



Manual 3A, Revision 18

2019 Cover-to-cover Periodic Review

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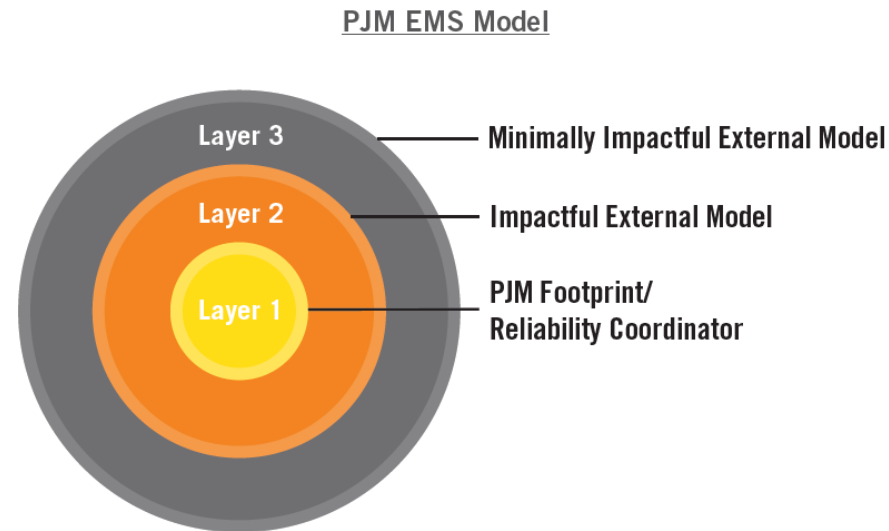
The overall purpose and intent of changes included in Revision 18 of Manual 03A can be summarized as:

- 2019 Cover-to-cover Periodic Review for M03A
- Phase I of an overall effort to:
 - update
 - reorganize
 - streamline
- *New Section*: **Modeling Philosophy**

Topic	Section Moved From	Section Moved TO
BES Facility Modeling	4.9	2.2.1
Sub-transmission Modeling	4.9	2.2.1
Sub-transmission Modeling Criterion & Responsibilities	4.9	2.2.2
External Modeling	4.9	2.2.3
Pseudo-Tie Eligibility and Pseudo-Tie Modeling	4.9	2.2.3
Naming & Modeling Standards	3.5	2.2.4
Prepare Initial BES Data to Denote BES Elements of the System	4.9	2.3.1
TO Staff Responsibilities – To Address BES Definitions	4.9	3.2
PJM Staff Responsibilities – To Address Revised BES Definitions	4.9	3.2
PJM’s SA Program & RTCA Data Quality	5.5	5.3
Examples of EMS Sub-transmission Modeling	4.9	Appendix G <i>New</i>

- Section 1.2: Formatting changes; generator data descriptions removed; outdated procedure removed
- Section 1.5: Description of PJM's use of 'three concentric model' revised and updated
- Section 1.6: Formatting changes; updates made to text to reflect current procedures. *New* note added to specify PJM timelines for TOs to provide telemetry and a full SCADA file from members with ICCP connection

- Section 1.7: The words ‘Real-Time’ removed from title (now reads: **PJM’s Operations Transient Stability Model**); section updated to reflect current procedures.
- Exhibit 1: Replaced with updated version; layers renamed for clarity.



Section 2 redesigned to reflect PJM's modeling philosophy. Revisions throughout section are a combination of text from existing sections 3.5 and 4.9, as well as text to reflect current modeling practices and guidelines.

Section 2 Content by Heading:

- 2.2.1 Internal World Modeling Philosophy
 - BES Facility Modeling
 - Sub-transmission Modeling
- 2.2.2 Sub-transmission Modeling Criterion and Responsibilities

Section 2 Headings (continued)

- 2.2.3 PJM External World Modeling
 - External World Modeling
 - Model Exchange and Extraction (with reference to JRCA added)
 - Pseudo Tie Modeling
 - Pseudo Tie Eligibility
 - Pseudo Tie EMS Modeling
- 2.2.4 Naming and Modeling Standards (from existing Section 3.5)
- 2.2.5 Unique Device Consideration in the PJM Model

- 2.3.1 Prepare Initial BES Data to Denote BES Elements of the System (from existing Section 4.9)

2.3.1 Prepare Initial BES Data to Denote BES Elements of the System

- **TOs staff perform an initial review of existing systems to assess what is to be included or excluded to the current list of BES elements and provide necessary documentation to NERC.³**

Footnote added

³ Refer to **Compliance Bulletin 14: Definition of Bulk Electric System (BES) – PJM Member Requirements** at <https://pjm.com/-/media/library/whitepapers/compliance/cb014-bulk-electric-system-definition-pjm-member-requirements.ashx?la=en>

- Section 3.2: Content moved from Section 4.9 to Section 3.2:
 - TO Staff Responsibilities – To Address BES Definitions
 - PJM Staff Responsibilities – To Address Revised BES Definitions
 - PJM Staff Responsibilities – Ongoing Sub-transmission Modeling Considerations
- Section 3.4: Text revised to reflect updated procedures when changing transformers and shunts.

- Section 3.5: Content moved to new Section 2.2.4 Naming and Modeling Standards
- Exhibit 10: Refreshed with updated screen shot of Sample TO Facilities List

PJM Interconnection, L.L.C
 Last Updated on 5/31/2019
PJM Transmission Providers FACILITIES LIST

The following list includes, but is not limited to, facilities of the regional transmission owners that are included in PJM's EMS model. FERC Form-1 or equivalent facilities are so noted under the column headed PJM OAT Tariff Facility. This list will be updated when transmission facilities managed by PJM are added to, or deleted from, the electrical network.

[PJM Transmission Providers Facilities List On-Line Help\(PDF\)](#)

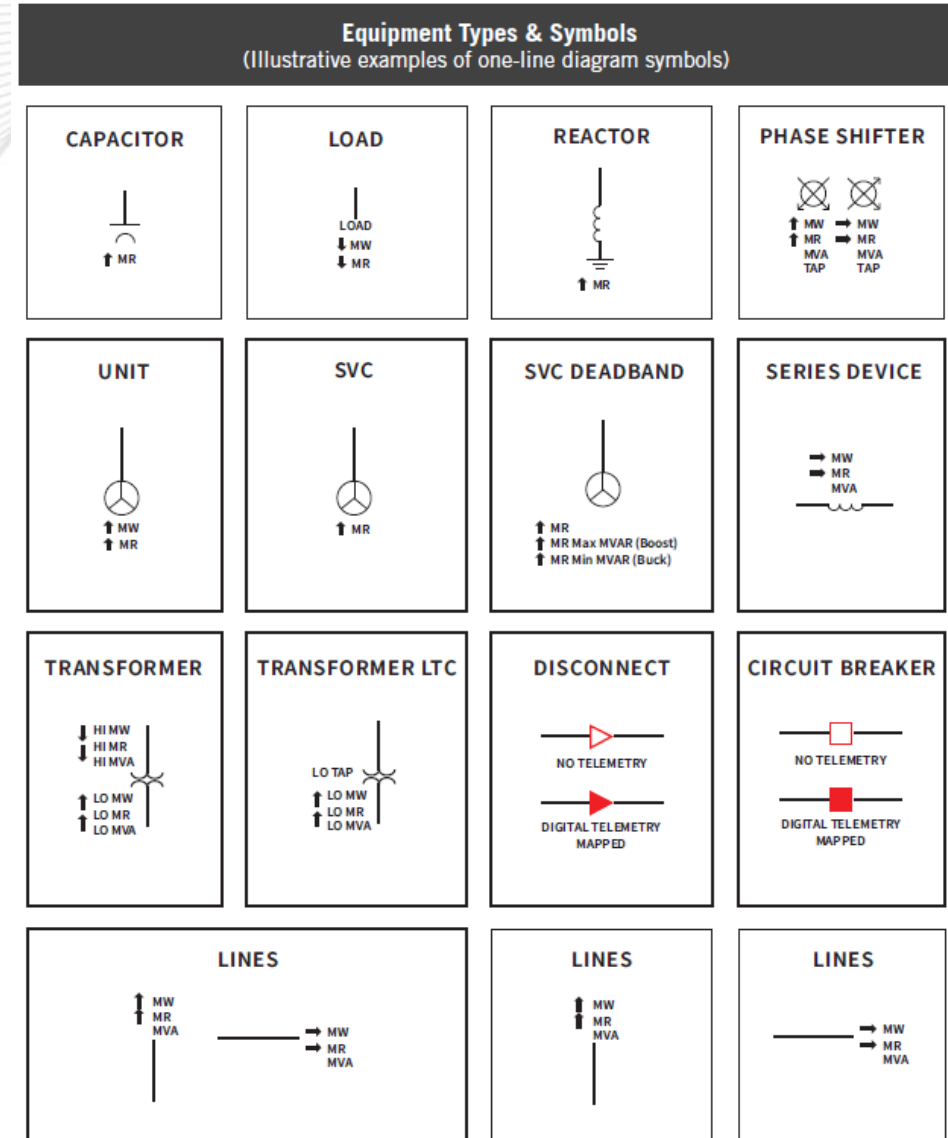
Equipment Code:
 1 - Transmission Line
 2 - Transformer or Phase Shifter
 3 - Shunt Capacitor or Reactor
 4 - Series Reactor or Capacitor
 5 - SVC Device
 6 - Other Substation Equipment-Busses, Bus Sections, or Breakers
 7 - Tie-line
 8 - Generator Step Up (GSU) transformer
 (List by Station and Voltage Level or Device Name)
 9 - Flow CB
 10 - Equipment

Company ABC

Mark column K as:
 Yes = Reportable and Call in
 Low = Reportable, status available will not call in unless unusual circumstances
 No = No call and no status

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)
Equip Code	ID	Facility Identification by Transmission Prov	B1_NAME	B2_NAME	B3_NAME	B3 TEXT	Voltage	PJM OAT Tariff Facility (Y/N)	Included in EMS Model (Y/N)	Reportable Facility (Y/N)	PJM Monitored Facility Status	BES Flag
		PJM EMS MODEL FACILITY NAME										
✓	1	Happy - Gloomy 138kV	HAPPY	138KV	HAP-GLOO	HAPPY - GLOOMY 1234	138	Yes	Yes	Yes	Reliability & Markets	True
✓	1	Land - Sky 500KV	LAND	500KV	LAN-SKY	LAND - SKY 567	500	Yes	Yes	Yes	Reliability & Markets	True
✓	1	Broad Tap - Street Rd 230KV	BRODTAP	230KV	BRO-STR	BROAD TAP - STREET RD 8910	230	Yes	Yes	Yes	Reliability & Markets	True
✓	1	Sun - Shine 230KV	SUN	230KV	SUM-SHI	SUN - SHINE 1111	230	Yes	Yes	Yes	Reliability & Markets	True

- Section 4.3:
 - Exhibit 6 One-line Diagram Symbols refreshed with clearer version (no change to content)



- **Section 4.8: DMS section updated**
 - Removed stipulation of SOS appointment of DMS members (per recently endorsed DMS Charter)
 - Requirements for access to DMS SharePoint added (active, signed NDA on file in eDART)
 - Added that DMS can meet as needed
- **Section 4.9: Section removed**
 - Topics relocated to Sections 2.2, Section 3.2, and (new) Appendix G (Examples of EMS Sub-transmission Modeling)

- Section 5.1: Formatting and content changes made
- Section 5.2: Section updated to reflect current procedures related to State Estimator (SE) Solution Quality and ICCP Links
- Section 5.3:
 - Heading changed from ‘New EMS Models Validation and Benchmarking’ to ‘Real-time Contingency Analysis (RTCA) and Solution Quality’
 - Text addressing PJM’s Security Analysis (SA) Program and RTCA Data Quality moved from existing Section 5.5

- Section 5.4:
 - Heading changed from ‘Real-time Contingency Analysis (RTCA)’ to ‘New EMS Models Validation and Benchmarking’ (previously Section 5.3 Heading)
 - Text updated to reflect current procedure
- Section 5.5:
 - Text realigned to Section 5.3 (at section addressing PJM’s Security Analysis (SA) Program and RTCA Data Quality)
 - Section removed

- Appendix F: New entry added in Acronyms table for **DER: Distributed Energy Resources**
- Appendix G: New appendix added for **Examples of EMS Sub-transmission Modeling** (moved from existing Section 4.9)