

April 30, 2014

**1. MA to revisit presentation / education slices on the evolution of the deviation buckets**

This item was addressed during the 5/1 EMUSTF meeting. The original slides can be found at <http://www.pjm.com/~media/committees-groups/task-forces/emustf/20131018/20131031-item-02a-ma-educational-session-part-b-updated.ashx>. The slides were reposted on the 5/1 EMUSTF page:

<http://www.pjm.com/~media/committees-groups/task-forces/emustf/20140501/20140501-or-allocation-education.ashx>

**2. PJM to investigate impact of imports/exports on uplift during peak load times**

Electricity flowing into or out of PJM from neighboring areas, known as interchange, can lead to uplift when it differs significantly from the expectation PJM operators use to schedule and dispatch resources to maintain reliability. An interchange transaction can either be an import, meaning power is purchased from a neighboring area and sold into PJM, or an export, where power is purchased from PJM and sold in an external area. These transactions, which are typically price-takers, can be submitted with as little as 20 minutes notice and are only curtailed or limited due to reliability concerns from either the sourcing or sinking area. In contrast, deploying emergency demand response under today's rules, for example, requires up-to two hours notice. This timing difference creates a situation where system operators must forecast an expected amount of interchange and then operate the system based on that expectation. When that expectation significantly differs from actual system conditions, it can create uplift.

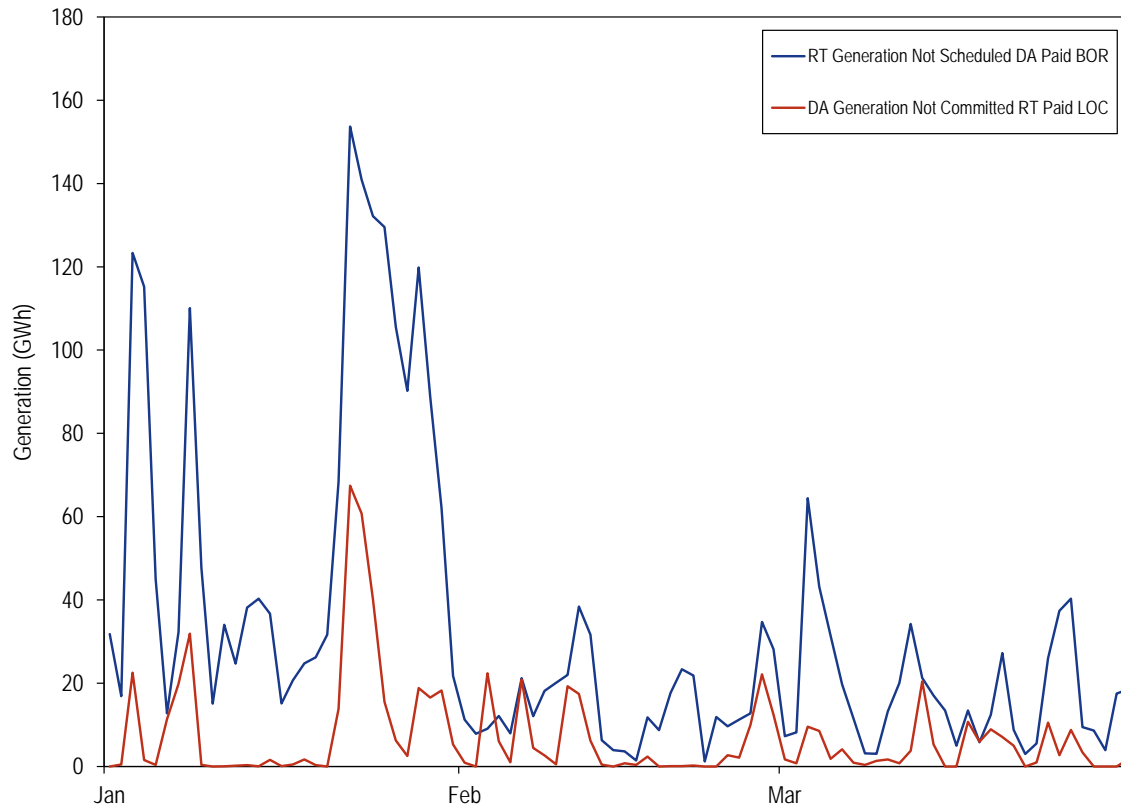
Additionally, in order to maintain system control when excess power imports into PJM, conventional generating units are ramped down in order to balance supply and demand which results in the lowering of LMPs across the system. Despite the low LMPs on the system, PJM could still be running high priced supply resources including gas generation and emergency demand response in order to meet the minimum run time requirements on such resources. Low LMPs during a period where expensive supply resources are being run at PJM's direction requires make whole payments and thus creates uplift. In an attempt to gain more certainty with regard to interchange forecasting, PJM is currently discussing the need for more timely information regarding interchange expectations in the Energy/Reserve Pricing & Interchange Volatility special sessions of the MIC and in the PJM/MISO Interchange Optimization special sessions of the JCM.

**3. How often has there been displaced resources due to conservative ops): (Resources that cleared in DA but didn't show in RT)**

See the chart below from the Monitoring Analytics report "2014 Quarterly State of the Market Report for PJM: January through March".

## EMUSTF Phase 2 Action Item Responses

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#### 4. What are the general reasons for the top 10 DAOR credits (Joel's slide #5)

See slide 7 in the MA's slide deck posted on the 6/11/14 EMUSTF meeting page.

#### 5. Do a Pareto diagram of Joel's slide #5 (showing reasons for uplift, instead of units)

See slide 7 in the MA's slide deck posted on the 6/11/14 EMUSTF meeting page. Note there is not a reason-unit mapping for every day a unit gets uplift.

#### 6. Hunt down 10% adder, to better understand the source

The 10% adder was negotiated value dating back to the power pool days. The basis for this adder was to cover the uncertainty in costs, particularly the variable heat rate curve for CTs which can vary significantly based on ambient temperature.

#### 7. Redo a chart with top 10 reasons for make-whole credits on Joel's slide 15.

See slide 17 in the MA's slide deck posted on the 6/11/14 EMUSTF meeting page. Note there is not a reason-unit mapping for every day a unit gets uplift

#### 8. What is the correlation between the top 10 units that get balancing and deviations?

See slide 18 in the MA's slide deck posted on the 6/11/14 EMUSTF meeting page.

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**9. Update charts in the MA presentation to include most current data available**

See the MA slide deck posted on the 6/11/14 EMUSTF meeting page.

**10. Revisit design component #2 to see if there is overlap with other design components, or if we should just adjust it.**

The design component was split into two components: "2a. What period of time the rate applies to" and "2b. How is rate calculated".

**11. Do a backcast of a possible transaction rate (design component 4, option A) to see what it would look like**

This will be discussed at the July 17 EMUSTF meeting under Item 5 on the agenda. The materials are posted.

**12. Update and reconfigure phase 2 matrix and send out**

This has been completed.

**13. PJM to group the phase 2 design components (similar to phase 1)**

This was completed during the 5/6 internal meeting.

**14. Need clarification of exports and their role in uplift (we have this for imports already)**

This was discussed during session.

**15. Change "RT Load" to RT Load (metered) in Status Quo wording**

This was completed in the matrix.

**16. Do we need to include DR netting impact (similar to gen netting)?**

DR Netting is already on the table as a design component (assuming this is not related to DR M&V rules).

**17. Need definition for Physical Deviations and deviations**

This presentation on slide 18 has a summary definition:

<http://www.pjm.com/~media/committees-groups/task-forces/emustf/20131018/20131031-item-02a-ma-educational-session-part-a-updated.ashx>

The 2013 State of the Market Report, Section 4, page 128 has a full description.

[http://www.monitoringanalytics.com/reports/PJM\\_State\\_of\\_the\\_Market/2013/2013-som-pjm-volume2-sec4.pdf](http://www.monitoringanalytics.com/reports/PJM_State_of_the_Market/2013/2013-som-pjm-volume2-sec4.pdf)

**18. Put together slides for "transaction in the supply and demand deviation category"**

This was presented to the EMUSTF on 6/19. Copies of the slides can be found here:  
<http://www.pjm.com/~media/committees-groups/task-forces/emustf/20140619/20140619-item-02b-emu-stf-presentation-on-utc.ashx>

**19. Clean up status quo for Option 19**

Updates were made to the matrix.

**20. Update matrix for 19, 19a, 19b, 19c**

This was completed in the matrix.

**21. PJM to provide a precise definition of "Committed For Reliability"**

*"Committed for Reliability" is defined as everything committed outside of the day ahead run and the RAC run (excluding real-time CTs). In other words resources not called economically.*

**22. Look into how other ISOs and RTOs allocate uplift costs**

Presentations given by ERCOT, ISO-NE, MISO and NYISO.

**23. Summarize what we've already done or what is in the SOM related to causes of uplift. Can start with Action Item #30 and show those in order of precedence. Include seasonality or unusual events in the analysis.**

The entries in Phase 1 Action Item 30 were documented in order of increasing to decreasing magnitude.

**24. Members to submit solution options for the matrix**

This is complete.

**25. PJM to clarify row 17 option B if this is different from status quo (RT Load (metered), RT Exports --- Deviations + RT Imports (Interchange Deviations from DA schedule for imports and exports))**

Did not receive a response from the member in an effort to clarify.

**26. Reach out to PJM Planning team to determine what information they are gathering regarding minimizing uplift**

Developing a planning upgrade resulting from uplift would most easily be justifiable today under the Operational Efficiency portion. The Market Efficiency section would have to be enhanced via a Tariff filing if we want to include it there because it is silent on uplift.

**27. PJM to review MISO cost causation analysis**

PJM has reviewed the analysis and determined that it is more of a cost correlation study. Further: PJM will be hosting a representative from MISO on 12/11/14 to respond to questions that stakeholders may have on the analysis.

**28. What is "alternate supply resources"? (in DC4 option D)**

Technologies such as energy storage or other non-traditional generation resources.

**29. Stakeholders to develop list of questions that they would like answered (to help guide the types of analysis that PJM needs to do and the types of data that needs to be collected)**

Action Item withdrawn by the requestor.

**30. PJM to develop a method to catalog and track questions**

Action Item withdrawn by the requestor.

**31. Show uplift on monthly basis (raw numbers and percentage of total market activity for 2013 and 2014.**

This was completed and posted to the July 17 meeting site. The presentation can be found here:  
<http://www.pjm.com/~media/committees-groups/task-forces/emustf/20140717/20140717-item-03-2014-uplift-reduction.ashx>.

**32. Get update from Citigroup on formula in solution option 13-C**

Haven't received a response from member.

**33. Citigroup to provide numbers on proposal and estimate what the fees would be.**

This is complete.

**34. How long after the operating day do you know DR deviations?**

Load reduction meter data is submitted within 60 days of the reduction. EDCs and LSEs then have 10 days to review. If objections to data from EDC and LSE, CSP has 2 days to correct and re-submit. The EDC/LSE then have 5 business days to review the re-submitted data. Results in the data being settled up to 90 days after the day of the reduction.

**35. Will need some analysis on costs and rates for all proposals in order to better understand the impact**

This is a work in-progress.

**36. Get link on MISO uplift report**

The link was sent to PJM by Ruta. PJM is analyzing the report.

**37. Get stakeholder [phase 2] proposals into the matrix.**

The matrix has been updated with additional proposals.

**38. Mbr to send package proposal to PJM.**

The matrix has been updated with additional proposals.

**39. Mbr to send rate design option to PJM.**

The matrix has been updated.

**40. Product examples of rate designs (fill in the "x" in the PJM package).**

The matrix has been updated.

**41. What are the percentages of incs and decs at the west hub?**

The 2013 average of the hourly percentage of cleared decs at the west hub vs. total cleared decs is 41%

The 2013 average of the hourly percentage of cleared incs at the west hub vs. total cleared incs is 52%.

**42. PJM and IMM to comment on the fee value presented by Citigroup. What is the impact on different types of transactions?**

During the December 11, 2014 EMUSTF meeting, Citigroup gave an overview and fielded questions on their proposal.

**43. Estimate the theoretical uplift rate for 2013 (based on the total load and gen MWh)**

2013 Load MWh = 773,789,703

2013 Gen MWh = 786,573,833

2013 Gen and Load MWh Total = 1,560,363,536

Net Uplift = Total Uplift – Citigroup Uplift Total = \$382,253,064 - \$127,000 = \$255,253,064

Gen and Load Rate = \$255,253,064 / 1,560,363,536 MWh = \$0.163586/MWh

**44. Find some way to identify packages and pair w/ the exec summaries**

Executive summaries will be labeled according to the matrix identifier.

**45. What are the current incentives and disincentives of the allocation of operating reserves today and how should they be adjusted/used going forward?**

This action item will be discussed in open forum.

**46. Send some poll wording suggestions around cost causation definition**

This action item has been closed, because PJM legal team will be presenting the results of their research on this topic. Please see the 11/13/14 meeting materials.

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**47. Would it be possible for the EMUSTF to gather and post the UTC transactions bid and cleared volumes to a public location on PJM’s web site on a daily basis during the period of time while the EMUSTF is an active task force?**

This has been discussed in other stakeholder groups. Unfortunately, PJM is unable to post this data.

**48. What is the regulatory definition of cost causation?**

Mr. Steve Shparber, PJM, will present the results of his research during the November 13 EMUSTF meeting. Please see that date’s meeting materials for information.

**49. Netting questions:**

1. How does PJM determine if a unit is “following dispatch”?
2. Go one level down to describe each component in that determines DA and RT withdrawal and injection deviations and which location (zone, interface, hub) they apply to.

<b>Operating Reserve Deviation Summary Components</b>		<b>Applicable Location</b>		
<b>Injections</b>		<b>Zone</b>	<b>Hub</b>	<b>Interface</b>
<b>Day-Ahead</b>				
	Increment Offers	X	X	X
	Imports			X
	Internal Bilateral Purchases	X	X	X
<b>Real-Time</b>				
	Imports			X
	Internal Bilateral Purchases	X	X	X
<b>Withdrawals</b>				
<b>Day-Ahead</b>				
	Decrement Bids	X	X	X
	Demand Bids	X		
	Load Response Bids	X		
	Exports			X
	Internal Bilateral Sales	X	X	X
<b>Real-Time</b>				
	Load	X		
	Exports			X
	Internal Bilateral Sales	X	X	X

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Any transaction at a specific nodal pricing point within a zone is included in the zonal total. Any aggregate or hub that has a bus definition that is fully contained within a zone is also included in the zonal total.

- 3. Provide more details on generation deviation netting as currently done today.**
- 4. Provide more details and specific examples on Transaction Netting as described in the Phase 2 matrix for a few of the packages.**
- 5. Provide more details and specific examples on Generation Netting for generator replacement**

**50.**