

Reserve Market Enhancements Proposed Component 7: Shortage Pricing “Circuit Breaker”

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views expressed are my own and not necessarily those of any client.*

Shortage Pricing “Circuit Breaker”: Motivation

If shortage pricing overheats, it could quickly burn up the stakeholder and policymaker support for PJM-administered wholesale markets.

Shortage Pricing: Potential Unintended Outcomes

Shortage pricing can lead to unintended and very costly outcomes, likely involving one or more of the following causes:

- Substantial loss of generation, transmission, and/or fuel supply due to extreme weather, terrorist act, regulatory/judicial act, or other cause;
- Market design flaws or shortcomings;
- Market participant conduct.

PJM's proposed ORDCs could lead to billion dollar days, or far more, with little or no reserve shortage (100,000 MW x \$2,000/MWh x 5 hours = \$1 billion) and such outcomes could continue for days or weeks

Rationale For Administrative Shortage Pricing (ORDCs)

- The rationale for wholesale electricity markets assumes the markets will be workably competitive;
- The rationale for administrative shortage pricing further assumes:
 - a demand curve based on marginal (customer) reliability value
 - market outcomes that accurately reflect supply availability and prices

These assumptions may not hold due to some combination of external circumstances and/or market design flaws.

Unintended Outcomes: Existing PJM Authority

PJM Tariff Section 9.2, Rights of the Transmission Provider:

- (a) PJM shall have the exclusive and unilateral right to file pursuant to Section 205 of the Federal Power Act...
- (b) PJM shall consult with the Transmission Owners and the PJM Members Committee beginning no less than seven (7) days in advance of any Section 205 filing under Section 9.2(a)... PJM may file with less than a full 7 day advance consultation in circumstances where imminent harm to system reliability or imminent severe economic harm to electric consumers requires a prompt Section 205 filing...

(cited by PJM and FERC in rejecting force majeure and circuit breaker proposals in 2010-2012, FERC Docket No. ER09-1063)

- How long would/should PJM consult with members before going to FERC??
- How would PJM decide if there is “imminent severe economic harm”??
- And what would PJM propose to file under Section 205??

Shortage Pricing Circuit Breaker (proposed energy price reform component #7): Proposed Elements

1. Pre-defined *fall-back market rules*, such as alternative ORDCs;
2. *Triggers* for when such fall-back rules would go into effect, or for when a process would begin to activate the alternative rules;
3. Possibly additional “Stop-Loss” provisions (consumer losses).

See also Circuit Breaker proposal in ER09-1063: Wilson 2010, pp. 29-30 (references at end of presentation)

Possible Trigger Concepts

- \$\$: Threshold cumulative shortage cost over a period of time; and/or
- MW: Threshold loss of capacity for some minimum period of time;
- Could be multiple triggers with different actions (activates rules in place, or activates process under which PJM must act, other variants)
- A trigger could be similar to common “Stop Loss” rules, but for consumers in this instance.

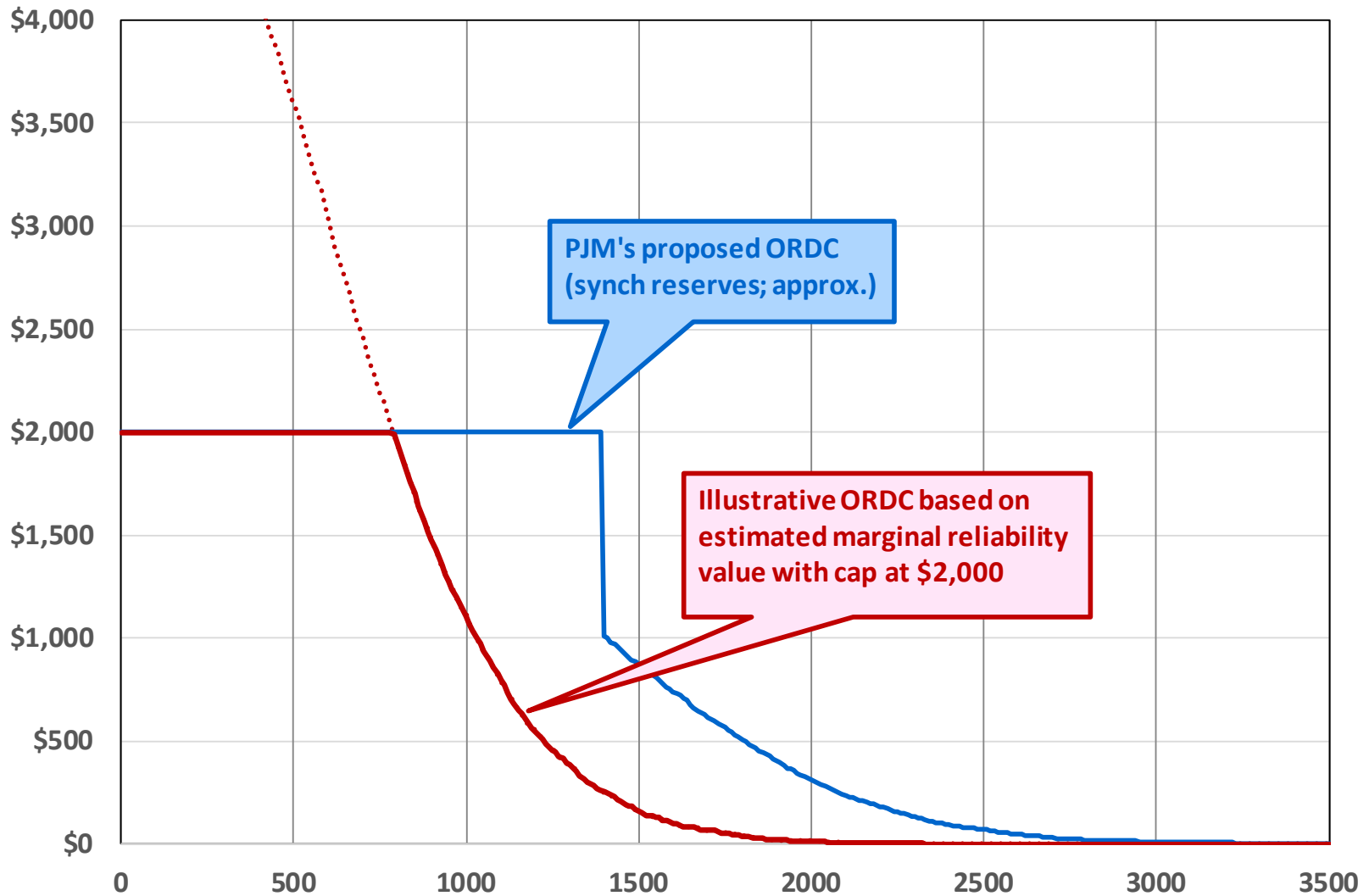
Fall-Back Market Rules: One Proposal

- Fall-back ORDCs based on first principles
 - Prices along ORDCs reflect estimated marginal value of reserves to customers
 - Reflects Value of Lost Load (“VOLL”);
 - Reflects likelihood or probability of firm load drop (“LOLP”)
 - Maximum ORDC price to further contain outcomes
 - *Hogan 2014 pp. 7-10; Hogan 2015 slides 13-15 (references at end of presentation)*
- System operators would continue to be able to:
 1. Shift the ORDCs under special circumstances, documenting the concern; and
 2. Commit additional resources that did not clear under the ORDCs (such resources, whose prices exceed marginal reliability value, would be compensated out of market).

FYI: PJM's Proposed ORDCs Are Not Based on First Principles, Do Not Reflect Marginal Reliability Value

- PJM intends to pay “any price” to maintain reserves at the “Minimum Reserve Requirement” (“MRR”) level
 - MRR has been a satisfactory reserve target (min, and max for which willingness to pay is non-zero) for many years; near MRR, LOLP, and marginal reliability value, are very low (Wilson 2018)
 - There has been no attempt in the EPFSTF to estimate the marginal reliability value of reserves for any reserve level
 - Stakeholders likely support PJM authority to maintain reserves at MRR, but....
- PJM intends to reflect this “any price” in reserve prices and LMPs
 - Price presently capped at \$2,000/MWh; but if FERC raises this, it would rise
 - PJM proposes to pancake the maximum price up to six levels (products/zones)
 - PJM also proposes to use identical ORDCs in the Day-Ahead markets

Illustrative ORDC Based on Marginal Reliability Value



Summary: Shortage Pricing Circuit Breaker

- PJM's proposed ORDCs can potentially cause enormous unintended and unwarranted outcomes, harming consumers and markets
 - A substantial loss of capacity and/or market design shortcomings could create vulnerability to frequent real or artificial shortages resulting in enormous transfers of wealth
 - PJM's proposed ORDCs are not based on marginal reliability value – they can set very high prices when there is no shortage, or very little shortage
 - PJM's proposal could lead to many billions in unjustified cost in a short time
- Best to plan ahead for possible extreme and unintended outcomes
 - Pre-defined fall-back plan
 - Triggers
 - Perhaps stop-loss provisions

References

- Hogan, William W., *Electricity Market Design and Efficient Pricing: Applications for New England and Beyond*, June 24, 2014, available at https://sites.hks.harvard.edu/fs/whogan/Hogan_Pricing_062414r.pdf
- Hogan, William W., *Electricity Market Design: Energy and Capacity Markets and Resource Adequacy*, September 1, 2015, available at https://sites.hks.harvard.edu/fs/whogan/Hogan_EUCI_090115.pdf
- Wilson, James F., *Affidavit in Support of Comments and Protest of the Pennsylvania Public Utility Commission*, filed July 30, 2010 in FERC Docket No. ER09-1063-004, available at <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=12403522>
- Wilson, James F., *Comments on PJM's ORDC Proposal*, EPFSTF November 1, 2018, available at <https://www.pjm.com/-/media/committees-groups/task-forces/epfstf/20181101/20181101-item-08-wilson-energy-economics-comments-on-pjm-ordc-proposal.ashx>