NEW YORK INDEPENDENT SYSTEM OPERATOR SM

SMD2/RTS

Qualitative Review of RTS Price Impacts

Presented to MSWG

10/14/2003

Background

- **The RTS development project was initiated out of a desire to overcome the limitations of the NYISO's real-time legacy systems.**
- **Major design objectives:**
  - Improved market system reliability.
  - Flexible platform to support future software modifications and enhancements.
  - Improved in-day scheduling and dispatch.
  - Incorporate market design enhancements and increased efficiency.
  - Uplift reductions.
  - Consistency with the FERC SMD Market standardization initiative.

Summary

- **Market design changes and enhancements that improve market efficiency and provide reductions in uplift include:**
  - More efficient scheduling of block loaded resources (Transactions & GTs)
  - Price consistency between real-time scheduling and dispatch through consistent models and constraints
  - More efficient ancillary service scheduling and pricing
  - Incorporation of scarcity pricing for consistent pricing of shortages
  - Reduced out-of-merit requests
  - Forward looking unit ramping and reduced need for reserve pickups
  - ¼ hour scheduling and commitment of supply
  - More frequent and improved load forecast tool
  - Capability to model price responsive loads.

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 because all dispatchable capacity is counted and available for scheduling.
  - Eliminates price inconsistencies between commitment and dispatch programs as both are operating with consistent energy, reserve and regulation constraints.
  - Real-time availability bids must be $0. Recognizes that units available to supply energy have a $0 cost to supply reserves.
- **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 versus the current system which can be short because available reserve capacity simply didn't bid into the market.

Market Efficiency & Uplift Improvements

- **Clearing price for ancillary services more accurately reflects the true cost of acquiring these services**
  - Eliminates separate Lost Opportunity Cost (LOC) payments uplifted via Rate Schedule 1.
  - Marginal LOCs incorporated into a published, and therefore more readily hedgeable clearing price.
- **Two settlement system for Ancillary Services**
  - Loads 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.
  - Creates additional incentive for suppliers to be available in real-time and to perform when called upon in a reserve activation.

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 test.

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 RTC and RTD-CAM evaluation to commit fast-start resources.
- **Real-Time Demand Response for Reserves**
  - RTS architecture supports modeling of loads for future participation in energy and reserve markets.
  - Ability to incorporate demand response has the potential to increase competition in real-time markets and to provide expanded opportunities for price responsive loads once a real-time program is fully implemented.