BME * LBMP								
Unweighted Price	$63.19	$80.25	$74.27	$59.22	$50.27	$53.84	$59.99	$66.70
Standard Deviation	$25.43	$41.53	$32.77	$25.00	$16.37	$22.27	$14.82	$77.04
Load Wtg.Price	$65.54	$82.65	$77.33	$61.45	$52.31	$57.49	$61.94	$70.24
REAL TIME LBMP								
Unweighted Price	$61.53	$74.03	$70.54	$53.94	$46.74	$48.96	$55.94	$63.37
Standard Deviation	$30.16	$37.46	$37.97	$28.70	$23.03	$21.57	$13.68	$36.73
Load Wtg.Price	$64.43	$76.41	$74.02	$56.14	$49.44	$52.82	$57.79	$66.44
Average Daily Energy Sendout/Month GWh	458	450	418	393	382	432	497	498

Scarcity Pricing

➢ **Proposed Demand Curves target price levels consistent with today's scarcity pricing levels for 10 and 30 minute shortages.**

	NYCA	East	LI
Spin	$850	$1,400	$1,750
10-Total	$350	$875	$1,200
30-Total	$200	$225	$525

Recapping the Benefits

Market Features Incorporated	Market Efficiencies
▪ Robust Ancillary Service Markets ▪ Increased Control Area Interchange ▪ Greater Security and Flexibility ▪ Increased Capabilities for Demand Response	▪ Ancillary Service market pricing and settlement ▪ Improved in-day scheduling and dispatch ▪ Long-term incentives for generation expansion and load responsiveness
Market Leadership	**Solution Quality**
▪ Build upon strength of SCUC ▪ Compliance with FERC SMD ▪ Establish NYISO markets in an SMD leadership role	▪ Improvements in billing, metering and auditability ▪ Delivers software modification and enhancement flexibility

Recapping the Benefits

Operational Improvements	Reliability Enhancements
▪ ¼ hour unit and transaction scheduling (where possible) ▪ Forward looking unit ramping ▪ Reduced Out-of-Merit ▪ Improved GT management	▪ ¼ hour reliability assessments ▪ Consistent security analysis routines ▪ Minimize seams issues ▪ Reduce need for reserve pickups
Architecture	**Tools**
▪ Improved system reliability ▪ Integrated fail over and redundancy ▪ Simulator / Training Environment	▪ State Estimator ▪ Load Forecast ▪ Market power analysis study mode

Questions?