2016/2017 Winter Weekly Reserve Target (WWRT)

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Sr. Engineer – Resource Adequacy Planning
PC Meeting
November 3, 2016
Winter Weekly Reserve Target

• Background
  – WWRT is part of the Reserve Requirement Study (RRS), which also calculates the IRM and the FPR.
  – WWRT is supplied to the PJM Operations Department which uses it to coordinate generator maintenance scheduling during the winter period.

• Objective
  – Cover against uncertainties associated with load and forced outages during the winter months so that winter LOLE is practically zero
Winter Weekly Reserve Target

• Procedure
  – Step 1: In GE-MARS, set up an IRM case with total LOLE = 0.1 days/year
  – Step 2: In addition to the required planned maintenance, simulate additional planned maintenance during the three winter months until the total LOLE is worse than 0.1 days/year.
  – Step 3: Calculate available reserves in each of the winter weeks.
  – Step 4: Average the available reserves on a monthly basis
Feedback/Requests from October OC Meeting

• Adopt a monthly approach to calculate the WWRT
  – This has been implemented in the procedure (see Step 4)
  – A monthly approach addresses January’s larger peak load uncertainty compared to February’s or December’s
• Clarify source of Winter ICAP values used in the analysis
  – Winter ICAP values are from the Winter Verification Test data
  – In most cases, very similar to Summer ICAP values
<table>
<thead>
<tr>
<th>Month</th>
<th>% Available Reserves</th>
<th>LOLE</th>
<th>Avg % Available Reserves (by Month)</th>
</tr>
</thead>
<tbody>
<tr>
<td>December</td>
<td>22.84</td>
<td>8.27E-06</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>21.67</td>
<td>6.20E-05</td>
<td></td>
</tr>
<tr>
<td></td>
<td>22.68</td>
<td>3.31E-05</td>
<td></td>
</tr>
<tr>
<td></td>
<td>27.15</td>
<td>0.00E+00</td>
<td></td>
</tr>
<tr>
<td>January</td>
<td>38.67</td>
<td>0.00E+00</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>24.15</td>
<td>9.51E-05</td>
<td></td>
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<tr>
<td></td>
<td>24.72</td>
<td>8.27E-06</td>
<td></td>
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<tr>
<td></td>
<td>30.28</td>
<td>0.00E+00</td>
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<tr>
<td></td>
<td>30.08</td>
<td>0.00E+00</td>
<td></td>
</tr>
<tr>
<td>February</td>
<td>33.07</td>
<td>0.00E+00</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>22.33</td>
<td>1.02E-04</td>
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<tr>
<td></td>
<td>26.41</td>
<td>0.00E+00</td>
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<tr>
<td></td>
<td>28.24</td>
<td>0.00E+00</td>
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</tbody>
</table>
Requested PC Action

- Endorsement of Winter Weekly Reserve Target Values for 2016/17 as shown below:

<table>
<thead>
<tr>
<th>Month</th>
<th>WWRT</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 2016</td>
<td>24%</td>
</tr>
<tr>
<td>January 2017</td>
<td>30%</td>
</tr>
<tr>
<td>February 2017</td>
<td>28%</td>
</tr>
</tbody>
</table>