• Allocate uplift dollars as broadly as reasonably possible to the causing and benefiting parties

• Establish a known, fixed, flat rate for all paying parties
  – Rate is known prior to transacting
  – The same rate for all transacting parties per MWh if supported by anticipated volumes
  – Based on some historic average plus over-collection
  – No preferential treatment to any transaction type

• Use a deferred balance to offset spikes in uplift

• Monthly true-up when payouts are low for a month

• Strive for simplicity
• Regional allocation based on voltage level
• Various rates in favor of one
  – Today we have
    • DA rate
    • RT RTO Deviations
    • RT East Deviations
    • RT West Deviations
    • RT RTO Reliability
    • RT East Reliability
    • RT West Reliability
Proposing the removal of...

- Daily rate calculation in favor of monthly
- "Reliability versus Economic" distinction
- The inclusion of IBTs in the calculation or netting of deviations
- INC/DEC netting at any level higher than an individual node
0. General Structure

- **Structure**: Single RTO-wide fixed rate with monthly true-up and deferred balance

- **Rate Period**: Monthly

- **Unusual circumstances**: Status quo for now but open to options

  ** More detail on future slides**
0. General Structure

- Transactions that rate applies to (denominator):
  1. RTO Real-time Load + Exports
  2. Virtual bids (INC/DECs/UTCs (as a single transaction))
  3. Pool scheduled generators deviating based on today’s deviation rules
  4. All self-scheduled generators not scheduled DA
  5. Price-taking import transactions
  6. Wheels (as a single transaction)**

** More detail on future slides
1. Stuff that cleared DA

- PJM’s primary Phase 1 proposal includes the removal of DA uplift.

- If DA uplift is not removed per the Phase 1 discussion, PJM proposes to include any DA uplift credits into the calculation of the single RTO-wide rate.

** More discussion on future slides regarding DA uplift incurred by resources scheduled for either reactive or blackstart. **
All uplift credits paid in real-time to generation, demand response, imports, etc. will be summed into the numerator.

This includes things like:

- LOC credits
- CT LOC
- Cancellation costs
- Manning costs
- Uplift payments
Two paths:

1. Continue with current allocations
   - Justifiable based on causing and benefiting parties
   - Adds complexity
   - Variable, unknown charge

2. Lump into single rate
   - Loss of granularity in causing/benefiting parties
   - Simplifies and stabilizes cost allocation
5 & 6. Reactive and Blackstart (cont’d)

- If DA OR is kept, all DA OR to these units can either be:
  - Allocated under today’s mechanisms, or,
  - Included in the single rate.

- If DA OR is removed, real-time uplift credits to these units can be:
  - Allocated under today’s mechanisms, or,
  - Included in the single rate.
• Status Quo.

• DASR has no uplift associated with it. All charges are paid through the market clearing prices.
• All uplift credits paid to emergency demand response and emergency purchases are included in the numerator.
9. Netting or other Out-of-Market Charges

• Status quo.
• Use a rolling average to determine the base amount of credits that needs to be collected each month to cover uplift costs
  – Remove extreme outliers like January 2014
    • Months outside 1 or 2 standard deviations
  • Rolling average can be calculated using any number of months
    – Shorter durations like 3-6 months may miss seasonal impacts on uplift
    – Longer durations like 12-24 months will include all seasons but may include “bad” months that are not outliers for longer than desired
- 68% of observations fall within 1 STD of the mean
- 95% fall within 2
- ~ 100% fall within 3
• Some multiple of the STD can be used as the deferred balance cap
  – The higher the multiple
    – The more money held
    – The less probable the monthly collection + deferred balance does not contain sufficient funds
• The lower the multiple
  – The less money held
  – The more probable the monthly collection + deferred balance does not contain sufficient funds
<table>
<thead>
<tr>
<th></th>
<th>DA OR</th>
<th>BOR</th>
<th>Reactive</th>
<th>Blackstart</th>
<th>LOC</th>
<th><strong>UPLIFT</strong></th>
<th><strong>TOTAL UPLIFT</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2013</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Month</strong></td>
<td><strong>DA OR</strong></td>
<td><strong>BOR</strong></td>
<td><strong>Reactive</strong></td>
<td><strong>Blackstart</strong></td>
<td><strong>LOC</strong></td>
<td><strong>(No reactive or blackstart)</strong></td>
<td><strong>TOTAL UPLIFT</strong></td>
</tr>
<tr>
<td>Jan</td>
<td>$5,928,134</td>
<td>$67,758,162</td>
<td>$23,604,234</td>
<td>$8,453,397</td>
<td>$11,481,334</td>
<td>$85,167,630</td>
<td>$108,771,865</td>
</tr>
<tr>
<td>Feb</td>
<td>$4,980,867</td>
<td>$62,395,543</td>
<td>$17,624,984</td>
<td>$7,134,209</td>
<td>$4,730,617</td>
<td>$72,107,027</td>
<td>$89,732,012</td>
</tr>
<tr>
<td>Mar</td>
<td>$6,302,475</td>
<td>$10,288,210</td>
<td>$14,350,137</td>
<td>$6,768,618</td>
<td>$7,127,313</td>
<td>$23,717,998</td>
<td>$38,068,135</td>
</tr>
<tr>
<td>Apr</td>
<td>$5,712,618</td>
<td>$17,635,540</td>
<td>$13,670,581</td>
<td>$9,242,815</td>
<td>$5,781,873</td>
<td>$29,130,031</td>
<td>$42,800,612</td>
</tr>
<tr>
<td>May</td>
<td>$5,403,220</td>
<td>$14,006,295</td>
<td>$17,214,142</td>
<td>$8,667,583</td>
<td>$8,518,338</td>
<td>$27,927,853</td>
<td>$45,141,995</td>
</tr>
<tr>
<td>June</td>
<td>$6,584,357</td>
<td>$10,816,722</td>
<td>$22,055,238</td>
<td>$7,952,100</td>
<td>$7,029,836</td>
<td>$24,430,915</td>
<td>$46,486,153</td>
</tr>
<tr>
<td>July</td>
<td>$8,306,004</td>
<td>$23,655,288</td>
<td>$19,633,772</td>
<td>$5,858,221</td>
<td>$19,492,274</td>
<td>$51,453,566</td>
<td>$71,087,338</td>
</tr>
<tr>
<td>Aug</td>
<td>$4,159,470</td>
<td>$8,819,526</td>
<td>$27,827,070</td>
<td>$7,584,998</td>
<td>$5,683,959</td>
<td>$18,662,955</td>
<td>$46,490,025</td>
</tr>
<tr>
<td>Sept</td>
<td>$6,005,482</td>
<td>$19,918,883</td>
<td>$27,534,906</td>
<td>$7,384,554</td>
<td>$10,974,087</td>
<td>$36,898,452</td>
<td>$64,433,358</td>
</tr>
<tr>
<td>Oct</td>
<td>$2,473,705</td>
<td>$9,505,540</td>
<td>$41,721,300</td>
<td>$6,708,931</td>
<td>$3,085,323</td>
<td>$15,064,568</td>
<td>$56,785,868</td>
</tr>
<tr>
<td>Nov</td>
<td>$2,799,522</td>
<td>$15,565,028</td>
<td>$42,743,907</td>
<td>$6,685,965</td>
<td>$2,144,870</td>
<td>$20,509,420</td>
<td>$63,253,327</td>
</tr>
<tr>
<td>Dec</td>
<td>$5,224,275</td>
<td>$34,868,398</td>
<td>$43,464,829</td>
<td>$4,403,179</td>
<td>$1,108,575</td>
<td>$41,201,248</td>
<td>$84,666,078</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$63,880,129</strong></td>
<td><strong>$295,233,135</strong></td>
<td><strong>$311,445,100</strong></td>
<td><strong>$86,844,570</strong></td>
<td><strong>$87,158,399</strong></td>
<td><strong>$446,271,663</strong></td>
<td><strong>$757,716,766</strong></td>
</tr>
<tr>
<td>Month</td>
<td>DA OR</td>
<td>BOR</td>
<td>Reactive</td>
<td>Blackstart</td>
<td>LOC</td>
<td>UPLIFT (No reactive or blackstart)</td>
<td>TOTAL UPLIFT</td>
</tr>
<tr>
<td>-------</td>
<td>-------------</td>
<td>-------------</td>
<td>-------------</td>
<td>-------------</td>
<td>-------------</td>
<td>------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Jan</td>
<td>$35,826,983</td>
<td>$486,477,754</td>
<td>$3,773,749</td>
<td>$4,037,517</td>
<td>$77,478,333</td>
<td>$599,783,070</td>
<td>$603,556,818</td>
</tr>
<tr>
<td>Feb</td>
<td>$9,492,506</td>
<td>$44,584,342</td>
<td>$1,043,326</td>
<td>$883,414</td>
<td>$11,465,139</td>
<td>$65,541,987</td>
<td>$66,585,314</td>
</tr>
<tr>
<td>Mar</td>
<td>$5,672,743</td>
<td>$46,693,305</td>
<td>$2,682,504</td>
<td>$2,635,547</td>
<td>$12,826,397</td>
<td>$65,192,445</td>
<td>$67,874,950</td>
</tr>
<tr>
<td>Apr</td>
<td>$4,185,011</td>
<td>$6,706,531</td>
<td>$5,272,525</td>
<td>$2,812,795</td>
<td>$2,991,466</td>
<td>$13,883,008</td>
<td>$19,155,533</td>
</tr>
<tr>
<td>May</td>
<td>$6,450,097</td>
<td>$7,565,556</td>
<td>$5,278,711</td>
<td>$1,819,676</td>
<td>$12,774,196</td>
<td>$26,789,849</td>
<td>$32,068,560</td>
</tr>
<tr>
<td>June</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$0</td>
<td></td>
</tr>
<tr>
<td>July</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aug</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sept</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oct</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nov</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dec</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$61,627,340</td>
<td>$592,027,488</td>
<td>$18,050,815</td>
<td>$12,188,949</td>
<td>$117,535,531</td>
<td>$771,190,359</td>
<td>$789,241,175</td>
</tr>
</tbody>
</table>

www.pjm.com
• **MEANS** – Shows based on the stating rolling average how much would be collected per month

• **STD** (standard deviation) – Shows the standard deviation of the monthly totals. The higher the number the more volatile the month totals

• **MEAN + STD** – Shows the total money available each month to pay uplift if 1 STD is kept in deferred balance.

• **MEAN + 2STD** - Shows the total money available each month to pay uplift if 1 STD is kept in deferred balance.
### DA OR + BOR + LOC (No Reactive/No BS)

<table>
<thead>
<tr>
<th>Values (no Jan 14)</th>
<th>MEANS</th>
<th>STD</th>
<th>MEAN + 1STD</th>
<th>MEAN + 2STD</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROLL 3</td>
<td>$35,288,434</td>
<td>$21,791,956</td>
<td>$57,080,390</td>
<td>$78,872,347</td>
</tr>
<tr>
<td>ROLL 6</td>
<td>$38,852,993</td>
<td>$20,482,064</td>
<td>$59,335,057</td>
<td>$79,817,121</td>
</tr>
<tr>
<td>ROLL 12</td>
<td>$33,963,022</td>
<td>$17,544,288</td>
<td>$51,507,310</td>
<td>$69,051,598</td>
</tr>
<tr>
<td>ROLL 17*</td>
<td>$38,604,935</td>
<td>$21,728,527</td>
<td>$60,333,461</td>
<td>$82,061,988</td>
</tr>
</tbody>
</table>

### ALL

<table>
<thead>
<tr>
<th>Values (no Jan 14)</th>
<th>MEANS</th>
<th>STD</th>
<th>MEAN + 1STD</th>
<th>MEAN + 2STD</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROLL 3</td>
<td>$39,699,681</td>
<td>$20,608,589</td>
<td>$60,308,270</td>
<td>$80,916,859</td>
</tr>
<tr>
<td>ROLL 6</td>
<td>$55,600,627</td>
<td>$22,570,961</td>
<td>$78,171,588</td>
<td>$100,742,549</td>
</tr>
<tr>
<td>ROLL 12</td>
<td>$55,335,708</td>
<td>$17,441,730</td>
<td>$72,777,438</td>
<td>$90,219,168</td>
</tr>
<tr>
<td>ROLL 17*</td>
<td>$58,962,570</td>
<td>$22,268,149</td>
<td>$81,230,719</td>
<td>$103,498,869</td>
</tr>
</tbody>
</table>
What does this mean?

• Need to compare methods for determining the numerator to the monthly payouts
  – If collecting for all…
    • Rolling 12 month + 1 STD collects enough money for all but 4 months
      – Jan, Feb, Dec 2013 & Jan 2014
    • Rolling 3 month + 1 STD collects enough money in half the months
  – If using 2 STD, all except rolling 3 month collect enough money for all months except January 2014
Timing When Using Deferred Balance

- Timing when using and replenishing the deferred balance will be critical
  - Potential change to prompt month’s rate to replenish deferred balance is also an option
- If the monthly collections + deferred balance are not enough to pay resources, there needs to be the flexibility to collect the required money quickly
  - This could be a trigger for the “unusual circumstances” collection
• Still performing analysis on various denominators to come up with some example rates
  – Denominator will vary month to month as bid activity and cleared quantities change

• Needs to be broad but remain rational
More to come…

• PJM to further refine the proposal
  – Add analysis of various denominators and example rates
  – Center in on a proposed numerator
  – Add a component for ad hoc charges
    • Potentially as part of an “unusual circumstances” proposal