Virtual Regional Dispatch

May 29, 2003

Joint Meeting
of
ISO-NE Markets Committee
NYISO Market Structures Working Group

Meeting Agenda

- VRD Working Paper Presentation
- Discussion Q&A
- Summer 2003 Concept Development Process

VRD – The Problem

- Empirical evidence of inefficient interchange in Northeast markets
  - An efficient market would:
    - Maintain price consistency at an un-congested interface
    - When differences exist, energy should flow from low priced to higher priced areas
    - Market participants would act quickly to arbitrage large price differences
  - NYISO market advisors report for 2002 shows:
    - Price differences at un-congested interfaces that persist over long periods
    - Counterintuitive flows in both directions continue to occur with substantial frequency
    - Significant savings in both markets would be realized by eliminating the inefficiency

VRD – The Problem

- Analyses of transactions between New York and New England have indicated that the market prices in the two areas have not been well-arbitraged.
  - Net flows often run counter to the prices in the two regions.
  - Flows do not respond quickly to large price differences.
- While further market improvements such as scarcity pricing are anticipated over the next few years, these improvements will not fully address the underlying issues.
- Inefficient inter-regional arbitrage has had substantial economic impacts in some hours in New York and New England.

VRD – The Problem

- Factors limiting price convergence between real-time spot markets in the Northeast:
  1. Transmission and ramping constraints.
     - Primarily physical limitations
  2. Export restrictions and non-LMP pricing.
     - Corrected with SMD in ISO-NE
  3. Variations in shortage pricing across control areas.
     - Being addressed by separate initiatives in both markets
  4. Export charges.
     - Recommended for elimination, subject of on-going discussion
  5. Lags and forecasting error in adjusting interchange.
     - Specifically addressed by this VRD proposal
     - Like items 2, 3, and 4, subject to rules and process correction

VRD – The Problem

- Lags, forecast error, and risk avoidance – more specifically;
  - The scheduling process requires transactions to be scheduled more than 60 minutes prior to the hour – makes forecasting more difficult.
  - Participants currently face considerable financial risk transacting between the markets in real time.
    - Participants must pay the congestion charges to deliver power to the border in one market and away from the border in the adjacent market.
    - These congestion charges depend on the price at the border in each market.
    - If these prices diverge substantially (as they do in many hours due to price volatility or congestion), participants engaged in physical transactions will be subject to considerable risk.

VRD - Key Outcomes

- Retains two individual markets
- Eliminates the most fundamental seams issue - coordination of interchange - by effectively increasing the size of the whole cloth
- VRD will enable the ISO's to make substantial progress toward the efficiency of a single regional dispatch.
- Allows each market to achieve the goals of reliability and market efficiency

VRD – Proposed Solution

- We propose scheduling rule changes that would allow the ISO's to determine the real-time physical interchange between the markets;
  - Physical interchange would be optimized given the bids and offers of the suppliers and loads in each market.
  - The ISO's would not rely on external transactions to establish the level of physical flows across the border.

VRD – Proposed Solution

- Congestion revenue will be collected when prices differ – a transmission right (CRR) could be created to receive these revenues.
  - Prices will differ when the interface is constrained and also for short periods when conditions in one market or the other cause proxy prices to diverge until moderated by VRD adjustment.
  - The interface congestion revenue (or CRR auction revenue) would be distributed in a manner to be determined, possibly to help hold the TOs harmless.
- Although not absolutely necessary, we recommend eliminating the export fees.

VRD – Proposed Solution

- In the simplest approach, the coordinated real-time interchange process could occur as follows:
  - Prices at the border would be posted by each ISO (i.e., the "proxy bus").
  - Based on these prices, the interchange would automatically be adjusted in small increments from the lower priced to higher priced market every 5 to 15 minutes.
  - These adjustments would continue until the prices equalize or until the interface constraint is binding.
  - The adjustments would be incremental to the transactions scheduled by the participants in the day-ahead or prior to real-time

VRD – Proposed Solution

- A more sophisticated approach may be desirable, even initially
  - Prices at the border would be posted by each ISO (i.e., the "proxy bus").
  - Based on these prices, the interchange would automatically be adjusted to a specific level from the lower priced to higher priced market sufficient to level the prices at the proxy buses.
  - These adjustments would occur whenever the prices failed to equalize or until the interface constraint is binding.
  - The adjustments would be incremental to the transactions scheduled by the participants in the day-ahead or prior to real-time

VRD – Proposed Solution

- Settlements – a topic of interest to us all will be addressed in detail during the COO development.
  - An example is presented in the working paper and is available for discussion here.
  - Recommend we consider that example and other settlements discussion after we complete the main topics today if time permits.

VRD – Early Concerns

- Does VRD reduce participants ability to transact across the region? – ***No,***
  - The proposed changes should *improve* participant's ability to transact throughout the region for the following reasons;
    - VRD represents no change in the DAM process
    - Transactions will be increasingly financial in nature, rather than physical, making the transactions more flexible and risk-management easier.
    - To the extent that prices are rationalized between markets, the financial risk participants face will be reduced.
    - If CRRs are created for the interface, participants will have the ability to engage in completely hedged financial transactions throughout the Northeast.
    - Real-time transaction scheduling will be unencumbered by physical scheduling processes.

VRD – Early Concerns

- Does this mean the ISO's will be taking a position? - ***No.***
  - Allowing the ISO's to dispatch the seam is analogous to the ISO's dispatch of internal generation to manage flows on internal interfaces.
  - Coordinating the dispatch would be similar to and capture much of the benefit of a single dispatch in the Northeast.
  - The physical flow will be determined entirely by the load and generator bids in the two regions.
  - The scheduling changes would actually reduce the ISO's participation in the market.
    - The ISO's currently schedule imports and exports more than an hour prior to the market.
    - If these schedules turn out to be uneconomic, the ISO must pay the supplier its bid price, uplifting the costs of the additional purchase to loads.

VRD – Early Concerns

- Will these changes benefit both markets or just one? ***Both …***
  - There are a number of hours each year when one area is short of reserves while the other area experiences a surplus
  - Due to the limitations cited earlier, the market is unable to match the surplus in one area with the shortage in the other
  - The expected efficiencies that can be gained from the improved operation during some shortage conditions are expected to exceed any secondary pricing affects of higher exports during other periods

VRD – Key Issues

- The following items are key among the issues that remain to be resolved collaboratively between the ISOs and their Participants.
  - Economic Impact analysis
  - Day-ahead market settlements, and the relationship to real-time operation and settlements.
  - Allocation of congestion revenues.
  - Complete settlements logic of Participant Transactions and VRD Interchange, including operation of the VRD process during scarcity pricing conditions.
  - Operational details, including the detailed components of the interchange determination process.
  - VRD relationship to ICAP recall.

VRD Issues – Economic Analysis

- Economic Impact analysis of VRD approach – potential scope to be considered
  - Evaluate on a regional and individual market basis:
    - Cost savings
    - Impact to load
    - Scarcity and non-scarcity conditions
  - Evaluate effect of export fees on benefits
  - Focus on the period since SMD has been operational in ISO-NE

VRD Issues – DAM/RT Settlements

- Settlements analysis of DA and RT markets
  - Reconcile full range of settlement types
  - Identify applicable Market variations in settlements
    - Settlements resolution for 5 Minute (NY) and 1hr (NE) settlement period difference for instance
  - Select models for evaluation representing:
    - Both markets (possible different treatment)
    - Generation and Load
    - Virtual and real
    - Transactions - economic, price taking, import, exports wheels
    - Congestion rent
  - Ensure DAM participants are undamaged by VRD

VRD Issues – Congestion Hedges

- Formulate appropriate congestion hedging mechanisms for application to transactions across the interface, considering:
  - Options and/or obligations
  - DAM or real-time
  - Revenue distribution
  - Scarcity pricing considerations – if any
  - Full funding or not

VRD Issues – Transaction Settlements

- Complete settlements logic of Participant Transactions and VRD Interchange, including operation of the VRD process during scarcity pricing conditions.
  - Conforming current market settlement differences
    - 1 hour versus 5 minute, for instance
  - Pre-settlement checkout
    - Information exchange
  - Congestion accounts distribution rules, management & reconciliation
  - Full evaluation of transaction treatment from DAM scheduling through final settlement for all transaction variants.
    - Bilaterals, sales, purchases, wheels, curtailments, cancellations, etc.
  - VRD exchange settlement rules including scarcity conditions

VRD Issues – RT Operation Design

- Develop real-time operational details, including the components of the interchange determination process.
  - Methodology - incremental or deterministic
  - VRD level forecasting requirements and methods
    - Non VRD interface management
    - Internal hourly reliability/dispatch requirements
    - Other
  - Data exchange requirements
  - Data exchange methodology
  - Operator tools requirements
  - Emergency/abnormal operating considerations

VRD Issues – ICAP/VRD Relationship

- VRD relationship to ICAP.
  - Implications for recall
    - Internal market
    - External market
  - Deliverability issues
  - Considerations from on-going regional discussions

VRD – Q&A

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VRD – A Process Proposal

- Joint effort
  - NYISO and ISO-NE
  - ISO Staff and Market Participants

- Target Schedule –
  - COO - Late August
  - Economic impact analysis – late August
  - Implementation plan – mid September
  - ISO unique functional specifications – end of calendar year

- Meetings and working sessions
  - Full progress review meetings monthly (3)
  - Frequent open working sessions – Issue solutions development

VRD – A Process Proposal

- Meetings and working sessions
  - Full progress review meetings monthly
    - This is one
    - One each in late June, July, and August
  - More frequent open working sessions
    - Self selecting MP involvement
    - Initial working session within 2 weeks to produce detailed work plan
- Parallel issue resolution processes
  - Economic impact analysis
  - Use the list from working paper, add as needed
  - Will allow completion by target date