



Guideline: Generation Owner Periodic Tasks and Data Submittals

PJM Generation Department
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Introduction

In order to assist PJM Generation Owners with managing the various tasks, testing, and data submittals required by PJM under the PJM Governing Agreements and Manuals, PJM has created this guideline. This guideline is not an all-inclusive list of items required of Generation Owners by PJM's Manuals and Governing Documents. It also does not address other external third party, regulatory, or legal compliance requirements including but not limited to NERC Reliability Standards applicable to NERC-registered entities, and FERC's regulations. The liability of PJM, its Board, officers, employees, and agents is governed by the applicable provisions of the PJM Tariff and Operating Agreement.

This document is broken into two sections, Required Tasks and Optional Tasks.

Required Tasks

Summer / Winter Net Capability Verification

Description

- Capability Verification testing is required of all generators that participate in the PJM RPM Capacity Markets or have a commitment in those markets.
- Summer Net Capability must meet or exceed the rated ICAP and the claimed installed capacity in PJM eGADS; Winter Net Capability must meet or exceed the rated ICAP and the claimed installed capacity in PJM eGADS.

Responsible PJM Department(s)

- Resource Adequacy Planning

Email Distribution List

- gadssupport@pjm.com

Driver / Requirement

- PJM Manual 21, Rules and Procedures for Determination of Generating Capability
- PJM Manual 18, PJM Capacity Market

Periodicity

- Semi-Annual*

Start Date

- June 1 / December 1

End Date

- August 31 / February 28-29

System Used to Collect Data

- eGADS: <https://www.pjm.com/markets-and-operations/etools/egads>

Required or Optional?

- Required

** Winter verification tests can be summer tests corrected to winter conditions. Hydro units test only in the summer, no winter verification test is required for hydro units.*

Black Start Testing

Description

- Black Start units test their ability to start without outside power and remain in a stable operating state while running at minimum generation levels. Tests are conducted at plant by Generation Owner (GO) and sent to PJM for review, pass/fail determination, and recordkeeping.

Responsible PJM Department(s)

- Performance Compliance

Email Distribution List

- Blackstart@pjm.com

Driver / Requirement

- Black Start Units Compensated By PJM
 - OATT Schedule 6A, Section 12: To verify that they can be started and operated without being connected to the Transmission System, Black Start Units designated as critical shall be tested annually in accordance with the PJM manuals. The Black Start Unit owner shall determine the time of the annual test.
 - OATT Schedule 6A, Section 14: To receive Black Start Service revenues, a Black Start Unit must have a successful annual test on record with the Transmission Provider within the preceding 13 months.
 - PJM Manual 12, Section 4.6.14: To collect monthly black start revenues, a unit must have a successful black start test on record with PJM within the last 13 months. Once a generator is qualified, they have until the end of the 13th month following the last successful black start test date to submit documentation of the next successful annual test to PJM.
 - If a unit fails a black start test, the unit is given a 10 day grace period within which it may re-test without financial penalty if within the 13 month testing period.
 - If the unit does not successfully pass a black start test within the 10 day grace period immediately following notification to PJM of a failed test, monthly black start revenues will be forfeited from the time of the first day of the month in which the unsuccessful test occurred until the first day of the first month after the unit successfully passes a black start test.
- Black Start Units Not Compensated By PJM
 - NERC Standard EOP-005, System Restoration from Blackstart Resources, R7: Each Transmission Operator shall have Blackstart Resource testing requirements to verify that each Blackstart Resource is capable of meeting the requirements of its restoration plan. These Blackstart Resource testing requirements shall include:
 - R7.1: The frequency of testing such that each Blackstart Resource is tested at least once every three calendar years.
 - R7.2: A list of required tests including:
 - R7.2.1: The ability to start the unit when isolated with no support from the BES or when designed to remain energized without connection to the remainder of the System

- R7.2.2: The ability to energize a bus. If it is not possible to energize a bus during the test, the testing entity must affirm that the unit has the capability to energize a bus such as verifying that the breaker close coil relay can be energized with the voltage and frequency monitor controls disconnected from the synchronizing circuits."

Periodicity

Testing periodicity of Critical Black Start Units: 1-13 months
Review, pass/fail determination, and record keeping: monthly

Start Date

Varies depending on in-service date

End Date

Varies depending on in-service date

System Used to Collect Data

eDART: <https://www.pjm.com/markets-and-operations/etools/edart>, Microsoft Excel, Microsoft Access

Required or Optional?

Critical Black Start units: Required
Non-Critical Black Start units: Optional

Voltage Schedule Review

Description

Annual review of PJM maintained voltage schedules assigned by the Transmission Owner (TO), acknowledged by the Generation Owner (GO), and approved by PJM. The annual review consists of two parts:

- TOs review and updated voltage schedules.
- GOs review and acknowledge voltage schedules.

Responsible PJM Department(s)

Generation

Email Distribution List

voltageschedules@pjm.com

Driver / Requirement

- NERC Standard VAR-001, Voltage and Reactive Control
- PJM Manual 3, Transmission Operations, Section 3.11

Periodicity

Annual; Requires 1 month each to complete review by Transmission Owner and Generation Owner

Start Date

April 1

End Date

May 31

System Used to Collect Data

eDART: <https://www.pjm.com/markets-and-operations/etools/edart>

Required or Optional?

Required

eDART Reactive Capability Review**Description**

To ensure accuracy of generator reactive capabilities that may result from planned unit modifications, a critical input to PJM and Transmission Owner security analysis packages, PJM requires that each Generation Owner review and confirm their unit reactive capability data via eDART on a bi-annual basis. PJM and the Transmission Owners should then verify accuracy of unit reactive capabilities modeled in their respective EMS systems.

Responsible PJM Department(s)

Generation

Email Distribution ListGenOutageSupport@pjm.com**Driver / Requirement**

PJM Manual 14-D, Generator Operational Requirements, Section 7.3.4, Generating Unit Reactive Capability Reporting

Periodicity

Semi-Annual:

- Generation Owners: April & October
- Transmission Owners: May & November

Start Date

April 1 & May 1, October 1 & November 1

End Date

April 30 & May 31, October 31 & November 30

System Used to Collect DataeDART: <https://www.pjm.com/markets-and-operations/etools/edart>**Required or Optional?**

Required

Cold Weather Checklist Data Request**Description**

PJM expects all generation resources to use a cold weather preparation checklist prior to the NOAA first frost date to prepare for cold weather operations to promote reliability.

To verify this and document the practice, generation resources are required to complete the Cold Weather Checklist Data Request issued by PJM.

Responsible PJM Department(s)

Generation

Email Distribution Listedartgosurvey@pjm.com

Driver / Requirement

- PJM Manual 14-D, Generator Operational Requirements, Section 7.5.2 Generation Resource Cold Weather Checklist
- NERC Reliability Guideline: Generating Unit Winter Weather Readiness - Current Industry Practices

Periodicity

Annual

Start Date

November 1

End Date

December 15

System Used to Collect DataeDART: <https://www.pjm.com/markets-and-operations/e/tools/edart>**Required or Optional?**

Required

Seasonal Fuel and Emissions Data Request**Description**

The Seasonal Fuel and Emissions Data Request requires all generation resources to report fuel and emissions data so that in severe situations PJM has the situational awareness to make decisions to promote the reliable operation of the electric grid.

PJM needs data concerning unit fuel reserves and emissions limitations for it to reliably operate the PJM Balancing Authority and its associated markets. This is especially true during periods of severe weather and/or times when there are external fuel constraints.

Responsible PJM Department(s)

Generation

Email Distribution List

edartgosurvey@pjm.com**Driver / Requirement**

- PJM Manual 14-D, Generator Operational Requirements, Section 7.3.5 Fuel and Emissions Reporting,
- PJM Operating Agreement (Sections 11.3 Member Responsibilities, 11.3.1 General, and Definition of “Emergency”, “Emergency” shall mean:...(ii) a fuel shortage requiring departure from normal operating procedures in order to minimize the use of such scarce fuel;...”
- NERC Reliability Standard, EOP-11, Emergency Operations

Periodicity

Annual

Start Date

Approx. October 1

End Date

Approx. November 15

System Used to Collect DataeDART: <https://www.pjm.com/markets-and-operations/etools/edart>**Required or Optional?**

Required

Periodic Data Requests

Description

Depending on the severity of the weather forecasts, projected fuel availability, responses to the Seasonal Fuel and Emission Data Request, or other reasons, PJM may request on a periodic basis updated responses to the Seasonal Fuel and Emission Data Request questions for a subset of units. This information is intended to assist in the Operations Planning process.

Responsible PJM Department(s)

Generation

Email Distribution Listedartgosurvey@pjm.com**Driver / Requirement**

- PJM Manual 14-D, Generator Operational Requirements, Section 7.3.5 Fuel and Emissions Reporting,
- PJM Operating Agreement (Sections 11.3 Member Responsibilities, 11.3.1 General, and definition of Emergency, “Emergency” shall mean :...(ii) a fuel shortage requiring departure from normal operating procedures in order to minimize the use of such scarce fuel;...”
- NERC Reliability Standard, EOP-11, Emergency Operations

Periodicity

As required

Start Date

As required

End Date

As required

System Used to Collect DataeDART: <https://www.pjm.com/markets-and-operations/etools/edart>**Required or Optional?**

Required

eDART GO Contact Data Request

Description

"As soon as practicable, but no later than 3 business days following a generation transfer or a new generation resource being placed in commercial operation, the “eDART Contact” responsible for tickets and data submittals in eDART must complete the eDART Contact Data Request – all fields are required. The Data Request is accessed by

selecting the "Gen. Tickets" menu item and the selecting GO Contact Data Request from the GO Data Request menu.

Name, Title, Role and Company of the primary and secondary individuals responsible for handling eDART functions. Email, Desk and Mobil Phone Numbers of the primary individual responsible for handling eDART functions. Name, phone number and Email of the primary individual or group that should be contacted for any operational issues and/or questions. This MUST be a group that can respond 24 hours a day, 7 days a week, 365 days a year. Name, phone number and Email of the secondary individual or group that should be contacted for any operational issues and/or questions. This MUST be a group that can respond 24 hours a day, 7 days a week, 365 days a year. Email Address of the group that should be contacted for any Voltage Schedule issues and/or questions."

Responsible PJM Department(s)

Generation, Member Relations

Email Distribution List

edartgosurvey@pjm.com

Driver / Requirement

PJM Manual M-14D, Generator Operational Requirements, Section 5.7.2.10

Periodicity

Addition of information within 3 days of new unit addition or transfer.

Start Date

Varies

End Date

Varies

System Used to Collect Data

eDART: <https://www.pjm.com/markets-and-operations/etools/edart>

Required or Optional?

Required

NERC MOD-026/027 Data Submittals

Description

In order to verify that the dynamic model and the model parameters used in dynamic simulations that assess Bulk Electric System (BES) reliability accurately represent generator unit real power response to system frequency variations, Generator Owners submit a report providing model parameters and plots proving the simulated response matches a recorded response. PJM determines if the provided models are "usable" or "not usable" by ensuring they can initialize, pass several simulation tests designed to ensure they will function in the interconnection-wide models, and comparing PJM simulations to reported simulation results.

Once an updated dynamic model is found useable, it is included in all future Planning dynamics case builds and is passed to Operations to update the real-time Transient Stability Analysis Tool (TSAT).

Responsible PJM Department(s)

System Planning Modeling and Support

Email Distribution List

NERC.Transmission.Planner@pjm.com

Driver / Requirement

- NERC Standard MOD-026— Verification of Models and Data for Generator Excitation Control System or Plant Volt/Var Control Functions
- NERC Standard MOD-027-1— Verification of Models and Data for Turbine/Governor and Load Control or Active Power/Frequency Control Functions

Periodicity

- Within 365 days of going in-service or making an equipment change
- Subsequent verification on or before the 10-year anniversary of the last transmittal

Start Date

Varies

End Date

Varies

System Used to Collect Data

PJM Planning Community: <https://www.pjm.com/markets-and-operations/etools/planning-community.aspx>

Required or Optional?

- **Required** for applicable generators (Individual generating unit greater than 100 MVA (gross nameplate rating) or Individual generating plant consisting of multiple generating units that are directly connected at a common BES bus with total generation greater than 100 MVA (gross aggregate nameplate rating)).
- **Optional** for generators not meeting the applicability criteria in the standard.

Gen Model (MOD-032 for Generator Owners)

Description

What is the data: Generator data needed for load flow, short circuit, and dynamics modeling. Complete set of data requirements available on PJM Planning Center website.

Why is it needed: To verify and update planning models

How is it used: on an ad-hoc basis (working toward adding more regularity and structure to this), Gen Model data is compared with existing modeling data and if discrepancies are identified they are confirmed with the Generator Owners (or GO corrects invalid data) prior to implementing to update the model(s)

Responsible PJM Department(s)

System Planning Modeling and Support

Email Distribution List

MOD-032@pjm.com

Driver / Requirement

- NERC Standard MOD-032- Data for Power System Modeling and Analysis,
- PJM requirements
 - <https://pjm.com/planning/services-requests/planning-modeling-submission-mod-032.aspx>
 - [MOD-032 Steady State, Dynamics and Short Circuit Modeling Data Requirements and Procedures](#)
 - [PJM Planning Center: Gen Model User Guide](#)

Additional Guidance

PJM Compliance Bulletin CB022 - MOD-032-1 Data for Power Systems Modeling & Analysis

<https://www.pjm.com/-/media/library/whitepapers/compliance/cb-022-mod-032-1-data-for-power-systems-modeling-and-analysis.ashx>

Periodicity

Annual

Start Date

May 1

End Date

June 15

System Used to Collect Data

PJM Gen Model Portal

Required or Optional?

- Required by NERC Standard for all NERC-registered generators.
- Required by PJM for non-NERC generators that participate in the capacity market or non-capacity generators with nameplate rating ≥ 20 MW

Resource Tracker Verification**Description**

PJM requires a Generation owner to have a single point of contact for real-time and near real-time operations. That single point of contact has to communicate and coordinate with the appropriate PJM member corporate entity to fulfill the assigned responsibilities.

Responsible PJM Department(s)

Member Relations

Email Distribution List

ResourceTrackerSupport@pjm.com

Driver / Requirement

PJM Manual 14-D, Generator Operational Requirements, Section 5.3.7 Resource Tracker supports the maintenance of ownership information and provides the user the ability to review all sources of ownership information. Generation Owner, or designated agent, is required to confirm the resource ownership information.

Periodicity

Annual, and if a Generator is transferred to another entity (2 business days after transfer)

Start Date

October 1 or upon generation transfer

End Date

November 1 or upon generation transfer

System Used to Collect Data

Resource Tracker: <https://www.pjm.com/markets-and-operations/etools/resource-tracker>

Required or Optional?

Required

Reactive Capability Testing**Responsible PJM Department(s)**

Performance Compliance

Email Distribution ListReactiveTesting@pjm.com**Description**

"PJM requires testing to be coordinated between PJM, the testing facility and the local Transmission Owner's (TO) to ensure that the impact on system operations is minimized. Testing is intended to demonstrate reactive capability for those conditions where reactive reserves or voltage control would be required.

The testing covered in Attachment E is designed to demonstrate useable reactive capability and, unlike real power (MW) capacity testing, not a maximum capability test. It is the intent of these procedures to align with NERC Reliability Standard MOD-025 so separate tests to meet the NERC requirements and the PJM requirements are not needed.

The following facilities are required to perform reactive capability testing:

- Individual generating units and inverter-based Energy Storage Resources with a gross nameplate rating greater than 20 MVA and directly connected to the Bulk Electric System.
- Generating plants/facilities with a gross aggregate nameplate rating greater than 75 MVA including inverter-based Energy Storage Resources, and variable resources such as wind, solar, run of river hydro, etc.
- Synchronous condensers with a gross nameplate rating greater than 20 MVA and directly connected to the Bulk Electric System
- All generating units providing PJM Black Start Service"

Driver / Requirement

- NERC Standard MOD-025- Verification and Data Reporting of Generator Real and Reactive Power Capability and Synchronous Condenser Reactive Power Capability
- PJM Manual 14-D Generator Operational Requirements, Attachment 'E'

Periodicity

Minimum of five every years

Start Date

Varies based on previous test date

End Date

Varies based on previous test date

System Used to Collect DataeDART: <https://www.pjm.com/markets-and-operations/etools/edart>**Required or Optional?**

Required for generators specified above

Capacity Modification Transaction

Description

CAP MODs are a type of Capacity Exchange transaction used by generation owners to request the addition of a new unit or the removal of an existing unit from their resource portfolio in Capacity Exchange, or to request a MW increase or decrease in the summer or winter installed capacity rating of an existing unit.

Responsible PJM Department(s)

Capacity Market Operations

Email Distribution List

RPM_Hotline@pjm.com

Driver / Requirement

- PJM Open Access Transmission Tariff (OATT), Attachment 'DD', Section 5.6.6
- PJM Manual 18, PJM Capacity Market, Section 4.2.6

Periodicity

When permanent changes to the installed capacity value of a generation unit is necessary.

Start Date

N/A

End Date

N/A

System Used to Collect Data

Capacity Exchange: <https://www.pjm.com/markets-and-operations/etools/capacity-exchange>

Required or Optional?

Required

Restoration Drills

Description

All Generation Facilities identified in PJM Transmission Owner Restoration Plans that are invited to participate in Restoration Drill are required to participate.

Responsible PJM Department(s)

State and Member Training

Email Distribution List

TrainingSupport@pjm.com

Driver / Requirement

- NERC Standard EOP-005, System Restoration Plans
- NERC Standard EOP-006, System Restoration Coordination
- PJM Manual 36, System Restoration, Attachment 'D'

Periodicity

Varies, at least once annually

Start Date

Varies, subject to scheduling constraints; commonly during spring

End Date

Varies, similar to the start date

System Used to Collect Data

- Resource Tracker used to track company contacts.
- PJM Learning Management System (LMS) is used to document drill participation.
<https://www4.virtualtrainingassistant.com/pjm/learnerConnection/Security/Logon.aspx>

Required or Optional?

Required (if invited to participate) - NERC Compliance

Optional Tasks

Annual Grid Security Drill / GridEx

Description

Grid Security Drills test the reliability and resilience of PJM and member company procedures, practices, technology and logistical support to events that affect the bulk electric system.

Responsible PJM Department(s)

System Operator Training, State and Member Training, Business Continuity Planning

Email Distribution List

bc_planning@pjm.com

Driver / Requirement

- PJM Manual 40, Training and Certification Requirements, Section 3.2.2 Market Operation Center Generation Dispatchers Certification Requirements
- NERC Standard PER-005-2, Operations Personnel Training
- NERC Standard EOP-011-1, Emergency Operations

Periodicity

Bi-Annually

Start Date

During the month of November

End Date

During the month of November

System Used to Collect Data

Participation Forms

Required or Optional?

Optional

Regulation Testing

Responsible PJM Department(s)
Performance Compliance

Email Distribution List
RegulationTesting@pjm.com

Description
If units elect to participate in the regulation market they will need to pass a series of tests in order to qualify. All testing requirements are identified in PJM Manual 12, Balancing Operations, Section 4.5, as well as links that need to be created in Manual 12, Section 4.4. Other reasons that units may need to test are identified in the manual as well. This includes change of ownership, and change to signal paths.

Driver / Requirement
Manual 12, Balancing Operations, Section 4.4, 4.5

Periodicity
Upon request by Market Seller

Start Date
N/A

End Date
N/A

System Used to Collect Data

- Email (Test scheduling and follow up)
- PI (For scoring test)

Required or Optional?
Optional

RTO Wide and Incremental Black Start RFPs

Description
PJM issues an RTO-Wide Black Start RFP every 5 years to identify new or replacement black start to enhance overall restoration reliability and efficiency. PJM may issue Incremental Black Start RFPs due to unit retirements, black start service terminations, or critical loads additions/removals. PJM's Black Start RFP process is used to meet minimum black start requirements defined in PJM Manual 36 System Restoration, Attachment 'A'.

Responsible PJM Department(s)
Generation

Email Distribution List
blackstart@pjm.com

Driver / Requirement

- PJM Manual 14D, Section 10 Black Start Generation Procurement
- PJM Manual 36, Attachment 'A', Minimum Critical Black Start Requirement

Periodicity

RTO Wide - Every 5 years, with awarded Black Start Resources entering service within 24 month of award;
Incremental, as needed

Start Date

- Initiated RTO-Wide RFP 2018 to have new black start resources available in 2020
- Process repeats every five years

End Date

Refer to PJM Manual 14-D, Generator Operational Requirements, Section 10 for black start procurement timelines.

System Used to Collect Data

Email - Interested parties respond to RFP via email to blackstart@pjm.com

Required or Optional?

Optional

Unit Specific Parameter Adjustment

Responsible PJM Department(s)

Generation & Day-Ahead Market Operations

Email Distribution List

unitspecificpls@pjm.com

Description

Market Sellers that do not believe their individual resources can meet the unit-specific parameter limits determined by PJM due to actual operating constraints, can request that PJM establish adjusted unit-specific parameter limits for those resources on their price based PLS and cost based schedules.

Driver / Requirement

- PJM Open Access Transmission Tariff (OATT), Attachment K, Section 6.6
- PJM Operating Agreement (OA) Schedule 1, Section 6.6
- PJM Manual 11, Energy & Ancillary Services Market Operations, Section 2.3.4.2

Periodicity

Annual

Start Date

March 1

End Date

February 28

System Used to Collect Data

Email – Microsoft Excel Spreadsheet sent to unitspecificpls@pjm.com

Required or Optional?

Optional

Real Time Values

Responsible PJM Department(s)

Generation Department, Day Ahead Market Operations Department

Email Distribution List

realtimevalues@pjm.com

Description

"Market Sellers can communicate the resource's current operational capabilities to PJM before and after the Day-ahead Energy Market closes through the 'Real Time Values' function in Markets Gateway. Real Time Values should be utilized when a resource cannot operate according to the unit specific parameters or approved Parameter Limit Exceptions."

Driver / Requirement

Manual 11, Energy & Ancillary Services Market Operations, Section 2.3.4.4

Periodicity

Up to 30 days when RTV is submitted

Start Date

As needed

End Date

As needed

System Used to Collect Data

Markets Gateway

Required or Optional?

Optional