



# PJM Manual 14D

## Generator Operational Requirements, Revision 42



PJM Committees  
Oct / Nov / Dec 2017  
Vince Stefanowicz  
Sr. Lead Engineer  
Generation Department

# Changes Since First Read



## Summary of Changes Since First Read

- Section 4.3 - Synchrophasor Communication System
  - Clarified network requirements
  - Deleted Exhibit 7
  - Revised link to registration form
  - Updated email address used for reporting problems
- Section 7.3 – Critical Information and Reporting Requirements
  - Added requirement for Generation Owners to notify PJM of any operating conditions that could potentially result in a single contingency causing an outage of multiple generation resources
    - Consistent with NERC standard BAL-002-2

## M14D, Rev 42, Summary of Changes Since First Read Section 10.1 – RTO Wide Black Start RFP

- Section 10.1.2 - Selection Process, D. RFP Proposal Evaluation:
  - Replaced duplicate black start criteria language with reference to PJM Manuals M36 Attachment A, M12 Section 4.6, and OATT Schedule 6A
  - Added paragraph describing preferred black start RFP proposals, and RFP proposals for black start units with dual fuel capability or primary firm gas transportation contracts will be given higher consideration in RFP evaluation process

# M14D, Rev 42, Summary of Changes Since First Read

## Section 10.1 – RTO Wide Black Start RFP

- Section 10.1.2 - Selection Process, D. RFP Proposal Evaluation (cont'd):
  - Provided outline of PJM evaluation criteria for RFP process
    - Technical Feasibility
      - Reliability Analysis
      - Unit Location / Characteristics
      - Operational / Environmental Restrictions
      - Black Start Testing Requirements
    - Fuel Assurance
    - Cost / Schedule

- First Reads, Second Reads:
  - SOS: October 4, November 2, December 7, 2017
  - OC: October 10, November 7, December 12, 2017 **(Endorsement)**
  - MRC: October 26, December 7, December 21, 2017 **(Endorsement)**

## Appendix (slides from 1<sup>st</sup> read)

- Periodic Review
- Replaced Local Control Center with Transmission Owner and replaced LCC with TO in multiple locations for consistency with other manuals
- Exhibit 1 and Section 6, replaced System Operator Certification with PJM TO Operator and Generation Dispatcher Certification for consistency with Manual 40
- Section 4.1.7 - SCADA - Supervisory Control and Data Acquisition - grammatical correction



- Added requirement that all generators shall be modeled in eDART consistent with the PJM EMS model.
  - PJM will notify those affected and will implement a mutually acceptable transition plan
- Added requirements for all **new** black start generators to be modeled individually in eDART and PJM EMS.
  - An example would be a combined cycle plant where one (or more) CTs are providing black start service
  - Needed for modeling consistency

- New section, relocated from Manual 10, Section 5.2

- Section 7.1.1 Generator Real Power Control
  - Revised over-frequency level per NERC Reliability Standard PRC-024-2
- Section 7.1.2 Voltage and Reactive Control
  - Added requirement that the Transmission Owner copy PJM via email on the voltage schedules assigned to the Generator Owner/Operator
    - Also included in new revision of PJM M-03, Section 3.11
    - Clarifies how Transmission Owners shall communicate generator voltage schedules to PJM per existing requirement.
    - Change is intended to facilitate VAR-001-4 compliance

- Section 7.1.2 Voltage and Reactive Control (continued)
  - Added the requirement for non-synchronous generating facilities which entered the New Service Queue on or after November 1, 2016 to provide dynamic reactive power and follow the assigned voltage schedule.
  - Consistent with FERC Order No. 827
  - Some existing non-synchronous generating facilities are currently providing dynamic reactive power:
    - As needed by Transmission Owner based on System Impact Studies.
    - Requirement can be met using smart inverters (Type III/Type IV inverter-based wind turbines), or dynamic reactive devices (e.g. SVCs).

- Section 7.1.2 Voltage and Reactive Control (continued)
  - Deleted voltage schedule exemption details and left the reference to the process as described in M3.
  - Clarified that AVR & PSS outage notifications must be made verbally and via eDART
  - Clarified the wording in the note related to Power System Stabilizers
- Section 7.1.6 Black Start
  - Clarified wording regarding the TO's capability and authority during system restoration
- Section 7.3.5 Fuel and Emissions Reporting
  - Removed references to capacity resources and added reference to specific EOP standard

- Section 11 Generator Data Confidentiality Procedures
  - Clarified wording and included parameter data to be provided to a Transmission Owner for system restoration planning purposes
  - See 9/12/17 OC meeting agenda item 7 for details
  - <http://pjm.com/-/media/committees-groups/committees/oc/20170912/20170912-item-07-0a-revs-gen-data-sos-oc-mtgs-sept-2017.ashx>
  - Exhibit 13: Generator Data Sharing Process Flow also revised accordingly
  - Attachment J: Generator Data Release Matrix
    - Revised to reflect changes in section 11; added column for restoration-related generator parameters

- Minor revisions based on Version 2 of NERC's Generating Unit Winter Weather Readiness Reliability Guideline.
- Updated the links to the NERC Guideline and the RF presentation