TO/TOP Matrix V14

Srinivas Kappagantula, Chair TTMS
System Operations Subcommittee
January 6, 2020
<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 V14 with an effective date of 4/1/2020</td>
<td>2/3/2020</td>
<td>PJM Member Transmission Owners (TOs)</td>
</tr>
</tbody>
</table>
Introduction

PJM TO/TOP Matrix

- Index between the PJM Manuals/Governing Documents 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 V14

NERC Reliability Standard Exits
- Several standards exiting the matrix, 3 years past enforcement
- Have an inactive date of 3/31/2017

Audit Question Updates
- EOP-005-3 R4.1, R4.2 and R5

Reference Changes
- Ensured assigned/shared task(s) are mapped to right sections of PJM governing documents and manuals

Administrative Changes
- Updated reference documents to current versions
- Spelling and grammar check

TO/TOP Matrix Version 14
NERC Reliability Standards Exiting Matrix

1. COM-001-1.4
2. COM-002-2
3. EOP-001-2.1b
4. EOP-003-2
5. EOP-004-2
6. IRO-001-1.1
7. IRO-004-1
8. IRO-005-3.1a
9. PER-001-0.2
10. PER-005-1
11. PRC-001-1.1(ii) R2, R2.2, R5.2, R6
12. PRC-010-0
13. PRC-022-1
14. TOP-001-1a
15. TOP-002-2.1b
16. TOP-003-1
17. TOP-004-2
18. TOP-006-2
19. TOP-007-0
20. TOP-008-1

Rationale for Inactive Standards in the Matrix

- Once a Standard has been inactive in the TO/TOP Matrix for 3 years, it gets deleted from the next version.
Administrative Changes

- Updated all reference documents to their current versions and updated section titles as appropriate.
- Spelling and grammar check.
V13 Effective 4/1/2019

TO/TOP Matrix V14 Drafting Period

TTMS Finalized V14 December 13, 2019

SOS 1st Read 1/6/2020

PC 1st Read 1/7/2020

OC 1st Read 1/9/2020

TOA-AC 1st Read 1/22/2020

SOS 2nd Read 2/3/2020

PC 2nd Read 2/4/2020

OC 2nd Read 2/6/2020

TOA-AC Approval 3/2020 via Email

V14 Posting Effective 4/1/2020

Timeline
• Your recommendation to the Transmission Owner’s Agreement-Administrative Committee to approve the TO/TOP Matrix V14 with an effective date of 4/1/2020
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 and Member TO Document Relationship 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 TO/TOP Matrix

- Delineation of Reliability Tasks

<table>
<thead>
<tr>
<th>Category</th>
<th>Standard Number</th>
<th>Requirement Number</th>
<th>Approved BTO/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>R1</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>S</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>
## Questions asked to demonstrate compliance

<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>
TO/TOP 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.