Draft TO/TOP Matrix V13
Recommendation for Approval

Srinivas Kappagantula
System Operations Subcommittee
February 1, 2019
<table>
<thead>
<tr>
<th>Action Required</th>
<th>Deadline</th>
<th>Who May Be Affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommend TOA-AC to approve TO/TOP Matrix V13 with an effective date of 4/1/2019</td>
<td>2/1/2019</td>
<td>PJM Member Transmission Owners (TOs)</td>
</tr>
</tbody>
</table>
• PER-003-2, new NERC Reliability Standard, enforceable 7/1/2019
  – No change to assigned or shared tasks
  – Purely administrative; clarifying footnote added to ensure that stakeholders (now and in the future) understand (i) the connection between the Standard and the Program Manual; and (ii) that the certifications referenced under PER-003-1 are those under the NERC System Operator Certification Program.
Edits for Approval

• Edits to VAR-001-5 Assigned/Shared Task
  – Needed to align assigned Member TO task to Manual 3, Section 3.11: Generator Voltage Schedules
  – eDART application is the preferred method for communication of voltage schedules; alternative or supplemental email communication of voltage schedules currently accepted, but will be phased out
  – Details in M-3, Section 3.11 Revision 54, Effective 12/10/2018
• Index between the PJM Manuals and NERC Reliability Standards applicable to PJM as the TOP
• Delineates the Assigned/Shared Tasks for Member TOs where PJM relies on its TOs to perform certain tasks
• Does not create any new obligations for PJM or its Member TOs
• An efficient and effective tool fundamental to a strong PJM Internal Control – the PJM TO/TOP Reliability Audit Program
TO/TOP Matrix Update Process

1. Review Future Standards Incorporation Plan and prioritize – Monthly at TTMS

2. Identify requirements to be added or edited in the Matrix

3. PJM develops “Strawman” for TTMS review

4. TTMS finalizes new or revised tasks (PJM and Member TOs)

5. Committee updates and TOA-AC approval prior to most pressing “Enforcement Date”
Changes Incorporated in V13

1. New NERC Reliability Standard Additions
   - EOP-004-4, EOP-005-3, EOP-008-2
   - PER-003-2
   - TOP-001-4 R20, R21
   - VAR-001-5

2. Task Updates
   - Assigned/Shared Member TO tasks
   - PJM tasks

3. Evidence of Compliance Updates
   - Clarification of evidence examples
   - Addition of evidence examples

4. Administrative Changes
   - Inactive date changes for some standards
   - Reference document updates
   - Spelling and grammar check
## New NERC Reliability Standards

### Summary of Changes to NERC Reqs. and Matrix

1. **EOP-004-4**: Minor revisions to R2; no change to assigned/shared tasks.

2. **EOP-005-3**: Retired old R7 and R8; EOP-005-2 R10 became EOP-005-3 R8; added a new training requirement R8.5; corresponding assigned/shared task updates.

3. **EOP-008-2**: Minor revisions to some requirements; corresponding updates to assigned/shared tasks. Did not change operating processes or procedures.

4. **PER-003-2**: No changes to requirements; clarifying footnote added. No change to assigned/shared tasks.

5. **TOP-001-4**: Added R20 and R21, which deal with data exchange infrastructure requirements and associated redundant functionality testing.

6. **VAR-001-5**: No changes to requirements and assigned/shared tasks. New version included changes to WECC variances.

<table>
<thead>
<tr>
<th>Standard</th>
<th>Req.#</th>
<th>Enforceable</th>
</tr>
</thead>
<tbody>
<tr>
<td>EOP-004-4</td>
<td>R2</td>
<td>4/1/2019</td>
</tr>
<tr>
<td>EOP-005-3</td>
<td>R4</td>
<td>4/1/2019</td>
</tr>
<tr>
<td>EOP-005-3</td>
<td>R4.1</td>
<td>4/1/2019</td>
</tr>
<tr>
<td>EOP-005-3</td>
<td>R4.2</td>
<td>4/1/2019</td>
</tr>
<tr>
<td>EOP-005-3</td>
<td>R8.5</td>
<td>4/1/2019</td>
</tr>
<tr>
<td>EOP-008-2</td>
<td>Minor Revs.</td>
<td>4/1/2019</td>
</tr>
<tr>
<td>PER-003-2</td>
<td>No Revs.</td>
<td>7/1/2019</td>
</tr>
<tr>
<td>TOP-001-4</td>
<td>R21</td>
<td>7/1/2018</td>
</tr>
<tr>
<td>TOP-001-4</td>
<td>R20</td>
<td>7/1/2018</td>
</tr>
<tr>
<td>VAR-001-5</td>
<td>No Revs.</td>
<td>1/1/2019</td>
</tr>
<tr>
<td>Standard</td>
<td>Req. #</td>
<td>Updates</td>
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</tr>
<tr>
<td>1. COM-001-3</td>
<td>R5</td>
<td>• Clarified assigned task to identify entities Member TOs need to have voice communications capabilities with</td>
</tr>
<tr>
<td>2. TOP-001-4</td>
<td>R10.2</td>
<td>• Added an assigned task (#2) - notify PJM of change of status in RAS schemes</td>
</tr>
<tr>
<td>3. TOP-001-4</td>
<td>R10.1</td>
<td>• Added an assigned task (#2) - notify PJM of change of status for monitored facilities</td>
</tr>
<tr>
<td>4. TOP-010-1(i)</td>
<td>R19</td>
<td>• Updated assigned task to reflect the correct part of PJM Manual 1 Attachment B</td>
</tr>
<tr>
<td>5. VAR-001-5</td>
<td>R5.1</td>
<td>• Revised assigned task to reflect updated voltage communication process in Manual 3, Section 3.11</td>
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</tbody>
</table>
There are no PJM task updates in V13 other than New NERC Reliability Standard Additions and administrative changes.
### Evidence of Compliance Updates

<table>
<thead>
<tr>
<th>Standard</th>
<th>Req.#</th>
<th>Updates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. EOP-005-3</td>
<td>R1.2, R6, R6.1, R6.2, R6.3</td>
<td>• Clarified, where possible, the types of evidence that can be used to demonstrate compliance during an audit</td>
</tr>
<tr>
<td>2. EOP-008-2</td>
<td>R4</td>
<td>• Added, as appropriate, examples of evidence that can be used to demonstrate compliance</td>
</tr>
<tr>
<td>3. TOP-001-4</td>
<td>R10.3</td>
<td>• Aligned, where necessary, evidence of compliance with the assigned Member TO tasks</td>
</tr>
<tr>
<td>4. VAR-001-5</td>
<td>R5.1, R5.2, R5.3</td>
<td></td>
</tr>
</tbody>
</table>
Administrative Changes

• COM-001-3: Removed extraneous information from the “Purpose” row
• EOP-004-2: Combined with the next version (EOP-004-3)
• EOP-004-3: Updated “Purpose” row
• Updated all reference documents to their current versions and updated section titles as appropriate
• Your recommendation to the Transmission Owner’s Agreement-Administrative Committee to approve the TO/TOP Matrix V13 with an effective date of 4/1/2019
TO/TOP Matrix Educational/Background Slides
TO/TOP Relationship

• Clear Responsibility and Authorities
  – Long Standing Relationship
  – Unity of Command and One Responsible Entity
  – Codified in PJM’s Agreements
• PJM Committees (OC, SOS, PC…)
• Strong and proven Internal Control
  – PJM Training
  – TO/TOP Matrix
  – PJM TO/TOP Reliability Audits
PJM & Member TO Relationship Document Hierarchy

- **PJM Open Access Transmission Tariff (OATT)**
- **PJM Operating Agreement (OA)**
- **PJM Consolidated Transmission Owners Agreement (TOA)**

**PJM Manuals**
- **Reliability Coordination**
  - M-37 Reliability Coordination
  - M-36 System Restoration
- **Balancing Authority**
  - M-12 Balancing Operations
  - M-11 Scheduling Operations
  - M-10 Pre-scheduling Operations
- **Transmission Operator**
  - M-1 Control Center and Data Exchange
  - M-3 Transmission Operations
  - M-13 Emergency Procedures
  - M-38 Operations Planning
- **Planning Authority**
  - M-14A Gen/Trans Interconnection
  - M-14B Planning Process
  - M-14C Gen/Trans Construction
  - M-14E Merchant Transmission

Filed with FERC
A Look at the Matrix

• Delineation of Reliability Tasks

<table>
<thead>
<tr>
<th>Category</th>
<th>Standard Number</th>
<th>Requirement Number</th>
<th>Approved BOT/FERC Standards</th>
<th>A/S</th>
<th>Assigned or Shared Member TO Tasks</th>
<th>PJM Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>EOP</td>
<td>EOP-005-2</td>
<td>R3</td>
<td>Each Transmission Operator shall have a restoration plan approved by its Reliability Coordinator. The restoration plan shall allow for restoring the Transmission Operator’s System following a Disturbance in which one or more areas of the Bulk Electric System (BES) shuts down and the use of Blackstart Resources is required to restore the shut down area to service, to a state whereby the choice of the next Load to be restored is not driven by the need to control frequency or voltage regardless of whether the Blackstart Resource is located within the Transmission Operator’s System. The restoration plan shall include: [Violation Risk Factor = High] [Time Horizon = Operations Planning]</td>
<td>5</td>
<td>1. Each Member TO shall have a restoration plan that supports restoring the Transmission Operator’s System following a Disturbance in which one or more areas of the Member TO’s BES shuts down. 2. The Member TO shall send the Member TO restoration plan to PJM for approval.</td>
<td>PJM will review, recommend revision, and/or approve submitted Member TO Restoration Plans.</td>
</tr>
</tbody>
</table>

Standard/ Requirement information

NERC Reliability Standard Requirement Text

Tasks Assigned to Member TOs or Shared between PJM and Member TOs

Tasks PJM performs to ensure Reliability Requirement is met in combination with TO Assigned/Shared Tasks
A Look at the Matrix

- **TO/TOP Audit Phase**

<table>
<thead>
<tr>
<th>Audit Questions</th>
<th>Evidence of Compliance (What auditors will be looking for)</th>
<th>Reference Documents</th>
<th>Enforcement Date</th>
<th>Inactive Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Do you have a restoration plan that supports for restoring the Transmission Operator's System following a disturbance in which one or more areas of the Member TO's BES shuts down? 2. Is it approved by PJM?</td>
<td>Exhibit your restoration plan and show that it covers a plan to reestablish its electric system in a stable and orderly manner in the event of a partial or total shutdown of its system, including necessary operating instructions and procedures to cover emergency conditions, and the loss of vital telecommunications channels. 2. Show evidence of approval by PJM.</td>
<td>M-36 System Restoration, Section 8-System Restoration Plan Guidelines; Section 1.1-Policy Statements, PJM Member Actions, Attachment G: Coordination of Restoration Plan with PJM Internal and External Neighboring Entities</td>
<td>7/1/2013</td>
<td>None</td>
</tr>
</tbody>
</table>
What the Matrix Is Not

- Evidence of compliance
- Formal delegation agreement
- Joint Registration Organization (JRO) or Coordinated Functional Registration (CFR)
- A means of creating new obligations for PJM or its Member TOs other than those specified in the PJM OATT, OA, CTOA, PJM Manuals and other governing documents
- A list of how all TOP requirements are met
TO/TOP Matrix Subcommittee (TTMS), a PJM subcommittee with participation limited to Member TOs, develops and maintains the TO/TOP Matrix.

The TTMS reports to the Transmission Owners Agreement-Administrative Committee (TOA-AC), which approves the Matrix.

Monthly meetings to collaborate on new or existing NERC Reliability Standards applicable to PJM as the TOP.
Typical Roadmap to a Version Approval

1. Review Future Standards Incorporation
   Plan and prioritize accordingly

2. Develop Assigned and/or Shared Tasks for NERC Reliability Standard Requirements where PJM relies on Member TOs

3. Conduct an annual review of the Matrix and agree to a final version for updates to various stakeholders

4. Take finalized version to PJM SOS, OC, and PC, seeking their recommendation to TOA-AC to approve the Matrix

5. TOA-AC approves the Matrix. Publish the approved Version.
• Once a Standard has been inactive in the TO/TOP Matrix for 3 years, it gets deleted from the next version