Independent Load Forecast

MISO Planning Advisory Committee
October 14, 2015
Draft Results

• While these results have been shared with stakeholders, they are subject to revision based on stakeholder comments, which are due October 20

• Revised EE/DR/DG adjustments are expected to be provided by October 20 as well, which will affect the “net” forecasts
Additional Scope for 2015

- Improve modeling of energy efficiency, demand response, and distributed generation
- Model multiple weather stations in the state econometric models
- Develop confidence intervals that capture uncertainty around the macroeconomic variables
- Conversion of the energy forecasts to peak forecasts
- Incorporate the new local resource zone (LRZ 10)
EE/DR/DG Adjustments

• Last year, adjustments were made at the state level
  – based on state mandates, supplemented with discussions with individual state experts

• This year, net forecasts are determined using adjustments at the LRZ level
  – the economic potential from the AEG study was input to EGEAS; the amount selected by EGEAS is used here
Multiple Weather Stations

• We developed virtual weather stations using population-weighted CDD and HDD from multiple weather stations within the states
• Each state is divided into regions along county lines and a representative weather station is chosen for each region
• The CDD and HDD for a given year are determined using the population of each region and the CDD and HDD of the region’s weather station
Confidence Intervals

• Last year, we used statistical bands of the state econometric model to determine low and high forecasts
  – in essence, this assumes there is no uncertainty in the projections of the model drivers and that all uncertainty stems from the model error

• This year, we estimated confidence intervals based on the historical variance of the drivers
  – except weather variables since the forecasts are for normal weather
Energy to Peak Conversion

• Last year, we used the 10 highest load hours by season to determine the relationship between annual energy, temperature, and summer/winter peaks

• This year, we developed models based on significantly more hours (~400)
Other Changes

• Electricity and natural gas price projections
  – IHS Global Insight no longer provides state specific projections, so we developed them based on EIA’s Annual Energy Outlook
    • the results were discussed with OMS earlier

• State models
  – Kentucky adjustment for the Paducah Gaseous Diffusion Plant closure
  – Louisiana forecast is driven off growth in manufacturing GSP
LRZ-level Results: 2016-25 CAGR

<table>
<thead>
<tr>
<th>LRZ</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<th>7</th>
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</thead>
<tbody>
<tr>
<td>Gross</td>
<td>1.63</td>
<td>1.45</td>
<td>1.56</td>
<td>0.63</td>
<td>0.97</td>
<td>1.18</td>
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<tr>
<td>Net</td>
<td>1.46</td>
<td>1.32</td>
<td>1.10</td>
<td>0.28</td>
<td>0.57</td>
<td>0.96</td>
<td>0.75</td>
<td>0.84</td>
<td>1.80</td>
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<tr>
<td>Net</td>
<td>1.25</td>
<td>1.24</td>
<td>0.84</td>
<td>0.16</td>
<td>0.45</td>
<td>0.80</td>
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<td>Peak</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
# 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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<tr>
<td>Net Energy</td>
<td>0.87</td>
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<tr>
<td>Gross Summer Peak</td>
<td>1.42</td>
<td>1.30</td>
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<tr>
<td>Net Summer Peak</td>
<td>0.86</td>
<td>0.96</td>
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<tr>
<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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</tbody>
</table>

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- 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
Next Steps

• Stakeholder comments due October 20
• Final EE/DR/DG adjustments due October 20
• Report due November 2
Contact Information

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