Coupling Demand-Side and ISO/RTO Services -- Not With This Market...

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Presentation to Harvard Electricity Policy Group
AGENDA

1. Demand Response in Context
2. Markets are Not Workably Competitive
3. All Who are Willing to Buy and Sell are Able To Do So?
4. LMP Prices are Second Best
5. Deferred Electricity Costs – What Connection to Markets or Rates?
6. Retail Regulation & Rates: Perennial “Fog” or Future Customer Opportunity?
7. Further Regulate Market Rates?
8. Market Failure or Real Market Reform?
Demand Response (DR) “can be thought of as a composite option, or a derivative product” (H.P. Chao), to satisfy scheduled and bid services.

Dispatchable DR can be both capacity (ex ante) and when exercised energy (ex post).

Voluntary and dispatchable DR – results in major price impacts.

How to integrate DR into ISO/RTO markets?
How to integrate DR into markets period?
2: Markets are Not Workably Competitive

• Ancillary services costs do not reflect cost-causation, (per forced outages or frequency variations) – costs are socialized

• Major market distortion is price caps => mutes scarcity prices

• Capacity markets suppress energy market prices (with added average priced supply from PJM RPM & ISONE FCN)

• Day-ahead market => reduces customer response to contingencies (compare Australia market)

• Combined effects, including segmentation, reduce customer response (price elasticity of demand and dispatchable DR)
3: All Who Are Willing to Buy and to Sell Are Able to Do So? – This is Not Happening

• When participation is limited, the market is incomplete, suboptimal, and inefficient

• Customers cannot be “price takers” – prices are not visible

• Need a more economically efficient market mechanism – to maximize producer and consumer surplus – double-auction
  -- All possible customers and producers submit both bid and ask prices
  -- Clearing prices result from intersecting demand-supply
  -- The double auction allows customers to provide DR at the same market clearing prices as supply
4: LMP Prices Are Second-Best

- Customers face a confounding set of ISO/RTO prices for energy & capacity, plus market distortions => second best
- Production and consumption do not directly compete; DR and customer price elasticity are severely limited, which prevents contestability – some like it this way
- LMPs are the just short-run energy part of the market

LMP markets seem far short of second best
5: Deferred Electricity Costs -- What Connection to Markets or Rates?
6: Retail Regulation & Rates: Perennial “Fog” or Future Customer Opportunity?

• The “fog” of retail revenue allocation and rate design -- fuel cost adjustment, decoupling, revenue-requirements...

• Equal-percentage-marginal-cost (EPMC) revenue allocation & rate design (only in CA) – better?

• “Two-part tariffs” to enable customers to respond to marginal signals – which signals to use, short-run or long-run?

Use periodic customer incentives in lieu of retail prices for dispatchable DR – “decouples” from reliance on retail prices
7: Further Regulation of Market Rates?

- A case of generator choice in wholesale markets
  - Theory says bid incremental costs => efficient market
  - Practice is calculate “spark-spread” option (value) and if “in-the-money” execute (generate/burn fuel or buy/sell)

- What are the rate implications of this practice?
  - Choice to locally generate and burn gas – contributes to fixed/variable revenues of both electric & gas transmission
  - Choice to buy non-local power and sell gas – lowers contribution to local fixed/variable revenues

- Extend regulation behind the meter to these matters?
  Further regulate market rates? Not advised
8: Market Failure or Real Market Reform?

• Workable competition between generators and customers does not exist; major market distortions must be removed
• All Who Are Willing to Buy and to Sell Are NOT Able to Do So
• Markets are suboptimal and inefficient; a double auction is needed to allow all to submit both bid and ask prices
• LMPs are second best, at best; contestability is absent
• Deferred electricity costs not reflected – lack market signals
• Perennial “fog” of retail regulation and rates; use periodic customer incentives in lieu of retail rates
• Market failure; demand-side is muted, not monetized

Waiting for real market reform and smart-grid automation
Questions and Comments

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