



Manual 03A, Rev. 25

Energy Management System (EMS) Model Updates and Quality Assurance (QA)

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- Periodic Review
 - Updated hyperlinks throughout the manual
 - Capitalized non-titled Section summary language - "Transmission Facility, Transmission Facility Ratings" etc:
Section 1.2, 1.3, 1.6, 2.2, 2.4, 2.4.1, 2.4.2, 2.4.3, 3.3, 4.2, 4.4, 4.5, Appendix A
 - Updated manual language for further clarification:
Section 1.3, 1.4, 3.3, 4.5, Appendix A, Appendix B
 - Deleted Exhibit 10 - phased out process

Manual 03A: Energy Management System Model Updates
and Quality Assurance, Revision 25

Subject	Link to Online Reference
PJM	www.pjm.com
PJM Manuals	https://www.pjm.com/library/manuals.aspx
PJM Calendar	https://www.pjm.com/Calendar.aspx
PJM Transmission Facilities	https://www.pjm.com/markets-and-operations/ops-analysis/transmission-facilities.aspx
PJM Open Access Same-Time Information System (OASIS) Informational website	https://www.pjm.com/markets-and-operations/etools/oasis.aspx
PJM Data Management Subcommittee (DMS)	https://www.pjm.com/committees-and-groups/subcommittees/dms.aspx
PJM Transmission Services Help	https://www.pjm.com/~media/markets-ops/trans-service/trans-fac-help.ashx

- Changed “HTTP” to “HTTPS”
Updated links were changes were applicable/needed
- Replaced invalid hyperlinks
Section 2.4.2 & 4.5

M03A: Capitalized non-titled language

Updated Capitalized non-titled format to align with other manuals:

- Transmission Facility Ratings
- Transmission Facility Ratings Database
- Transmission Facility Ratings Data Set
- Dynamic Transmission Facility Ratings

Section 2: Model Information and Transmission Facility Requirements

Welcome to the Model Information and Transmission Facility Requirements section of the **PJM Manual for EMS Model Updates and Quality Assurance**. In this section, you will find information on the following topics:

- Overview of Model Information and Data Requirements
- PJM's Internal World Modeling Philosophy
- Sub-transmission Modeling Criterion and Responsibilities
- PJM's External World Modeling
- Unique Device Considerations in the PJM Model
- PJM Bulk Electric System (BES) **Transmission Facilities**

- Establish and provide Transmission Facility Ratings ~~transmission facilities ratings and provide these ratings to PJM~~

1.3 Electrical Model Responsibilities for Transmission Owner's Operating Entity

The PJM TO operating entity (or Local Control Center – LCC – Transmission Operator) responsibilities defined below are required to create and maintain an accurate model of the electric system. These models are required ~~in order to perform Real-time Monitoring, Real-time Analysis, Real-time Assessments and Operational Planning Analysis to analyze real-time conditions to help ensure that the PJM transmission system is operated safely and reliably.~~

PJM TOs are obligated to provide data and information to adequately model the electric system. In addition to the responsibilities identified in this manual, the PJM Consolidated Transmission Owner's Agreement (TOA) and the PJM manuals also reference models and information required by PJM. The roles identified by PJM are consistent with ~~those contained in NERC Reliability Standards and the PJM TO/TOP Matrix, those in the NERC Functional Model for interconnected system operation.~~ The responsibilities listed below, although not intended to be all-inclusive, identify many significant TO operational responsibilities and obligations which impact electric system modeling. The TO is required to:

- Added manual language detailing areas the EMS model impacts
- Replaced NERC Functional Model reference – process retired in 2019

PJM's EMS performs the actual limit checking. Data is transferred manually from TERM to the EMS where automated programs continuously check that ~~all~~ EMS ratings data ~~are is~~ consistent with the corresponding TERM data. ~~Periodic checks run each day (0600 and 1800 hours) to verify that the ratings in EMS and in TERM are consistent.~~ When differences are found, the system automatically generates TERM tickets to match the EMS Transmission Facility Ratings ratings. In addition, if an individual change is missed, periodic runs each day (0600 and 1800 hours) to true-up and ensure that Transmission Facility Ratings in the EMS and in TERM are consistent. Through these checks, whenever such differences are found, a ~~A~~-Temporary TERM ticket is created with a status of 'Implemented w/o Approval' when the EMS data and TERM

- Added manual language detailing the Ratings Update process and checks



Section 4.5: Removed Exhibit 10

CUT-IN FLAG REPORT FROM 9/6/2014 to 9/23/2014									
Ticket	TO	Station & Equipment	Volt	Start	End	Type	On Time	Description	
556748	GDF	LONTTOPL KNQPEAST CB 500 KV	500 KV	9/6/14 7:00	9/23/14 16:00	Continuous	Yes	This is part of RTEP project XT250 to rebuild LONTTOPL-KNQPUEHA.	
556748	GDF	LONTTOPL-KNQPUEHA LAC-SUS 500 KV	500 KV						
556748	GDF	LONTTOPL KNQPWEST CB 500 KV	500 KV						
556748	GDF	KNQPUEHA NPCK CB 500 KV	500 KV						
556748	GDF	KNQPUEHA NPCK2TE CB 500 KV	500 KV						
198073	SCMED	CANTDNTY H452 CB 230 KV	230 KV	1/6/14 14:00	9/25/14 12:00	Continuous	Yes	Wreck and re-build of 230kV line 2017B.	
198073	SCMED	CANTDNTY TX3 XFORMER 230 KV	230 KV						
198073	SCMED	CANTDNTY H352 CB 230 KV	230 KV						
198073	SCMED	CANTDNTY-HARRIERD 2017B 230 KV	230 KV						
198073	SCMED	CANTDNTY H354 DIS 230 KV	230 KV						
198073	SCMED	CANTDNTY L452 CB 115 KV	115 KV						
198073	SCMED	HARRIERD 201786 DIS 230 KV	230 KV						
515466	AEL	WATERFAL-TOWNROCK 118981-2 115 KV	115 KV	9/4/14 9:00	9/26/14 12:00	Continuous	Yes	69/115kv Transformer 2 at Waterfall out service for replacement	
515466	AEL	WATERFAL WFTR_2_AB CB 69 KV	69 KV						
515466	AEL	WATERFAL WFTR_2_CB 115 KV	115 KV						
515466	AEL	WATERFAL 2 XFORMER 115 KV	115 KV						
515468	AEL	ACERRECA AB5567 CB 138 KV	138 KV	9/17/14 18:00	9/19/14 21:00	Continuous	No	AB5567 NEEDS TO COME OUT TO INSTALL NEW BREAKER	
548804	FCIT	48 TUHOD-1916 1916 2 138 KV	138 KV	9/22/14 6:00	9/26/14 21:00	Daily - Weekends Only	Yes	Need to install switch structures at WINE EAST terminal.	
548804	FCIT	892 TUHO 1916 CS DIS 138 KV	138 KV						
548804	FCIT	46 WINEEG 38L4916 CB 138 KV	138 KV						
548804	FCIT	48 TUHOD-1916 1916 2 138 KV	138 KV	9/17/14 18:00	9/19/14 21:00				
548804	FCIT	Close 984 RANDE 38BT5-6 CB 138 KV	138 KV						
548804	FCIT	Close 296 GTUN BT1-2 CB DIS 138 KV	138 KV	9/22/14 6:00	9/26/14 21:00				
548804	FCIT	48 TUHOD LK 38TR77 34 138 KV	138 KV		9/22/14 18:00				
548804	FCIT	294 GURNE 38L1916 CS 138 KV	138 KV	9/17/14 18:00	9/19/14 21:00				
548804	FCIT	48 TUHOD 34TR77 CB 34.5 KV	34.5 KV	9/22/14 6:00	9/22/14 18:00				
548804	FCIT	46 WINEE-4916 4916 1 138 KV	138 KV	9/15/14 6:00	9/19/14 21:00				
548804	FCIT	46 WINEE-4916 4916 1 138 KV	138 KV	9/16/14 15:16	9/26/14 21:00				
548804	FCIT	48 TUHOD 1916 CB CB 138 KV	138 KV	9/17/14 18:00	9/19/14 21:00				

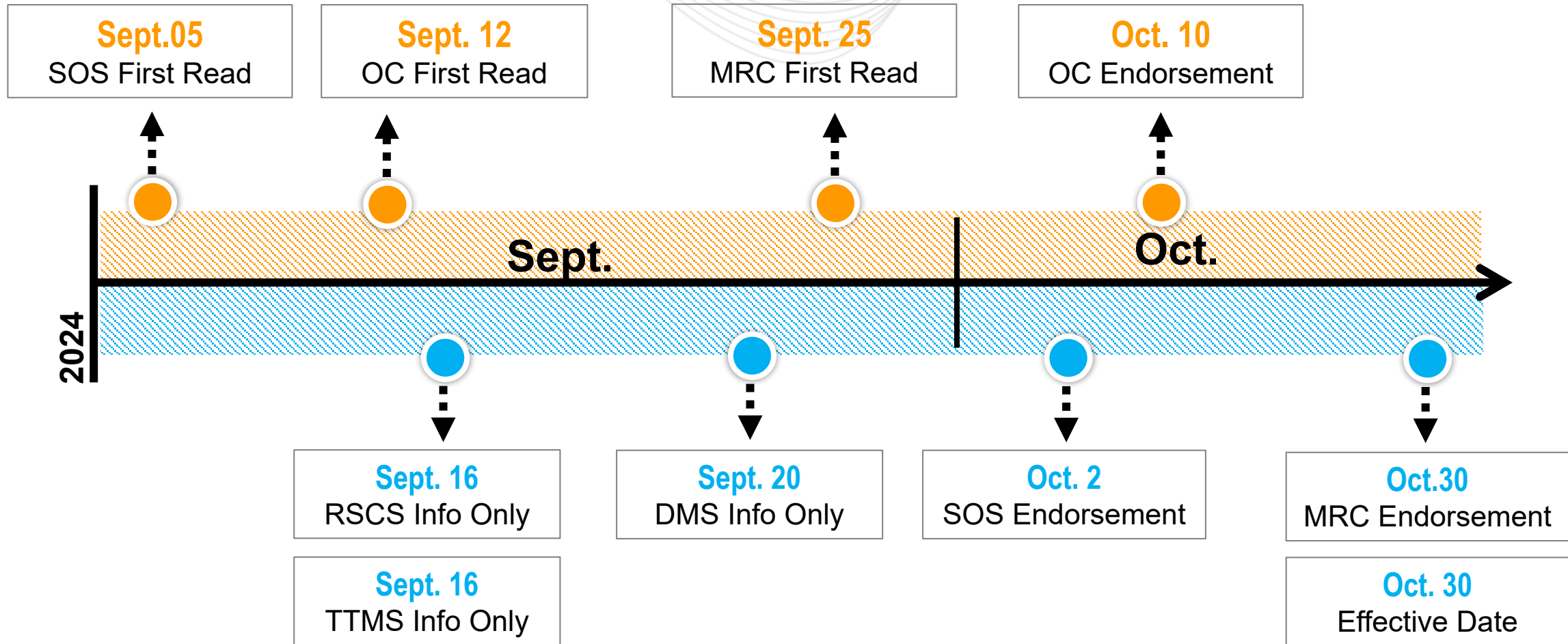
- Remove Exhibit 10
Outdated process was replaced via “Cut-in Barron” weekly reports

To facilitate the Cut-in process, PJM performs outreach to each TO with Cut-in related work in the Operations time horizon. will publish a weekly list of scheduled outages in eDART that have the Cut-in flag set. The reports include a six (6)-week look-ahead of all outages tickets that have the Cut-in flag set. See Exhibit 10 below.

TOs can filter the information for their individual needs. TOs are expected to review the data for accuracy and begin assembling and submitting necessary Transmission Facilities Ratings data, ensuring that telemetry is provided to support the new configuration. PJM staff members also review this data. Each TO must respond back to PJM within three (3) business days either agreeing that the information is correct or with changes that have been made via eDART.

Exhibit 10: Sample Format for 6-Week Look Ahead Cut-in Report

Manual 03A, Rev 25 Review / Approval Timeline



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