Independent Load Forecast Update

MISO Planning Advisory Committee

November 11, 2015
Change from Draft Version

• The revised EE/DR/DG adjustments had very little impact at the system-wide level (e.g., net summer peak CAGR* changed from 0.98 to 0.97)

• The only significant change at the LRZ level was in LRZ 7
  – net energy CAGR changed from 0.75 to 0.66

* CAGR- compound annual growth rate (%)
Changes from 2014 Forecast

- Historical data correction for MISO South resulted in better peak demand calibration
- Correction in LSE assignments to LRZs had a small impact
- Multiple weather stations for state models appear to have minor impact
- Change in peak modeling plus additional year of historical data resulted in somewhat lower summer peaks and higher winter peaks
Changes from 2014 Forecast

• Low and high forecast bands are wider and more realistic

• Change in EE adjustment had a very large impact
  – Some LRZs had much smaller energy adjustments this year
  – Peak adjustments are larger overall, but the growth rates do not reflect that
## LRZ Energy Forecast Comparison - CAGR

<table>
<thead>
<tr>
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<td>10</td>
<td>1.76</td>
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</table>
DR Assumption

• All available DR was included in the adjustment, which reduces demand throughout the forecast period
  – This will not always be the case in reality because sometimes it will not be needed
  – Thus, the net peak forecast will be lower than actual if all DR is not called upon

• This is a common assumption when forecasting for resource needs
Peak Demands

MISO System

- Summer CP without EE/DR/DG adjustment
- Summer CP with EE/DR/DG adjustment
- Winter CP without EE/DR/DG adjustment
- Winter CP with EE/DR/DG adjustment
Peak Adjustments

- The peak adjustments are larger this year (5.8-10.5 GW) than last year (2.4-9.6 GW)
- Growth rate comparisons become problematic
  - The 2015 forecast peak lies below the 2014 forecast but has a higher growth rate
MISO-level Results: CAGR

<table>
<thead>
<tr>
<th></th>
<th>Last year (2015-2024)</th>
<th>This year (2016-2025)</th>
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<tbody>
<tr>
<td>Gross Energy</td>
<td>1.42</td>
<td>1.33</td>
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<td>Net Energy</td>
<td>0.87</td>
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<td>Gross Summer Peak</td>
<td>1.42</td>
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<td>Net Summer Peak</td>
<td>0.86</td>
<td>0.96</td>
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<td>Gross Winter Peak</td>
<td>1.41</td>
<td>1.32</td>
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<tr>
<td>Net Winter Peak</td>
<td>0.86</td>
<td>0.91</td>
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</table>

Notes
CAGR – compound annual growth rate (%)
Gross – prior to adjustments for energy efficiency, demand response, and distributed generation
Net – after adjustments for energy efficiency, demand response, and distributed generation
EE/DR/DG adjustments are expected to be revised prior to being finalized
## 90/10 Net Forecasts: CAGR

<table>
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<tr>
<th></th>
<th>Base</th>
<th>High</th>
<th>Low</th>
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<tbody>
<tr>
<td>Energy</td>
<td>1.12</td>
<td>1.56</td>
<td>0.58</td>
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<tr>
<td>Summer Peak</td>
<td>0.97</td>
<td>1.44</td>
<td>0.39</td>
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<tr>
<td>Winter Peak</td>
<td>0.91</td>
<td>1.40</td>
<td>0.31</td>
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Stakeholder Comments

• Is there potential for double counting of energy efficiency programs in the approach?
  – Past EE programs affect the state econometric model formulations, so some level of EE is “assumed” by the models
  – The EE/DR/DG adjustment would then double count
• This is likely true to some unknown degree
• SUFG is only aware of the amount that has been called on within the market (essentially, nothing)
• We will probably try to estimate the impact of this in the future
Lessons Learned

- The map is approximate
  - LRZ 1 in MI
  - LRZ 3 in SD
  - LRZ 8 in MO, OK, TN, & TX
Lessons Learned

• Make sure your comparisons are apples to apples
  – Are transmission and/or distribution losses included?
  – Has it been adjusted for EE and DR?
Contact Information

State Utility Forecasting Group
765-494-4223
sufg@ecn.purdue.edu
http://www.purdue.edu/discoverypark/energy/SUFG/

Doug Gotham
765-494-0851
gotham@purdue.edu