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
Uplift Downside

- 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.
Clearing Price v. Uplift – Theory v. Reality

- 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
Blowouts/ Confidence in the Market

- **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
Allocation

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.
Fundamental Market Structure

- 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.