NAVIGANT CONSULTING

20 Madison Ave. Ext.
Albany, NY 12203
518.464.2700 phone
518.456.6008 fax

Memorandum

**To:** **Chuck King**

**From:** **David Clarke**

**Date:** **6/25/2003**

**Re:** **LIPA Perspective on VRD Issues**

**Comments of the Long Island Power Authority on Virtual Regional Dispatch**

**Summary**

The NYISO and ISO-NE requested market participant comments on the Virtual Regional Dispatch (VRD) strawman proposal. LIPA supports the comments submitted by the New York Transmission Owners. These additional comments of the Long Island Power Authority focus on the VRD functionality required to effectively relieve barriers to inter-ISO trade. VRD implementation must successfully allow economically efficient interchange over existing inter-ties and send economically efficient signals for the construction of new inter-tie capability. In order to achieve this goal VRD must improve the economically efficient interchange over existing inter-ties including the 1385 Cable.

Specific LIPA recommendations include the following:

- Include flexibility to accommodate multiple free floating and controllable interties on the same interface.
  - Allow sufficient dimensions in software specifications
  - Include provisions for selecting VRD flows on controllable and free-floating parts of an interface based on relative price divergences.
  - Avoid uplift increases by selecting and settling market participant transactions based on prices reflecting VRD flows.
- Make owners of intertie capability or their assignees financially indifferent to the ownership of power that is being transferred
  - Correctly recognize the location of congestion
  - Collect day-ahead and incremental real time congestion revenues for congestion across the interties separately
  - Allocate these revenues among owners of intertie capacity or their assignees.
  - Allocate congestion rights, not auction revenue rights
- Reduce and then share congestion liabilities arising from residual flows running counter the real-time price gradient.
  - Reduce these by selecting and settling market participant transactions based on prices reflecting VRD flows.

LIPA comments are organized as follows:

- What VRD could and should accomplish
- Functionality needed,
- The ability to accommodate multiple external areas,
- The ability to accommodate a separate VRD schedule for controllable and free floating inter-ties on the same interface,
- The timing of scheduling market participant transactions with respect to VRD flow selection and price setting,
- The allocation of congestion liabilities arising from residual flows running counter to the real-time price gradient,
- The manner in which congestion across the interface is hedged and the calculation and the allocation of congestion revenues,

**What VRD Could and Should Accomplish**

The ability to flow power over existing interties when it is economic to do so and when it does not violate reliable operation of the system has been seriously limited under the existing market structures. Although used frequently prior to the introductions of the NYISO and ISO-NE markets, the market structures adopted since inception have significantly impeded the use of the Northport/Norwalk Cable (1385). Use of 1385 has been blocked outright since the implementation of SMD in New England as no node or mechanism for scheduling transactions over 1385 is included in the ISO-NE post-SMD OASIS. Meanwhile, new operating procedures have been adopted to limit the normal flow on 1385 to zero, even in instances where non-zero flows would be economic and would not prevent the reliable operation of the system. Thus, current market rules create a barrier to the economic use of this inter-tie capability and to inter-ISO trade. The treatment of the 1385 cable by the ISOs is a classic market seams issue.

The ISOs have suggested that VRD will address the seams issues between NY and NE, but for VRD to address these fundamental seams issues, it must allow economic flows over existing inter-tie capability such as the 1385 cable, recognize these flows in the setting of locational prices, correctly calculate congestion, and allocate offsetting congestion revenues to the owners of the transmission that enables these flows. It is important to include this VRD functionality from the outset to avoid delaying the resolution of these fundamental seams issues.

**Functionality Needed**

Historic and future investment in intertie facilities is made to capture the value of moving power from an area where it has lower value to an area where it has higher value. To encourage transmission expansion, those making the investment (or their customers on behalf of whom the investment is being made) should reap the benefit of that investment.

As an owner of intertie capacity, LIPA would like to be able to buy and sell real time power over that transmission at a price that reflects the marginal value of power in the ISO from which it is buying power or to which it is selling power, sharing the difference in the value of that power at either end of the intertie among those owning the transmission or financial rights to the transmission. Alternatively, LIPA would like financial rights of an equivalent value. With appropriately designed

and appropriately allocated financial rights, LIPA could be indifferent to the 'ownership' of the power that was being transmitted across the 1385 cable.

Functionally, LIPA would like to be able to bid for real time power to be delivered over 1385 when the delivered cost was below the bid price. For example, LIPA might want to buy imported power at Northport when the delivered price dropped below $30, or export from Northport when the price delivered to New England exceeded $70. Flows would not need to be restricted to those selected from LIPA bids: the magnitude and direction of the flows selected could change based on other market participant bids or VRD schedules, although LIPA would settle based on its scheduled flows. The prices against which these bids are judged should be reflective of actual flows, such flows occurring over 1385 when they are economic and do not compromise reliability.

It appears that VRD holds promise for delivering this functionality, if it were implemented so as to calculate a separate economic schedule over free floating and controllable ties on the same interface, and if it provided an appropriate real time congestion hedge to owners of that intertie capacity.

**The Ability to Accommodate Multiple External Areas**

The capability to solve for contemporaneous VRD schedules over different interfaces to accommodate multiple external areas is also needed to support the contemporaneous solution of controllable and non-controllable inter-ties on the same interface. Care should be taken to sufficiently dimension this capability to accommodate the splitting of existing interfaces into controllable and free floating interties.

**The Ability to Accommodate a Separate VRD Schedule for Controllable and Free Floating Inter-ties on the Same Interface**

Although a negative interaction between flows on 1385 and interface capability upstate is much less likely with the operation of the Athens plant, total interface capability is likely to be limited. At a minimum, capability to judge the relative merits of VRD flows on the free-floating part of the interface against those on the controllable part of the interface should be included in the initial program specifications.

Consideration should be given to comparing the price differences between the free floating external busses with the price differences between the controllable busses and adjusting the relative VRD flows on each part of the interface until the price differential matches within some tolerance. For example, if the initial dispatch showed a higher price differential on the free floating external busses than on the controllable busses, it would schedule more flows there, reducing the relative price differential. While computationally more intensive, there is value in moving the power on the part of the interface where it is most economically efficient. Additionally, it would increase the range of conditions under which VRD will make an economic contribution, and could add flexibility to address persistent seams issues such as the inability to schedule on intertie capacity such as 1385.

**The Timing of Scheduling Market Participant Transactions with Respect to VRD Flow Selection and Price Setting**

Early ISO thinking on implementing a separate VRD for controllable lines on an interface comprised of controllable and free floating lines, suggested that VRD would only be appropriate if market participants could submit transactions separately for each part of the interface. The reasoning was that if VRD adjusted the relative flows over different parts of the interface, the assumptions under which market participant transactions were selected would no longer apply, creating uplift. LIPA

believes that this is a concern that arises if the pricing used to select market participant transactions is determined prior to the solution for VRD flows and prices and does not depend on whether market participants can submit transactions separately for the controlled and uncontrolled parts of the interface.

Under RTS the RTC software, in order to anticipate VRD flows, would need to make an estimate of the VRD flows, and thus would override market participant transactions. If market participant transactions were settled based on the prices upon which they were selected in RTC, any deviation between the actual and projected VRD would cause an uplift, whether market participants could schedule over both parts of the interface or not. If market participant transactions were selected and settled based on prices reflecting VRD flows, i.e. after the fact, then changes in the relative flows on different parts of the interface would be consistent with the pricing of market participant transactions.

Since separate VRD scheduling on the controllable parts of the interface is important to include in the initial design, LIPA strongly supports the ISOs re-thinking those features that prevent separate scheduling on controllable and free-floating parts of the interface. Specifically, although LIPA sees the necessity for market participant transactions to be bid prior to the setting of prices (i.e. transactions should not be allowed to be bid up to 24-hours ex-post as is the current practice for internal transactions in New England), LIPA supports allowing market participant transactions, especially those that are price sensitive, to be selected based on prices that reflect VRD flows. As such, LIPA supports delaying the checkout and settlement of market participant transactions until after VRD prices are determined.

**The Allocation of Congestion Liabilities Arising from Residual Flows Running Counter to the Real-Time Price Gradient**

The ISOs raised the issue of how congestion liabilities arising from residual flows that run counter to the VRD price gradient should be allocated. The first charge is to reduce the liabilities as much as possible and an important step is to schedule market participant transactions based on the prices determined in the VRD dispatch. This would suggest that the VRD dispatch should be designed to occur on the same frequency as the real time market solves for prices, both to reduce the lag between the setting and actualizing of VRD flows, and to align the forward period for which prices are calculated and VRD flows are selected to the upcoming 5-minute period. Any remaining differences should be allocated to those benefiting.

**The Manner in which Congestion Across the Interface is Calculated, Hedged and in which Congestion Revenues are Allocated**

Being able to bid for power from a transaction at a delivered price, or its financial equivalent requires owners of intertie capability to be hedged against paying any day-ahead or real time congestion on power that flows over their interties. The right to collect congestion, both day-ahead and real time regardless of the direction of the powerflow would be an equivalent financial right that would leave the owners indifferent to whether their power or the power of another market participant flowed on the interties.

Thus VRD, were it to allow a separate schedule over 1385, and allocate real time congestion to those owning the intertie (or their assignees), could go a long way toward resolving the market structure features that prevent the economic use of controllable intertie capability. Allocating day-ahead and real time congestion revenue rights to the owners of intertie capability (or their assignees) can also

provide appropriate price signals for those considering expanding intertie capability and appropriately balanced revenue and cost consequences for their customers.

For the real time congestion revenue rights to work, the location of congestion needs to be correctly recognized. Where multiple parties are bidding to use limited radial transmission resources and the transactions are selected over constrained transmission based on price, LMP requires price divergence on either end of the fully utilized facility. Likewise, where an interface is further constrained by security constraints, price divergence will occur for either side of the interface. Moving the recognition of congestion to prices on the upstream side of a constraint prevents market participants who are awarded congestion revenue rights across the constraint from hedging their transactions, and removes both the incentives for new construction and the functionality needed to assure the economic use of the line, or the owners indifference to whether they or another market participant owns the power flowing over their interties.

Finally, an auction revenue right is not the financial equivalent to a congestion revenue right. It is also difficult to imagine integrating real time congestion revenue rights into the auction of day-ahead rights. Thus, a separate auction would be required anyway. It is better to allocate the real time congestion revenue right to the owners or their assignees and let them hold them or sell them on a bilateral basis as needed.