EMUSTF Voting Items

Adam Keech

Director, Market Operations

Markets and Reliability Committee

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- EMUSTF work parsed into Phase 1 and Phase 2
    - Members desire a combined vote
- Consensus will be extremely difficult to reach
- FERC 206 proceeding (EL14-37)
    - Confined to allocation of uplift to virtuals and UTCs
- PJM and the IMM believe some Phase 1 items need to be addressed regardless of the decision on cost allocation

- February 5, 2015 – Discuss package contents and impacts
- By February 25, 2015 – EMUSTF vote on package
- *February 26, 2015 – MRC first read*
- March 18, 2015 – Further EMUSTF discussion (if required)
- March 26, 2015 – MRC vote/MC first read
- April 23, 2015 – MC vote

- From the Phase 1 Matrix…
    - 2 – Objective Function: Transmission Planning
        - Add enhancement to operational performance that would allow us to capture contributors to uplift.
        - Provide transparency to triggers for operational performance and market efficiency
        - Add scenario to RTEP modeling process (for high uplift)
        - make sure that we capture the benefits and costs of reactive service devices appropriately

**NOTE: This issue will need to be brought back to the MRC as a recommendation and further vetted by the appropriate committee as this is not in the scope of this group.

- From the Phase 1 Matrix…
  - 5 – LOC Credit Methodology
    1. Use the schedule the resource is committed on for energy as the reference for LOC unless the resource is self-scheduled. If self-scheduled, use the lesser of the available cost or price curves.
       - Applies to energy, reactive and CT LOC
    2. LOC for reactive services and energy should be an integration up the curve as opposed to (LMP – Offer) * Reduced MW
       - Applies to energy, reactive and CT LOC
  - 5a – LOC for resources committed in DA but not run in RT
    1. Include startup and no-load costs in the DA offer used to calculate CT LOC.
    2. Change the eligibility of this payment to resources that meet the defined operational criteria rather than just falling in an asset class.

LOC payments are allocated to RTO-wide deviations.

	LOC When Output Reduced in RT	LOC When Scheduled DA Not Called RT	Total
Current Credits	$71,860,641	$175,558,472	$247,419,114
Issue 5.1: Committed Schedule	$2,648,695	$30,536,275	$33,184,970
Issue 5.2: Using Offer Curve	($2,716,105)	$14,951,966	$12,235,861
Issue 5a.1: Including Start and No-Load	NA	($89,190,225)	($89,190,225)
Net Impact	($67,410)	($43,701,984)	($43,769,394)
Credits After Changes	$71,793,231	$131,856,488	$203,649,720

- Planning Item
  - *For (114) = 100%*
  - Against (0) = 0%
  - Abstain (2)
- CT LOC Items
  - *For (93) = 83.78%*
  - Against (18) = 16.22%
  - Abstain (5)
- Do you wish to make a change or maintain the status quo?
  - *For (92) = 88.46%*
  - Against (12) = 9.68%
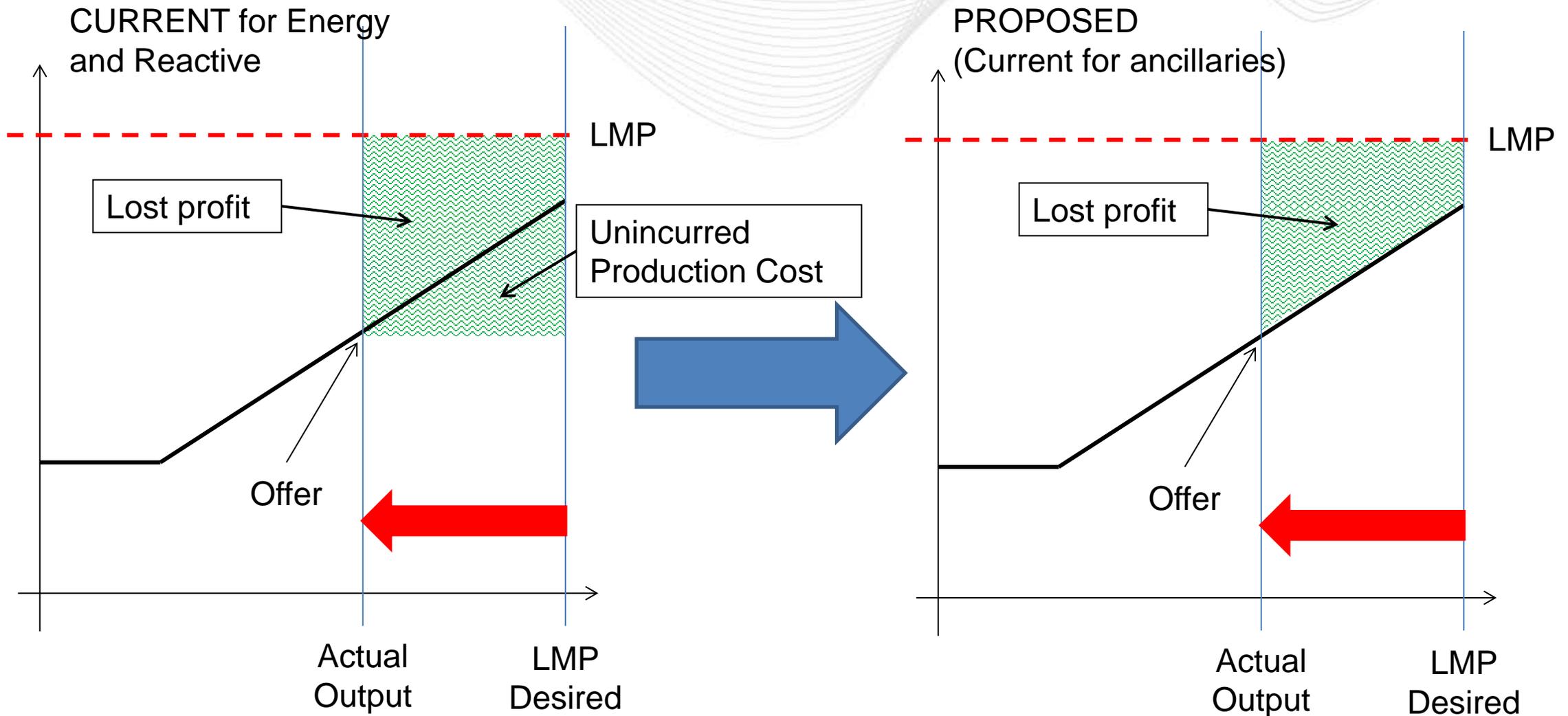 - Abstain (12)

- 20 Unique respondents
- 116 Voting Companies

Appendix

- Current rule – 'higher of'
    - 3.2.3(f), (f-1)(ii), (f-4)
    - UB in the LOC equation is…

"UB equals the unit offer for that unit for which output is reduced or suspended, determined according to the real-time scheduled offer curve on which the unit was operating, unless such schedule was a price-based schedule and the offer associated with that price schedule is less than the cost-based offer provided for the unit, in which case the offer for the unit will be determined from the cost-based schedule; and"

- Using the 'higher of' reduces the amount of LOC paid to resources when their price-based offer is less than their cost.

- PJM and the IMM believe the offer used should be the offer the resource was committed on.

- Throughout the years of 2013 and 2014, had PJM not used the 'higher of' logic as it currently exists, LOC paid would have increased by $33.2M

- PJM and the IMM propose that the 'higher of' logic remain in place for self-scheduled resources

- Current rule – 'box calculation'
  - 3.2.3(f), (f-1)(ii), (f-4)
    - The current LOC calculations contained within these sections use a shortcut methodology when computing LOC.
    - This method is not consistent with LOC calculations used for the same purpose in the reserve markets.
    - PJM and the IMM seek to change the energy and reactive LOC calculations to be consistent with the reserve market applications.

CURRENT for Energy and Reactive

LMP

Lost profit

Unincurred Production Cost

Offer

Actual Output

LMP Desired

PROPOSED (Current for ancillaries)

LMP

Lost profit

Offer

Actual Output

LMP Desired

- This change will reduce the LOC paid to resources dispatched down for reactive or constraint control (per last graphic)
  - For 2013 and 2014, it would have reduced LOC payments by approximately $2.7M
- The same change applied to resources collecting CT LOC payments would have increased LOC payments by approximately $15M

- Had we use an integration up the offer curve as opposed to the current methodology there would have been a net increase of $12.2M

- Current rule
  - 3.2.3(f-1)(ii)
  - UB in the LOC calculation is…

"UB equals the unit offer for that unit, determined according to the schedule on which the unit was committed day-ahead, unless such schedule was a price-based schedule and the offer associated with that price schedule is less than the cost-based offer provided for the unit, in which case the offer for the unit will be determined from the cost-based schedule; and"

- Current calculation does not include the start-up and no-load cost as part of the unit's offer used in the LOC calculation

- This results in the inclusion of unincurred production costs in the LOC calculation

  – Similar to a resource reduced for reliability in 5.1 where the current calculation of LOC includes unincurred costs

- This results in a resource being financially better off if it does not run in RT as opposed to if it did

- PJM and the IMM agree that this creates inappropriate market incentives and that the start-up and no-load costs need to be included in the CT LOC calculation

- Resource Offer Price = $150

- Resource Start-up Cost = $500

- Resource No-load Cost = $1000/hour

- DA Start-up Cost = $500 / cleared MW / hours committed

- DA No-load Cost = $1000 / hour / scheduled MW

Turn these numbers into $/MWh numbers so they are comparable to the offer price

Resource Cost = Offer Cost + Start-up Cost + No-load Cost

Market Credits

- Resource DA Commitment = 100 MW
- DA LMP = $200/MWh

- DA OR = $0
- DA LMP Credits = $20,000

Commitment Costs

- Resource DA Commitment = 100 MW
- DA Offer Cost = $15,000
- DA Start Cost = $500
- DA No-Load = $1,000
- Resource Cost = $16,500

DA Profit = DA LMP Credits + DA OR – Resource Cost
DA Profit = $20,000 - $16,500
DA Profit = $3,500

Balancing Settlement

- RT MW = 0 MW

- RT LMP = $300/MWh

- Balancing Energy = (0 – 100 MW) * $300

  = -$30,000

LOC Payment = (RTLMP – Offer) * DA MW

- RTLMP = $300/MWh

- Offer = $150/MWh

- DA MW = 100 MW

CTLOC = ($300 - $150) * 100 MW = $15,000

Balancing Settlement = Balancing Energy + LOC Payment
Balancing Settlement = -$30,000 + $15,000 = -$15,000

- DA Settlement = $20,000
    - Includes $3,500 in profit (if the unit runs in RT)
- Balancing Settlement = -$15,000
    - - $30,000 buy back + $15,000 CT LOC
- Close of Business
    - $20,000 DA Credit
    - $15,000 Balancing Charge
    - $5,000 Net Profit
        - It was $3,500 at the close of the DAM.

- The resource cleared in the DA Market with a $3,500 profit. How did it end up with more in RT if it didn't run?
- The extra $1,500 is the start-up and no-load cost of the resource
  - $500 startup and $1000 no-load
- The resource results in a better financial position via PJM's markets by not running because these are not included in the cost to meet the DA commitment
- If they were included, the CT LOC payment would decrease by $1,500
  - Offer component would increase to $16,500
  - Consistent with the actual cost to provide

- Because the start-up and no-load are included in the 'Offer' in the CT LOC calculation, the resource picks up an additional credit equal to the start-up and no-load costs that it does not incur

- Through 2013 and 2014, if PJM had netted start-up and no-load from CT LOC calculations it would have reduced LOC payments by approximately $89.2M

- PJM and the IMM feel that the start-up and no-load costs need to be included in the DA offer for CT LOC.

- Current rule
  - 3.2.3 (f-1)

"A Market Seller's **combustion turbine unit or combined cycle unit operating in simple cycle mode** that is pool-scheduled (or self-scheduled, if operating according to Section 1.10.3 (c) hereof)…"

  - PJM and the IMM agree that this should apply based on unit characteristics, not unit class.
  - PJM proposes a (start-up + notification time) maximum of 2 hours and a minimum run time limitation of 2 hours

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