Uplift Allocation and Causation

The Myth of Balanced Schedules
Why Allocation to Deviations is a Flawed Approach

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Discussion Topics

- Uplift Allocation
  - ISO-wide comparison of uplift allocation
  - Balancing market commitments primarily caused by factors other than financial bids
  - Uplift's relationship with "price formation" problems
  - Beneficiary (load) pays principle: Balancing uplift from RT price formation issues not only lowers RT prices, but also lowers DA and forward market prices
  - Importance of convergence bidding for market efficiency

Market Comparison of Uplift Allocation

Higher Balancing Uplift Rates in PJM Create a Significant Barrier for Convergence Bidding

Uplift - What/How Others Are Really Paying

ISO	Live Date	Netting	RT Uplift	Avg $/MW 2013
ERCOT	Dec-10	YES	Hourly Net short	$0.02
NYISO	Dec-99	N/A	N/A	N/A
CALISO	Apr-09	YES	Hourly Net short	$0.26 (FMM)
MISO	Apr-06	YES	DDC: Hourly Net Short	$1.00 (DDC)
		(MARKET WIDE)	CMC: Hourly Net Flows	$0.02 (CMC)
PJM	Jun-00	Yes for Physical	Daily Abs MW	$3.28 (East)
		No for Financial		$1.65 (West)
SPP	Mar-14	NO	Daily Abs MW	$1.82 (H1 2014)

http://www.pjm.com/~/media/committees-groups/task-forces/emustf/20140813/20140813-item-03-red-wolf-xo-energy-proposal.ashx

The flaw in PJM uplift allocation is the presumption that schedule deviations are the primary cause of real-time (RT) uplift

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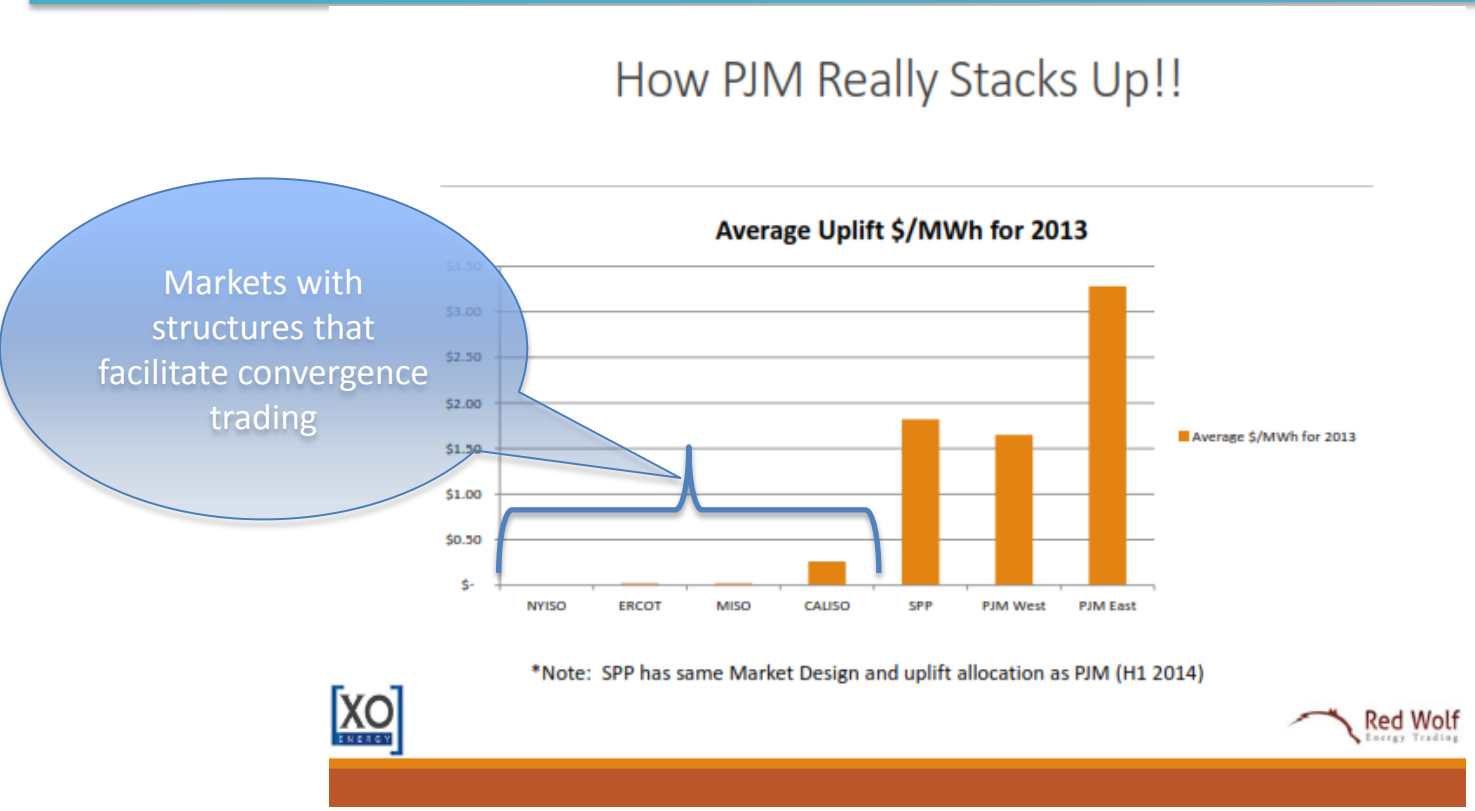

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RT Commitments Not Due to Financial Bids

Reasons for Uplift

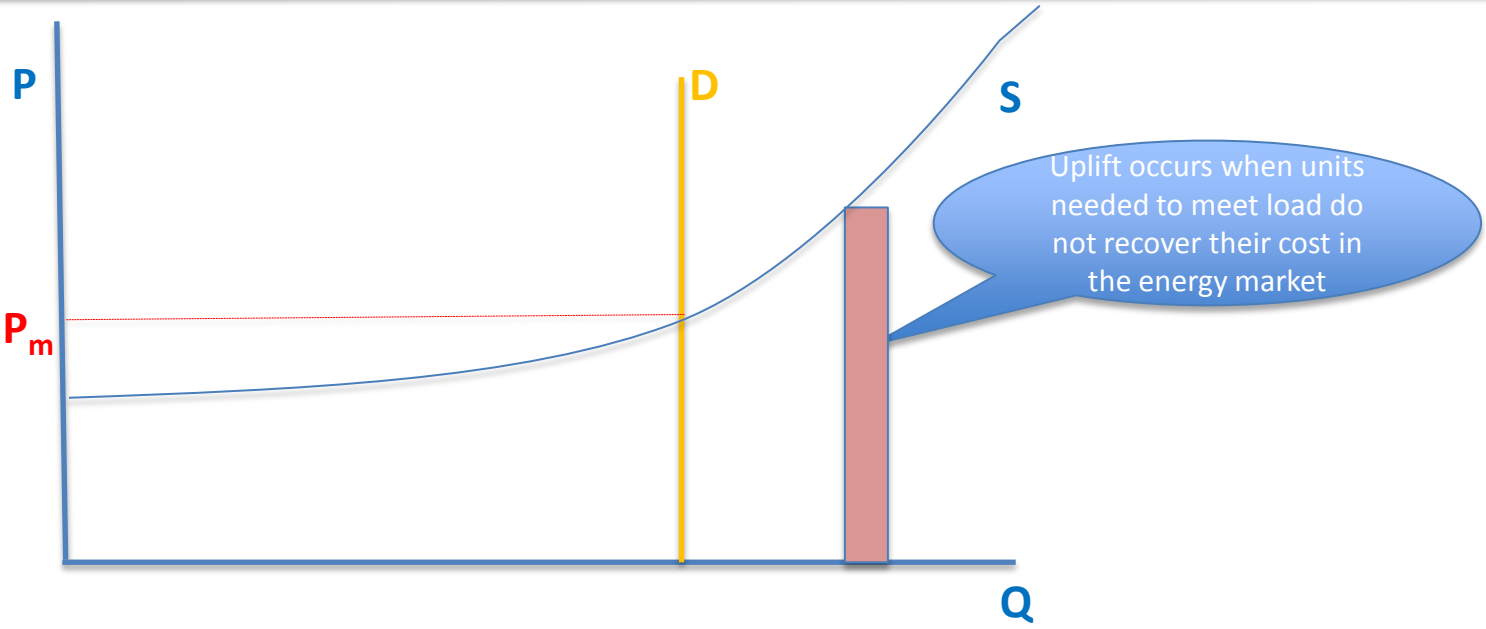
- Generators need make-whole payments (uplift):
  - Marginal units start-up and no-load costs
  - Marginal units may not be “in merit” for many intervals of their commitment cycle
  - Price formation issues identified in AD14-14

- Many (most) reasons for balancing market commitments unrelated to financial bids:
  - Operator out-of-market actions
  - Local reliability requirements
  - Transmission outages
  - Load forecast error
  - Generator trips
  - Voltage issues
  - Changes in loop flow between DA and RT

- PJM, has been able to reduce uplift merely by reducing their reliance on expensive steam units in the Reliability Commitment, without deviations changing

- Not all deviations are equal – many financial bids actually improve the day-ahead commitment and reduce overall costs

Uplift Allocation Cannot Be Separated from Price Formation Problems Identified in AD14-14



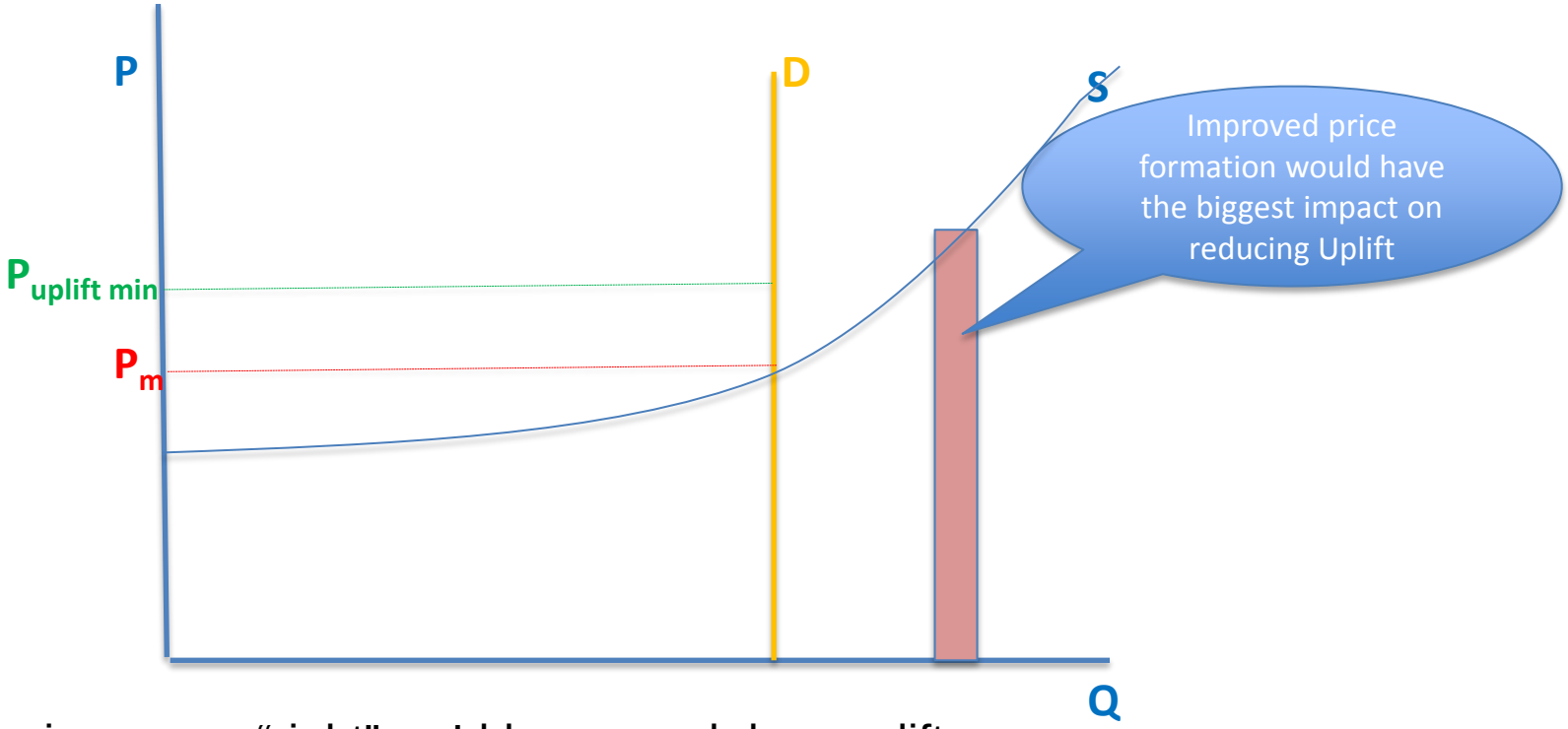
- In a more perfect theoretical market, prices would be high enough to fully compensate all generators running to meet load
- A primary cause of uplift is the software issues that prevent units from setting correct prices in the RT market, as noted in the Staff white paper from AD14-14 and pointed out in the subsequent technical conferences
- **If the RT prices were "right," there would not be much uplift**

Uplift Allocation

Need for Improved Price Formation

- Price formation issues in the RT markets are a major contributor to uplift (see FERC Docket AD14-14)
  - Peakers committed and not setting price
  - Peakers unable to adjust bids in RT if costs increase
  - Pricing of shortage events like load reduction
  - Co-optimization of reserves/energy

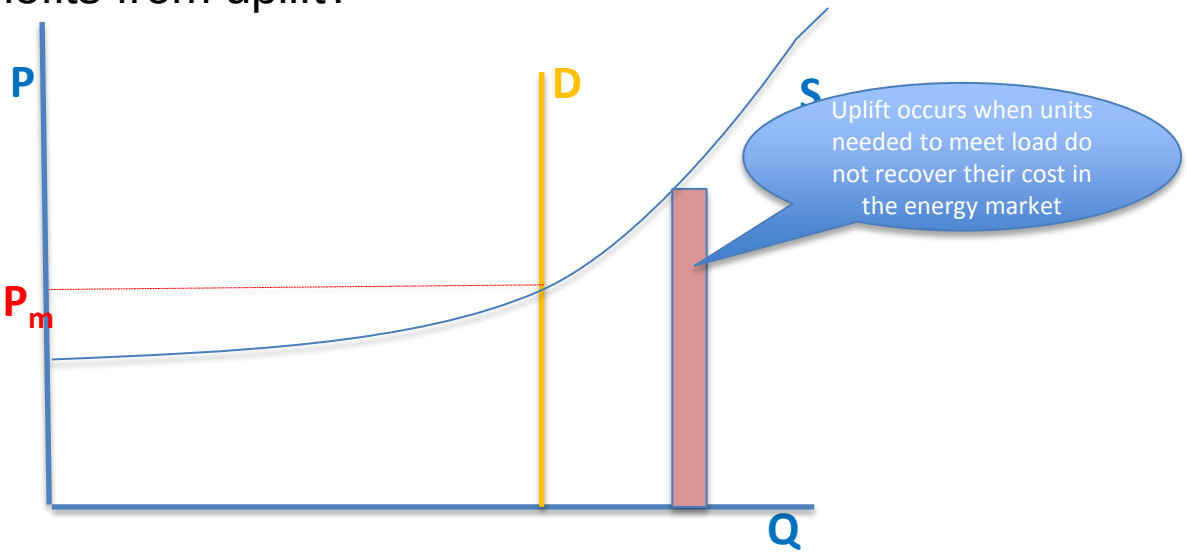
http://www.ferc.gov/EventCalendar/EventDetails.aspx?ID=7424&CalType=%20b



- If RT prices were "right" we'd have much less uplift
  - Prices would be higher
  - Some financial deviations would pay more, some less

Beneficiary Pays Approach Would Allocate Uplift to Buyers

- Who benefits from uplift?



- Load/buyers benefit from the inherent price suppression implied by the fact that marginal units must be paid outside (and over and above) the normal market price formation mechanism
  - We accept the assigning of uplift costs to load for the day-ahead market
  - But DA load also benefits from price suppression in the RT market through the price convergence process
- What about load that buys DA with no deviations?
  - Imagine the thought experiment: What if RT imbalances were settled for $0/MWh?

The existence of uplift in the RT market means that both DA and forward market prices are less than they would be without the RT price suppression

Convergence Bidding Is Important for Market Efficiency

- Convergence trading (Incs, Decs, UTCs) improves price convergence and market price signals
  - Incs replace the missing DA gen
  - Decs replace the missing DA load
  - UTCs make DA congestion look more like the “real” RT congestion

- A robust convergence bidding market is critical for the PJM market to work properly
  - A fact from AD14-14 is that peaking units cannot set price in the Day-ahead market in PJM
  - Because of this, day-ahead price efficiency requires a robust market of incs and decs and UTCs

- ISO markets are extremely competitive when they are open to financial market participants facilitating the convergence of DA and RT markets
  - Isolated load and generation pockets with limited access to transmission need to be addressed through market mitigation (such as bid caps, FTR forfeiture rule, etc.)
  - For the broader ISO market, the Commission should promote market structures – and cost allocation rules -- that reduce the barriers to these important and efficiency-enhancing transactions