Furthering our joint commitment to regional resource assessment and transparency in the MISO region, OMS and MISO are pleased to announce the results of the 2018 OMS MISO Survey

June 2018
MISO Region is projected to have adequate resources to meet its Planning Reserve Requirement for 2019; continued action will be needed to ensure sufficient resources are available going forward

- The region is projected to have 0.6 GW to 6.6 GW resources in excess of the regional requirement, based on responses from over 97% of MISO load

- Beyond 2019, decrease in resource commitments could lead to more risk to resource adequacy than previously projected
  - Lower resource commitments are mainly focused in Zones 4 and 7
  - Fewer resource commitments lead to higher likelihood of using emergency resources

- Demand forecast continues to decrease similar to previous projections
  - 2019 summer peak forecasts decreased 1.5 GWs from 2017 projections
  - Regional 5 year growth rate is 0.3%, down from 0.5% last year
Understanding Resource Adequacy Requirements

- Load serving entities within each zone must have sufficient resources to meet load and required reserves.
- Surplus resources may be shared among load serving entities with resource shortages to meet reserve requirements.
Existing resources, potential retirements, and new resources create a range of resource balances

### Projected Regional Capacity Position in Installed Capacity (ICAP) GW (% Reserves)

<table>
<thead>
<tr>
<th>Year</th>
<th>Committed Capacity</th>
<th>Potential New Capacity</th>
<th>Potentially Unavailable Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>6.6 (22.4%)</td>
<td>0.8</td>
<td>5.2 (17.6%)</td>
</tr>
<tr>
<td>2020</td>
<td>7.3 (22.9%)</td>
<td>1.3</td>
<td>-0.1 (17.0%)</td>
</tr>
<tr>
<td>2021</td>
<td>7.5 (23.0%)</td>
<td>2.4</td>
<td>-0.9 (16.4%)</td>
</tr>
<tr>
<td>2022</td>
<td>7.5 (23.0%)</td>
<td>4.2</td>
<td>-2.3 (15.3%)</td>
</tr>
<tr>
<td>2023</td>
<td>6.0 (21.8%)</td>
<td>4.7</td>
<td>-4.5 (13.5%)</td>
</tr>
</tbody>
</table>

- Regional outlook includes projected constraints on capacity, including the Sub-regional Power Balance Constraint.
- These figures will change as future capacity plans are solidified by load serving entities, state commissions, and local regulators.
- **Potential New Capacity** represents the capacity in the DPP study of the MISO Generator Interconnection Queue at their expected capacity credit and projected queue certainty factors (see slide 12), as of May 1, 2018.
- **Potentially Unavailable Resources** includes potential retirements and capacity which may be constrained by future firm sales across the Sub-regional Power Balance Constraint.
Regional capacity balances decreased largely due to decreased availability of resources

Regional 2019 Outlook
Committed Capacity Projection Variations since 2017 OMS MISO Survey
In GW (ICAP)

- Forecasted Regional Surplus: 2017 OMS-MISO Survey = 3.9 GW
- Forecasted Load Reductions = 1.5 GW
- Increased Reserve Requirement due to Higher Forced Outage Rates = 1.4 GW
- New Resources since 2017 = 1.2 GW
- Decreased Availability of Existing Resources since 2017 = 4.6 GW
- Forecasted Regional Surplus: 2018 OMS-MISO Survey = 0.6 GW

New resources include resources with newly signed Interconnection Agreements and new Load Modifying Resources
Decreased availability results from new retirements and potential retirements
Demand forecast variation creates risk for forward-looking resource adequacy projections

<table>
<thead>
<tr>
<th>Year</th>
<th>Potential Capacity Projections</th>
<th>Committed Capacity Projections</th>
</tr>
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<tbody>
<tr>
<td>2019</td>
<td>6.6 (22.4%)</td>
<td>0.6 (17.6%)</td>
</tr>
<tr>
<td>2020</td>
<td>7.3 (22.9%)</td>
<td>-0.1 (17.0%)</td>
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<th>Potential Capacity Projections</th>
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<tbody>
<tr>
<td>2019</td>
<td>4.8 (20.9%)</td>
<td>-1.2 (16.2%)</td>
</tr>
<tr>
<td>2020</td>
<td>5.2 (21.2%)</td>
<td>-2.2 (15.4%)</td>
</tr>
<tr>
<td>2021</td>
<td>5.1 (21.1%)</td>
<td>-3.3 (14.5%)</td>
</tr>
<tr>
<td>2022</td>
<td>4.8 (20.9%)</td>
<td>-5.0 (13.2%)</td>
</tr>
<tr>
<td>2023</td>
<td>3.1 (19.5%)</td>
<td>-7.4 (11.3%)</td>
</tr>
</tbody>
</table>

Potential Capacity includes potential new capacity and potentially unavailable resources
One day in ten PRM (17.1%)

In 2019, regional surpluses are sufficient to cover areas with potential resource deficits

2019 Outlook, ICAP GW (% Reserves)

6.0 (22.4%) 6.6 (22.4%)

Potential Capacity Projection

Committed Capacity Projection

2019 Outlook (ICAP GW)

-1.5 0.1 0.7 0.1 0.8 -1.4

1.5 to 1.7 0.1 to 0.2 0.5 to 1.0 0.5 to 0.6 1.9 to 2.0 1.4 to 1.5

1 MN, MT, ND, SD, West WI 2 East WI and Upper MI 3 IA 4 IL 5 MO 6 IN and KY 7 Lower MI 8 AR 9 LA and TX 10 MS

-1.4 0.6 1.4 0.6 to 1.4

-1.4 1.4 1.0

• The MPSC recently made a determination that the Michigan LSE’s have adequate resources (owned or contracted) to meet projected resource adequacy through 2021, this aligns with the upper range of the OMS MISO survey projections for zone 7
• Regional surpluses and potential resources are sufficient for all zones to serve their deficits while meeting local requirements
• Positions include reported inter-zonal transfers, but do not reflect other possible transfers between zones
• Exports from Zones 8, 9, and 10 were limited by the Sub-regional Power Balance Constraint
Continued focus on load growth variations and generation retirements will reduce uncertainty around future resource adequacy assessments.

2023 Outlook, ICAP GW (% Reserves)

- 6.0 (21.8%)
- 10.5
- 20.5
- 10 (13.5%)

One day in ten
PRM (17.1%)

The MPSC recently made a determination that the Michigan LSE’s have adequate resources (owned or contracted) to meet projected resource adequacy through 2021, this aligns with the upper range of the OMS MISO survey projections for zone 7.

Regional surpluses and potential resources are sufficient for all zones to serve their deficits while meeting local requirements.

Positions include reported inter-zonal transfers, but do not reflect other possible transfers between zones.

Exports from Zones 8, 9, and 10 were limited by the Sub-regional Power Balance.
Future resource ranges will shift as planned generation interconnections are firmed up.

Potential Generation Additions, in GW

- Potential new resources are represented at their expected capacity credit and projected queue certainty factors from slide 12.

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Forecasted resource mix changes continue to underpin a number of initiatives currently in the stakeholder process

- Existing wind and solar resources are at their expected capacity credit
- Potential new resources are represented at their expected capacity credit and projected queue certainty factors from slide 12
2018 OMS MISO survey results consider new generator interconnections as potential capacity

<table>
<thead>
<tr>
<th>Apply Capacity Credit</th>
<th>Apply DPP Study Phase Weighting</th>
<th>Requested In-Service Date</th>
<th>DPP Study Cycle Not Started</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind 15.6%</td>
<td>Not Started = 10%</td>
<td>If requested in-service date is prior to 2018, projects would be moved to their DPP study cycle end date, unless an updated date is provided in the OMS-MISO Survey</td>
<td>If the DPP Study Cycle hadn’t started, then project requested in-service dates would be moved to their DPP study cycle end date plus 2 years, unless an updated date is provided in the OMS-MISO Survey</td>
</tr>
<tr>
<td>Solar 50%</td>
<td>Phase 1 = 10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All other 100%</td>
<td>Phase 2 = 50% Non-Intermittent, 25% Intermittent</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Phase 3 = 75% Non-Intermittent, 50% Intermittent</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GIA in Progress = 90%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- DPP = Definitive Planning Phase in the MISO generator interconnection queue
- DPP Study Phase Weighting is applied to recognize that as projects move through the queue process they generally become more certain
- In-service adjusted if the DPP Study Cycle Not Started to recognize that a project likely can’t get capacity credit until at least the end of the DPP study cycle and additional 2 years to reflect expected GIA dates and possible construction timelines