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FEDERAL ENERGY REGULATORY COMMISSION

Price Formation in Energy and Ancillary Services Markets Operated by Regional Transmission Organizations and Independent System Operators
Docket No. AD14-14-000

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Panel 4: Impacts of Offer Price Caps and Market Power Mitigation

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BACKGROUND

- Accurate cost-based offers are essential for Market Power Mitigation.
- In PJM, utilize the Three Pivotal Supplier Test. This is a structural test; does not examine competitiveness of offers.
- Thus it is critically important that prices formed in LMP from cost-based offers are accurate.
- LMP is based on data input into the dispatch model.
- For good LMPs, need both good data and good models.
- Input data comes from Manual 15, Cost Development Guidelines:
  - 24th revision; Over 100 Pages; References 11 other PJM documents.
  - Building costs from "bottom up" necessarily based on formulae, approximations, estimates and scaling factors.
  - Complicated, but necessary approach.
  - But how good is the methodology?

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BACKGROUND

- **LMP Models:**
  - Day Ahead and Real Time LMP based on thermal model.
  - Requires work around for non-thermal constraints (voltage limitations) and these are ad hoc and absent documentation.
    - Fall 2012 reactive issues.
    - "Closed Loop Interfaces".
  - Last January's experience raises concerns that the models are not capturing all physical constraints (units bid in DA not cleared, yet committed by PJM).
- **Result:**
  - Estimated data input to a model that may not be accurate during constrained operations.
  - Raises concerns about the veracity of cost-based LMP. Is it about "actual" cost?
  - Perhaps "good enough" during non-constrained times with relatively low fuel prices given single clearing price, security constrained economic dispatch.
  - Did not assure recovery of actual costs during polar vortex with extremely high natural gas prices.

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Does the $1,000/MWh offer cap permit resources to reflect their costs fully in supply bids?

- It is well known that actual costs exceeded the cap and that PJM sought two waivers to address this situation. The first waiver granted January 24, 2014 provided for actual costs above $1000/MWH to be recovered via uplift after actual documented costs were reviewed by PJM and the IMM. This was to effectuate immediate relief until the Commission could decide whether to grant the second waiver which would allow costs exceeding $1000/MWH to set LMP. The Commission granted this second waiver on February 11, 2014.

- On March 26, 2014, PJM's IMM reported to the Commission that of the $583,774 of relief requested for the first waiver issued in Docket No. ER14-1144, only $9,118.43 was granted. And no LMP exceeded $1000/MWH during the effective period of the second waiver granted by the Commission in Docket No. ER14-1145.

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- **Lessons learned from this past winter are as follows:**
  - Actual costs of operation can exceed $1000/MWH.
  - Price formation in LMP is based on approximations and estimates and run on a model that does not recognize all relevant dispatch constraints.
  - The way PJM and the IMM implemented the first waiver did not allow recovery of actual costs based on an actual fuel bill, start-up and no load costs.
- **ODEC is of the opinion an offer cap is still relevant:**
  - Regardless of its age or lack of empirical veracity, typical gas fuel costs applied to a more modern fleet (i.e. better performing) should still be much less than $1000/MWH.
  - The existence of a cap provides a stop loss mechanism to load that is paying energy prices generated by an inaccurate model using approximate input data.
  - A cap is needed as the three pivotal supplier test is only structural and provides discipline for resources to get the input data right.
  - The offer cap also serves to curb overly exuberant fuel suppliers. Only after the cap was lifted last year did gas prices soar to offer cap busting levels.

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- The offer cap was exceeded and should thus be re-evaluated. A new cap could be appropriately set based upon information in PJM or the IMM's possession that provides a good empirical basis for a new cap.

- ODEC has gathered gas pricing information over three years over a number of the relevant pricing hubs in PJM. Over the last three years, gas exceeded $90/MMBtu on eleven days (1% of the days). The price exceeded $100/MMBtu five days with the top price at $140/MMBtu (0.4% of the days). So perhaps $1400/MWH would be a reasonable new cap?

- PJM has a very real and immediate problem to address this winter to avoid having to seek waivers again should fuel prices drive LMP above $1000/MWH. The PJM stakeholders have not yet been able to agree on a meaningful compromise to address this issue. ODEC believes a workable solution would be to set a new empirically based cap and provide for an *ex post* review of any demonstrable actual costs if the cap is exceeded. Paying less than 2% of the costs applied for last January makes it difficult for the load community to have much confidence in the cost development aspect of LMP price formation.

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Does the $1,000/MWh offer cap permit resources to reflect their costs fully in supply bids?

- PJM seems to have all of the relevant costs, including opportunity costs, included in the marginal cost estimates that underlie market power mitigation provisions.
  - But it is questionable how accurate these costs are. Gas costs are not known by day-ahead offer deadline.
  - Price formation accuracy is further diminished when the models do not reflect all relevant constraints.
- Section 12 of manual 15 addresses opportunity costs of which there are energy market and non-regulatory opportunity costs. The non-regulatory costs are for either physical limitations of a unit or a fuel supply issue due to force majeure.
  - Subject to over two years of debate in the PJM stakeholder process.
  - Has same problems as other aspects of cost development process: Moves Outliers Forward; Based on Market Data; Complicated.

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Do RTO/ISO offer rules permit resources to reflect changes in resource supply costs that occur between day-ahead and real-time and across hours in real-time?

- Not sufficiently. Gas electric mismatch; need ability to change bids as prices change and add intraday schedules.
- Rules do not cover net cost of unburnt gas for cancelled or shortened dispatches compared to original commitment.
- PJM Stakeholder process currently evaluating:
  - Via multiple schedules (up to 72), provide mechanism for updating intra-day cost schedules for units not committed day-ahead.
  - Fuel policies for intra-day offers.
  - Long lead time unit > 14 hours will be committed day-ahead at time of commitment with then current cost-based offer.
- These changes will help, but still need resolution of gas/electric issues and, hopefully, alignment of gas/electric day.

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What is the role that offer caps and market power mitigation procedures play in ensuring just and reasonable rates?

What is the extent to which offers capped at some value (like the current $1000/MWh cap) play a meaningful role in consumer protection?

- Offer caps and market power mitigation are essential features of the energy market, especially when there are operational constraints during periods of relatively high fuel prices.
  - Forces discipline in developing cost-based offers.
  - Tempers fuel provider exuberance during emergency conditions.
- PJM's Three Pivotal Supplier test is a structural test only; does not examine competitiveness of offers. This makes it even more important to assure cost-based offers are as accurate as possible.
- But even the most rigorous cost development regime is still just an amalgamation of well developed estimates. An offer cap is still required for discipline and consumer confidence.
- An offer cap also provides a benchmark and limiting influence for entities to price call options and fixed price forwards. Profit maximizing firms have a fiduciary obligation to price to this level. Absent an offer cap, prices could increase indefinitely.