PJM RTO Wide Five Year Selection Process
Black Start RFP

OPSI Update
May 16, 2014
• RTO Wide RFP Awards complete
• Successful implementation of new SRSTF methodology for critical load requirement:
  – Major re-designation of critical load units in transmission owner zones
  – Established new cranking paths for black start to critical load units
• Sufficient black start megawatts to serve critical load requirements in all transmission owner zones post-2015 retirements
• Cross zonal solutions utilized in some transmission owner zones
• Potential termination of some existing excess black start units where appropriate
Incremental and RTO Wide RFP Process
(RFP Awards since 2012)
Current State vs. Post 2015 State

Current Black Start: 8,720 MW (195 units)

Pre-SRTF Critical Load: 4,780 MW (475 units)

Post-2015 Black Start: 8,070 MW (150 units)

Post-2015 Critical Load Requirement: 2,910 MW (600 units)

Legend:
- What we have today
- Critical load under previous business rules
- Total black start after RFP solutions implemented
- Critical load requirement per SRSTF rules after retirements/terminations
Key Points for Post-2015 State

- Overall less black start megawatts, with fewer black start units, cranking a lower amount of critical load but a higher quantity of critical load units.
- Net increase in surplus of black start to critical load requirement due to ensuring cranking power for all critical load units, larger units for RFPs, geographic diversity.
RTO Post-2015 Black Start – Critical Load Requirement
Reasons for Black Start Surplus vs. Critical Load Requirement

Components of Post-2015 Black Start amounts:

1. Existing black start units

2. RFP Awards (Incremental or RTO wide)
   a) Larger units offered in RFPs (entire unit accepted, not a portion of unit)
   b) Multiple units selected as RFPs (ie. 2 black start units for no additional cost)
   c) Needed to award additional RFP black start units for cranking critical load (ie. MVAR capability, line charging)
   d) Larger existing black start units – not able to serve critical load requirement, so additional black start needed
   e) Geographic diversity of black start to serve critical load requirement
   f) Additional critical load or redundancy due to revised Nuclear Safe Shutdown critical load requirement
   g) Higher quantity of critical load units requiring additional black start capability

3. Black start amounts include projections for PJM termination of excess black start where appropriate (ie. an existing black start unit that doesn’t crank any critical load)
Timeline

RFP Evaluation Complete
Target= April 1, 2014

- Black Start/Critical Load Baseline Update
  - GO Survey
  - NGO-Critical Load Updates/NPIR
  - Update Black Start Calculator

- RFP Evaluation
  - Technical
  - Operational
  - Cost/Schedule

New Black Start Available
Target= April 1, 2015

- Black Start RFP Solution Implementation
- eDart Black Start Tools
- TO Restoration Plan Updates

Current Status

Communications (Internal and External)

- State Outreach/OPS/CI
- PJM Committees
### Next Steps

<table>
<thead>
<tr>
<th>Action</th>
<th>Target Date</th>
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<tbody>
<tr>
<td>Post black start cost projections for 2015-2017 (Monitoring Analytics)</td>
<td>Reviewed at 5/2/2014 SRSTF Meeting</td>
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<tr>
<td>Complete analysis for any remaining PJM black start terminations</td>
<td>6/1/2014</td>
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<tr>
<td>Coordinate implementation sequencing for awarded RFPs – ie. timing for retirements / terminations</td>
<td>6/1/2014</td>
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<tr>
<td>Coordinate / implement transmission owner restoration plan revisions</td>
<td>6/1/2015</td>
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