



Harvard Kennedy School Energy Policy Seminar Series, Fall 2015

Financial Trading in Electricity Markets

Monday, October 5, 2015

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“Power trading in regions covered by organized markets is inherently financial,” Goldman Sachs Vice President Harry Singh explained on Monday, speaking about the role of financial trading in organized wholesale electricity markets, which rely on transactions like day-ahead electricity bids and offers to dispatch generation and set prices, along with financial transmission rights and other price hedging products that allow generators and consumers a measure of price predictability. Within this context, virtual bidding—offers in the day ahead market to buy or sell electricity fulfilled through purchases and sales in the real-time electricity market rather than through the actual generation or consumption of electricity—can play a useful role, Singh argued.

Virtual bidders can help to promote more realistic day ahead electricity market prices by bidding to raise prices if they are unreasonably low, or lower them if they are unreasonably high—a situation that could emerge either due to the deliberate exercise of market power by generators or distributors or through other market anomalies, such as challenges faced by wind power producers relative to selling power in the day-ahead market. Virtual bidding can also serve as a risk management tool to help hedge price risks between day ahead and real time markets.

At the same time, Singh acknowledged, virtual trading poses certain challenges to markets, arising from the fact that the day ahead market in which virtual bidding takes place determines how system operators schedule the physical dispatch of the electricity system on the following day. For example, because system operators are well aware that virtual bidders may offer to sell energy that in fact will not be generated, they may be required to go outside the market for reliability unit commitments to ensure an adequate supply of electricity on the following day—incurring additional system costs that may not be incorporated into prices and are recovered as a separate “uplift.” In addition, Singh acknowledged, there can be instances where virtual trading may result in less realistic day-ahead prices, raising concerns about attempts to influence the profitability of financial transmission rights—though Singh noted that there are safeguards to address such concerns, and FERC pursues aggressive enforcement efforts to discourage such practices.

Singh emphasized the relationship between good market design and the ability of financial trading to benefit markets, acknowledging that poor market design can create situations in which financial traders can benefit at the expense of the market as a whole. However, Singh’s talk went on to focus on ways in which traders themselves are dependent on good market design for their activities, including being able to design effective risk management products for generators and distributors, giving as an example recent difficulties with Financial Transmission Rights in the PJM market.

Financial Transmission Rights (FTRs), Singh explained, are used to protect against financial risks associated with grid congestion—for an entity with energy to sell or buy, owning financial transmission rights offers protection against price spikes associated with grid congestion, which can arise unpredictably if a line or generator suddenly goes out of service. Furthermore, new financial transmission rights can provide financial rewards for funding grid infrastructure improvements.

Within the Regional Transmission Organization PJM in recent years, however, a disagreement about the exact definition of Financial Transmission Rights has resulted, until very recently, in not enough revenue being collected to pay the holders of such rights and fully protect generators and consumers from congestion prices, Singh explained. Like holders of underfunded insurance policies, underfunded Financial Transmission Right holders can find themselves losing money in a crisis and exposed to price risks they expected to hedge. Often, the amount of money at stake is relatively small—but extreme weather events, such as the polar vortex, can have big impacts—for financial traders as well as for generators and consumers. Singh described a lengthy process involving the System Operator, the Independent Market

Monitor, FERC, utilities, and financial traders, trying to reach a common understanding of the problem and to address it—resulting in changes to PJM policies such that PJM FTRs are now fully funded—although underlying issues with the definition of FTRs remain, Singh noted.

Singh spoke as part of the Kennedy School's Energy Policy Seminar Series, which is jointly sponsored by the Energy Technology Innovation Policy research group of the Belfer Center and by the Consortium for Energy Policy Research of the Mossavar-Rahmani Center on Business and Government.