Update on the Multi-day Operating Margin (MOM) Forecast, v1
Issue MSC008

Market Subcommittee (MSC)
October 10, 2019
Purpose

• Provide an update on the delivery of the MOM Forecast v1.0

Key Takeaways

• Development largely completed
  • Waiting for new data source to go into production
  • October delivery is still expected, although not assured
• Readers Guide has been drafted
• Next features are being contemplated
MOM Forecast Characteristics

- Data will be identical to values used by MISO Operations (data governance)
- Incremental approach with successive versions
- Utilize data warehouse & analytical platform
  - Automated
  - Reliable
  - Extensible
  - Flexible
MOM Forecast v1.0 initial development is largely complete

- V1.0 will be updated daily and include system-level aggregation of peak-hour information
- System of record is a new MISO tool, currently in testing, containing capacity sufficiency information
  - MOM Forecast is dependent on this system
- Delivery target for MOM Forecast v1.0 is October 2019, with updates to follow
  - Report will be posted on the MISO public website under the Summary section of Market Reports
  - A Quick Link to its location will be placed under the Markets and Operations page
MOM Forecast v1.0 layout (system view)

### Multiday Operating Margin Forecast Report

<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Resource Committed</strong></td>
<td>74,587</td>
<td>75,110</td>
<td>81,983</td>
<td>78,350</td>
<td>77,049</td>
<td>81,378</td>
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<tr>
<td><strong>Resource Uncommitted</strong></td>
<td>69,222</td>
<td>37,896</td>
<td>31,111</td>
<td>34,728</td>
<td>36,056</td>
<td>33,499</td>
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<tr>
<td><strong>Uncommitted &gt; 16 hr</strong></td>
<td>17,054</td>
<td>9,676</td>
<td>8,230</td>
<td>9,018</td>
<td>10,269</td>
<td>9,338</td>
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<tr>
<td><strong>Uncommitted 12-16 hr</strong></td>
<td>6,983</td>
<td>3,251</td>
<td>2,149</td>
<td>2,421</td>
<td>2,421</td>
<td>2,136</td>
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<td><strong>Uncommitted 8-12 hr</strong></td>
<td>3,061</td>
<td>2,562</td>
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<td><strong>Uncommitted 4-8 hr</strong></td>
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<td>3,930</td>
<td>4,752</td>
<td>4,758</td>
<td>4,011</td>
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<tr>
<td><strong>Uncommitted &lt; 4 hr</strong></td>
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<td>17,270</td>
<td>14,858</td>
<td>16,063</td>
<td>16,169</td>
<td>15,933</td>
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<tr>
<td><strong>Renewable Forecast</strong></td>
<td>10,466</td>
<td>4,132</td>
<td>2,809</td>
<td>6,323</td>
<td>8,847</td>
<td>4,279</td>
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<td><strong>Resources Available</strong></td>
<td>154,275</td>
<td>117,138</td>
<td>115,903</td>
<td>119,401</td>
<td>121,952</td>
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<td><strong>NSI (+ export, - import)</strong></td>
<td>1</td>
<td>-1,183</td>
<td>-752</td>
<td>-682</td>
<td>-679</td>
<td>-755</td>
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<tr>
<td><strong>Projected Load</strong></td>
<td>82,502</td>
<td>77,325</td>
<td>82,872</td>
<td>82,820</td>
<td>83,788</td>
<td>83,879</td>
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<tr>
<td><strong>Operating Reserve Margin</strong></td>
<td>2,409</td>
<td>2,810</td>
<td>2,410</td>
<td>2,410</td>
<td>2,410</td>
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<td><strong>Obligation</strong></td>
<td>84,911</td>
<td>80,136</td>
<td>85,282</td>
<td>85,230</td>
<td>86,198</td>
<td>86,289</td>
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<td><strong>Resource Operating Margin</strong></td>
<td>69,363</td>
<td>38,185</td>
<td>31,373</td>
<td>34,853</td>
<td>36,433</td>
<td>33,622</td>
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</table>

*Resources includes Generators, DRRs & EARs (emergency resources not initially included)*

This is a prototype version, subject to change before deployment.
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MOM Forecast Readers Guide

- Draft version has been included along with the MSC meeting materials
- Comments are welcomed
Incremental enhancements are contemplated

- MISO will use internal and Stakeholder feedback to prioritize near-term evolution of MOM Forecast
- Likely near-term enhancements include:
  - Regional breakdown (North, Central, South)
  - Compute Actuals (after-the-fact) for each component
    - Needed to assess accuracy in future forecasts
  - Possible adjust time “buckets” for off-line capacity
- Other enhancements could include:
  - Include emergency capacity availability
  - Include outage/derate data from CROW
Key objective will be to identify and quantify uncertainties.

Understanding and quantifying uncertainty can be as important as the forecast, itself.
Potential longer-term MOM Forecast refinements, if warranted

- Improve estimates of resource outages, by:
  - Estimating future forced outages
  - Identifying risks of capacity returning from outage
- Anticipate RDT Flow
- Estimate BTMG contributions
- Improve Interchange Forecasting
  - More than just scheduled interchange
  - Price-sensitive
  - Depends on neighboring system conditions
- Anticipate Stranded Capacity
- Other…
Additional Information

• Issue Tracking Tool for MOM Forecast
  • https://www.misoenergy.org/stakeholder-engagement/issue-tracking/multi-day-operating-margin-forecast/

• For questions/comments:
  • Chuck Hansen (chansen@misoenergy.org)