

Let Customers Fix Electricity Markets

By Michael Rosenzweig, Sarah Voll, and Hamish Fraser

The summer blackout in the northeast U.S. has once again focused the nation's attention on the electricity system, this time on the disruption of the physical transmission grid. In the earlier California crisis, it was the market that failed. Last year, the Federal Energy Regulatory Commission (FERC) proposed a Standard Market Design that aims to address both weaknesses, a proposal that has been stalled by jurisdictional and regional squabbling.

If utility managers in the regions with competitive electricity markets do not take the initiative to make sure electricity markets work, they run the risk that their markets will be re-regulated, as was done in California. Electricity markets can work if the right public policy decisions are made. A crucial step is to allow *demand* response to influence prices.

FERC's ultimate goal is to have structurally competitive and efficient markets that are immune to price manipulation by participants. However, especially since the California crisis, FERC is very sensitive to price volatility, which it largely blames on the lack of price-responsive demand. So FERC incorporated into its design a burdensome administrative structure to ensure that suppliers cannot manipulate the market. By focusing solely on artificially constraining behavior on the supply side, FERC ignores mechanisms to create demand responsiveness. These supply-side measures risk interfering with the normal corrective process for tight supply, which is the investment in additional capacity.

Price spikes occur when suppliers can manipulate price because reserves are scarce and customers cannot respond to price increases by reducing their consumption.

FERC's first line of defense against these spikes is a cap on how high bids can be, followed by a voluntary "automatic mitigation procedure," which is a mechanism intended to respond to potential abuses of market power by imposing even tighter limits on electricity prices when suspicious trigger conditions arise. FERC recognizes that spot market prices subject to such measures may not produce an adequate level of investment in the long term. To deal with this deficiency, FERC then imposes an obligation on sellers of electricity to ensure that they control enough generating capacity to meet their peak load.

Instead of this complex structure of regulatory oversight, FERC could address the fundamental problem—the inability of the demand side of the market to respond to price—more directly

When supply is tight, certain large customers can reduce their demand and thus constrain price spikes.

through a solution we call a Demand Response Mechanism, or DRM. The underlying relationship between the volatility of the market price and the supply/demand margin implies that there is a quantity of demand response that will dampen upward price pressure by enough to counter any withholding of generation capacity. The few real-world examples that have been observed indicate that when supply is scarce relative to demand, a reduction in demand of 2% to 5% could reduce prices by half or more. Participants in the DRM would be a set of the largest customers with enough demand to provide the required amount of demand response.

These customers are capable of reducing demand by either switching energy sources, cancelling shifts, or closing parts of plants. They can also choose to shut down if they can make more money "selling" their elec-

tricity rather than consuming it. In the Pacific Northwest during the high price period in 2000-2001, aluminum companies shut down completely and got paid for not using the electricity they normally would have consumed.

Such a DRM, which would operate under the purview of the transmission system operator, would provide customers with a way to react to high prices without discouraging the corrective investment in additional capacity. The DRM could have the following design characteristics:

- It applies to a minimum number of the largest consumers.
- It would be triggered only under predetermined conditions of supply scarcity.
- Participants would be entitled to purchase a baseline quantity of energy through a special financial contract.
- Consumption in excess of the baseline would be charged market prices.
- Customers could offer to consume less than their baseline amount, in which case they would sell back the difference at market prices.

Current FERC proposals display surprisingly little confidence in the market forces at

the core of power sector reform. Though it acknowledges demand side inelasticity as a primary culprit in observed market failures, FERC addresses these failures by resorting to a clumsy, non-market administrative edifice. It's giving up too easily on the demand side.

A DRM could harness market forces that will protect customers in the short term while supporting FERC's own goal of developing structurally competitive markets by allowing suppliers to earn adequate (but efficient) returns on investment. With the Standard Market Design process stalling, utilities now have the chance to help develop good public policy that incorporates a demand-side solution. Problems of excessive price volatility need to be solved if their markets are to survive.

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