



Harvard Electricity Policy Group Uplift Downside

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- **No. 1** terminal player in LNG in the United States, serving natural gas, power, and industrial needs in New England for more than 40 years
- **Approximately 13,000 MW** of electricity generation from power, cogeneration, steam, and chilled water facilities; **6.5 million** lbs/hr of steam; **39,000 tons/hr** of chilled water
- **30** wind, hydro, solar and biomass/biogas operating facilities with a generation capacity of **863 MW**
- **Among the largest** industrial retail electricity suppliers in the United States, serving approximately **80,000 accounts** in 12 markets
- In Mexico, **No. 2** private gas transportation (pipeline) and LDC operator, with **3** cogeneration plants, and **6** natural gas distribution companies and serving nearly **400,000 customers**

- **Protecting Oneself**
- **Clearing Price v. Uplift**
- **Blowouts/Confidence in the Market**
- **Allocation**
- **Fundamental Market Structure**

■ Pricing customer products

- Transparent market signals and liquid third party hedging opportunities are essential.
- Many customer (particularly mass market customers) desire risk managed fixed rate products.

■ Risk management

- Expensive, unpredictable and volatile uplift threaten retail business models that are not an integrated asset play.
- Uplift might be unavoidable as ISOs/RTOs rely on unit flexibility to support reliability

■ **Transparent costs should lead to hedgeable costs but higher clearing prices can trigger heightened uplift.**

- **Reflecting costs in clearing prices does not necessarily lead to hedging opportunities**
 - PJM market based ancillary services (spinning reserves, regulation, day ahead reserves) have clearing prices
 - Theoretical ability for a buyer and seller to arrange a fixed for floating swap
 - Based on historical clears and view of forward prices
 - Lack of players limits trading and impedes ability of seller to lay off risk
 - Energy and capacity are the primary costs for load serving entities and revenues for generators so natural place to focus
 - A tail event like January 2014 extreme price spikes reduces trading even more
 - Bid/Ask spreads get wider not tighter
 - Still buying interest at historical levels + reasonable premium but sellers have readjusted to higher clears

- **Self Supply of Ancillaries – probably unrealistic**
 - Utility Workers Union of America Petition for Declaratory Ruling – PA PUC

- **Better to have clearing prices**
 - Transparent and indicative of future pricing of customer products

- **Costs accurately and fairly allocated?**
 - No confident explanation of cause
 - Adjustments, immaterial or not, are disconcerting

- **2014 Real Time “Balancing” Operating Reserves blowout**
 - Large swing in BOR costs between Mid Atlantic and Midwest portfolios.

- **2013 Reactive Service Price Spike**
 - Zonal allocation
 - Temporary or new normal?
 - Advice to watch for planned outages
 - Yet PJM cannot model RT voltage problems in DA
 - Frequently Mitigated Units adders?
 - Retirements leading to more expensive units providing voltage control
 - December 24th day of magic
 - “flexible unit” dispatch approach
 - Reactive charges practically disappear

■ Cost Causation

- Reliability related Balancing Operating Reserve costs allocated to all MWs accounted for two thirds or approximately \$380+ million in January 2014
 - Cannot be avoided by Load Serving Entities
- Deviations accounted for the remaining \$170+ million
 - Can be managed by accurate forecasting and scheduling

■ Customer v. Load Serving Entity

- The ire of the press and regulators has fallen squarely on load serving entities
 - Regulatory and legislative reviews of retail energy markets
 - Limitations on certain marketing practices and product offerings for residential and small commercial customers.

- **Conservative grid operations, historical generator forced outage rates, inadequate gas infrastructure, transmission constraints**
- **What is the price of reliability?**
- **Do we have the right mix of generator capability?**
- **Do we have the right incentives for generators to be available during critical grid needs?**
- **Perfect Dispatch**
 - Combustion turbine dispatch to meet load at the right time is very different than measuring optimal and least cost to the market.
- **Central Station + Gas and Electric Transmission**
 - Distributed Energy Resources?
- **Be less conservative**
- **Operator Training**

- **Reflecting wholesale costs in market clearing prices is a laudable goal because transparency, predictability, and hedgeability are essential to the ability of load serving entities to offer risk managed products and services to retail customers. However, as I see it, if reliability is priceless, then clearing prices are not the magic bullet nor uplift avoidable.**