
Energy Market Uplift Senior Task Force Phase Two Proposal



EMUSTF Charter

Phase 1: Explore and develop ways to ***minimize uplift*** while maintaining consistent prices and operational reliability.

Phase 2: Explore new methodologies for the allocation of make-whole payments:

- “An effort to examine and revise ***the entire*** Operating Reserve construct is necessary”
- “Transparency of Locational Marginal Pricing”
- “Commitment in the least costly manner, consistent with Reliability”
- “Accurate representation of actual Real-Time operating conditions”
- “***Equitable allocation*** of cost consistently between markets ***based on cost causation/benefit principles***”

FERC Uplift Workshop

This September the FERC will hold a workshop to examine uplift

“Uplift payments: Uplift payments are “out of market” payments to resources to take actions the need for which were not identified in the normal market process. This can result, for example, from system conditions that were not predicted or otherwise accounted for in the grid models used to clear the markets. Uplift payments can undermine the market’s price signals, and sustained patterns of specific resources receiving a large proportion of uplift payments raise additional concerns that those resources are providing a service that should be priced in the market or opened to competition.”

“Operator actions that affect prices: RTO/ISO operators regularly commit resources that are not economic to address reliability issues or un-modeled system constraints. If operators regularly commit excess resources, such actions may suppress energy prices or otherwise interfere with price formation.”

PJM's Current Uplift Construct

Who is getting paid OR Credits?

- The top 10 units receiving energy uplift credits received 42.8 percent of all credits.
- The top 10 organizations received 83.6 percent of all credits.

Who is paying OR Cost?

- Entities that participate in the physical and financial energy markets are allowed to enter into Internal Bilateral Transactions (IBTs). IBTs are used to net out of operating reserve cost allocation.
- Entities that participate solely in the financial energy market are precluded from netting.

PJM's Current Allocations Impact on Financial Transactions

In 2010

- 169,223,448 MW of INC/DEC Volume was entered by Financial Entities.
- 41.8% of all INC/DEC volume was by Financial Entities
- 235,801,427 MW were bid by Physical Entities
- 58.2% of all INC/DEC volume was entered by Physical Entities

By 2013 Financial participation had fallen precipitously

- 38,937,242 MW of INC/DEC Volume was entered by Financial Entities.
- 28.6% of all INC/DEC volume was by Financial Entities
- 97,174,588 MW were bid by Physical entities
- 71.4% of all INC/DEC volume was entered by Physical Entities

Do Financial Transactions Add Value?

A paper by Frank Wolak, an Economics Professor at Stanford and also the Chair of the Market Surveillance Committee for CAISO, looked into the value of financial transactions in CAISO.

- Although the percent hourly total energy and cost reductions are small, on an annual basis the implied cost savings and carbon dioxide emissions reductions can be substantial.
- The annual total cost of fossil fuel energy is \$ 2.8 billion the year before convergence bidding and \$ 2.2 billion the year after convergence bidding
- Applying the 2.6 percent reduction to these figures implies an annual cost savings for the variable cost of fossil fuel energy of roughly 70 million dollars per year
- This implies that the introduction of convergence bidding reduced carbon dioxide emissions by 650,000 and 537,000 tons annually.
- Both these results point to sizable economic and environmental benefits from the introduction of convergence bidding in California.

- <http://economics.yale.edu/sites/default/files/wolak-130411.pdf>

Dr. Hogan's View on Cost Allocation

“The problem is especially important in dealing with transactions like FTRs, virtual trades, and UTC transactions, that have the common characteristic that they are financial contracts that do not imply or produce physical delivery or load in the real-time electricity market. **By design and construction, these financial contracts will be settled at prices determined in the spot market, but the observed quantity will always be zero in the real-time physical flows.** The underlying economics of the financial contract are driven by the expected value of the real-time price that will apply to the financial settlement of the contract. By design, the deviation between day-ahead and real-time for the financial contract is the full quantity, and for a competitive bidder there is no connection between this deviation and the appropriate economic analysis of the bid. Hence, allocating costs to these virtual contracts based on deviations does not have a foundation in the economics of a competitive bid and creates perverse incentives to avoid virtual transactions. **Any added charge to the virtual contract creates a wedge between the expected real-time price and the day-ahead price, reducing the incentive and the ability to promote convergence of the prices.** Uplift allocation to any virtual contracts has material consequences that work at cross purposes to good electricity market design.”

Dr. William Hogan, Harvard University

<http://www.hks.harvard.edu/fs/whogan/Hogan UTC 071612.pdf>

Decline in Financial Market Participation Not Limited to PJM

- PJM, NEPOOL, MISO, and CAISO have all experienced at one time or another a decrease in INC/DEC participation.
- Decreased participation in PJM is not the result of product migration. Decreased Participation is due to a flawed cost allocation construct.
- Market participants are driven toward profits, not driven away from fees. To say Financial Participants trade one product rather than another to avoid fees is analogous to stating institutions avoid profits to decrease tax liabilities.
- MISO recognized several years ago the negative impact the lack of financial participation was having on their market and sought to redesign uplift cost allocation. This proposal is the result.

MISO Experienced Similar Problems in the past

Additional Comments regarding Profitability of Virtual Transactions from IMM's 2007 SOM Report

"For virtual transactions, the average gross profit per MWh cleared decreased slightly from \$0.69 per MWh in 2006 to \$0.43 per MWh in 2007.

However after RSG allocations were deducted, the average net profit was negative during 2007."

This naturally leads to a discussion of MISO's Real-Time RSG Allocation. →



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Virtual Transactions and Allocation of Real-Time RSG charges

- One issue that has been the subject of great debate is the appropriate amount of Real-Time RSG to allocate to Virtual volumes.
- Since cleared virtual transactions do not result in the actual injection or withdrawal of energy, is it appropriate to allocate Revenue Sufficiency Guarantee Payments to cleared virtual supply volumes?
- As mentioned earlier, virtual volumes are also used to allocate Day-Ahead RSG (in this case, Virtual Demand* is used, not Virtual Supply). However, DA RSG accounted for only 7% of total RSG over the last year. So most of RSG is allocated through the Real-Time RSG Distribution.
- The following slides summarize the history of FERC Orders and Midwest ISO filings related to RT RSG Redesign → → → →

*The Day-Ahead RSG is also allocated based upon cleared Day-Ahead fixed demand bids, cleared price sensitive demand bids, and cleared Day-Ahead exports



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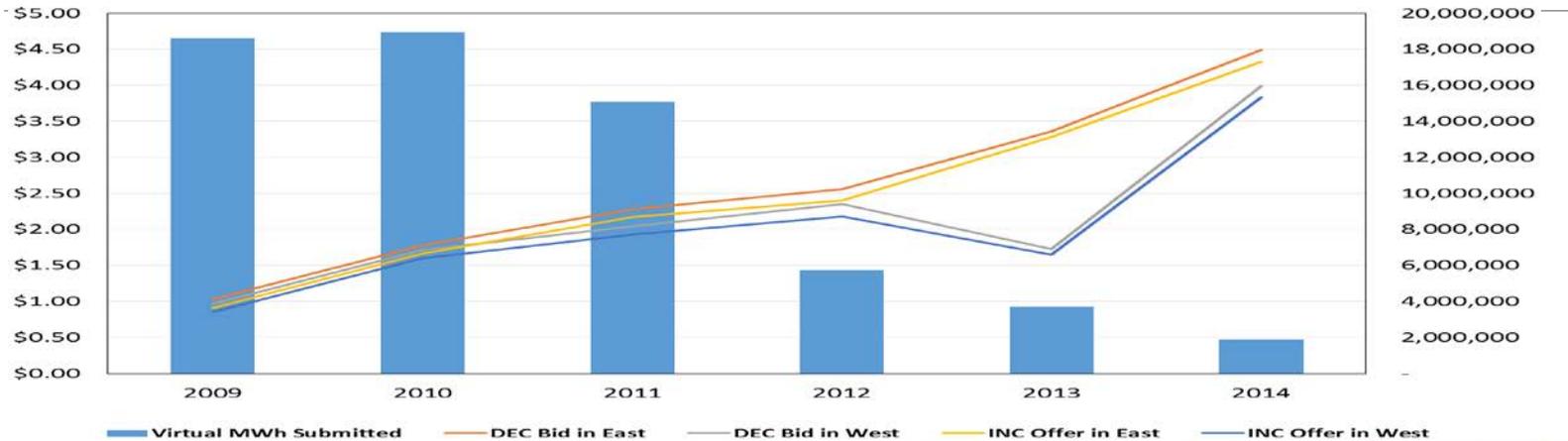
<http://www.caiso.com/Documents/Presentation-VirtualTransactionsinMidwestISOMarkets.pdf>

When Virtual trading became unprofitable due to the allocation of Uplift – they evaluated their uplift construct and completed their RSG Redesign



PJM – Decline in Virtual Trading is Due to Unprofitability

Average Daily Virtual INC/DEC Uplift Charges (\$/MWh)



UTC vs. Inc / Dec – Gross Profit Per Day Comparison
May 1, 2012 – April 30, 2013

	UTC (Gross)	Inc/Dec (Gross)	Delta (Inc/Dec – UTC)
Total Cleared (MWh)	367,504,399.6	122,297,775.7	-245,206,623.9
Average Daily Profit (\$/day)	\$364,140.22	\$188,806.49	-\$175,333.73
Avg Profit/Cleared MWh (\$/MWh)	\$0.3617	\$0.5635	\$0.2018
Standard Deviation of Daily Gross Profit	\$681,288.4627	\$1,356,355.721	\$675,067.2585
% of Days Where Bid Type Has Negative Gross Profit	28.8%	51.5%	22.7%

	UTC Gross	UTC Net	INC/DEC Gross	INC/DEC Net
Cleared MWh	452,001,946	452,001,946	108,039,474	108,039,474
Average Daily Profit	\$394,397	\$389,828	\$131,612	-\$63,499
St Dev of Daily Profit	\$1,266,783	\$1,267,456	\$783,490	\$697,462
Average Profit/Cleared MWh	\$0.32	\$0.31	\$0.44	-\$0.21
% of Loss Days	39%	40%	53%	68%

*January 2013 through December 2013

There a Market Design Flaw in the current allocation of uplift to Virtuals



MISO Revenue Sufficiency Guarantee

Reasons to use MISO RSG Allocation Methodology:

- It meets ALL requirements of PJM's uplift charter
- Already approved by FERC
- Based on cost-causation principles
- Charges by portfolio not transaction

MISO RSG Summary

Generator commitments are tagged for:

- Capacity (to support Load)
- To a specific constraint
- For voltage or local reliability issues

MISO RSG Summary

Portfolios are charged based on:

- Their impact on capacity required in RT
- Their impact on flows over constraints in RT
- Their RT Load

Four Buckets

1. Constraint Management Charge (CMC)
2. Voltage and Local Reliability (VLR)
3. Day-Ahead Deviation Charge (DDC)
4. 2nd Pass Distribution

Constraint Management Charge

Total portfolio impact on constraint by summing

- (MW Dev * Shift Factor) for all transactions
- Company's charge is based on pro-rata share of flow deviations.
- Only portfolios "harming" constraint are charged
- Portfolios that lower uplift can receive a credit against other hours that their portfolios increase uplift.

Voltage and Local Reliability

- If “commercially significant” charged to local Load Balancing Authority (LBA)
- Otherwise charged pro-rata to all LBAs.

Day-Ahead Deviation Charge

- Charged based on net additional capacity required.
- All deviations net each other.
- Only net short portfolios are charged

2nd Pass Distribution

- Any make whole payment not collected through other three buckets are charged to 2nd Pass.
- Charged pro-rata to real time load

Rate Caps

Both DDC and CMC have rate caps

Any amount exceeding the rate cap is charged to 2nd Pass

Allocation Factor

Units committed for CMC or VLR do impact capacity required on the system.

A percentage of their MWP is charged to DDC to recognize this.

Derates and Topology

Line derate amounts and topology adjustments (e.g. loop flows) are included in the denominator for CMC rates.

Notification Deadline

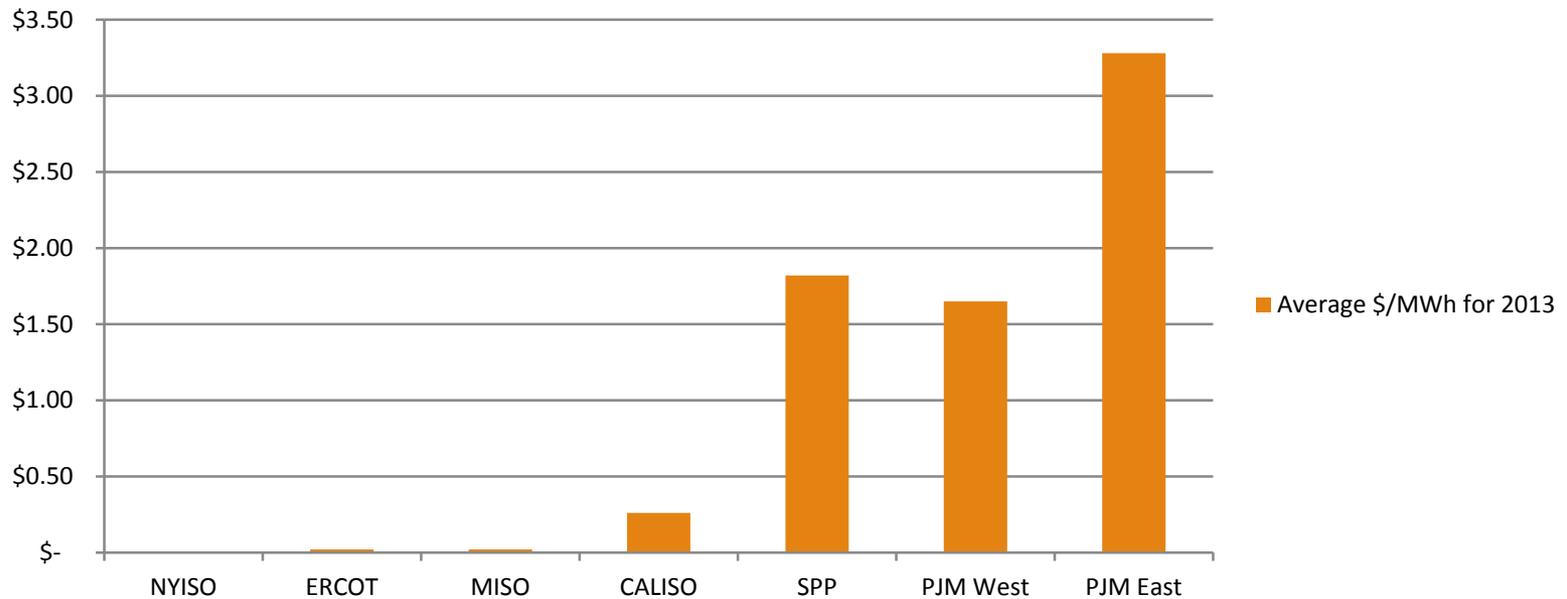
- 4 hours prior to the operating hour
- Any deviations prior to deadline are net, and only net “harmful” deviations are charged.
- Any deviation after the deadline are not net, and only “harmful” deviations are charged.

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)

How PJM Really Stacks Up!!

Average Uplift \$/MWh for 2013



*Note: SPP has same Market Design and uplift allocation as PJM (H1 2014)

Links

The following MISO presentations are from the original MISO RSG re-design in 2011, and don't have the most recent changes from this year:

[MISO RSG Re-Design Training](#)

[Virtual Settlement Training](#) (starting at slide 83)

FERC held an RSG Technical Conference last November about the most recent changes, and this is a presentation that MISO gave about some of the changes:

[MISO RSG Technical Conference](#)