Manual 14B – Version 57
Summary of Changes

Stan Sliwa, P.E.
Lead Engineer, Transmission Planning

Planning Committee

August 6, 2024

Reliability Planning
Generator Deliverability Analysis

- Administrative update to the Generator Deliverability procedure to align with current analysis practice
  - TPL-001 P2-1 single contingency (opening of a line section without a fault) is excluded from analysis
- Aligns with Load Deliverability procedure for single contingency events
- Planning event P2-1 is considered only in baseline analysis

2.3.10 Generator Deliverability Analysis

The generator deliverability test ensures that the Transmission System is capable of delivering the aggregate system generating capacity at summer peak load with all firm transmission service modeled. Additionally, to help ensure that generating resources are deliverable year round, expected generation output levels during light load and winter conditions are examined as part of the generator deliverability analysis. As a result, there are three separate periods examined as part of the generator deliverability analysis. The procedure ensures sufficient transmission capability in all areas of the system to export an amount of generation capacity at least equal to the amount of certified Capacity Resources in each "area". Areas, as referred to in the generator deliverability test, are unique to each study and depend on the electrical system characteristics that may limit transfer of Capacity Resources. For generator deliverability, areas are defined with respect to each transmission element that may limit transfer of the aggregate of certified installed generating capacity. The cluster of generators with significant impacts on the potentially limiting element is the "area" for that element. The starting point power flow cases for the light load, summer and winter are the same power flow case set up for the baseline analysis, but the applicable baseline load and ratings criteria apply for the period under consideration. The flowgates ultimately used in the reliability analysis are determined by running

Section Break (Next Page)

all contingencies maintained by PJM planning and monitoring all PJM market monitored facilities and all BES facilities. Single and common mode contingencies (NERC TPL P1, P2-2, P2-3, P2-4, P4 and P7) in PJM and just outside of PJM are examined during the generator deliverability analysis. Details of the generator deliverability procedure including methods of creating the study dispatch can be found in Attachment C.

Light Load Base Case Assumptions
Load Levels

- Load modeled in the Light Load case has historically been set to 50% of each area's non-coincident summer peak forecast
- Load profiles continue to evolve with greater amounts of load becoming non-scalable, such as data centers
  - These non-conforming loads do not follow a typical load pattern, i.e., patterns based on weather and temperature profiles
- Maintaining the current practice can result in unrealistic load profiles and cause unrealistic flow patterns in areas with large amounts of non-scalable load
- M14B language is being revised to allow for the modelling of light loads in excess of 50% of 50/50 peak load where applicable

Light Load M14B Redlines

C.3.1.3 General Procedures and Assumptions

Step 1: Develop Base Case

The RTEP base case is developed for a reference year 5 years in the future. All identified RTEP Baseline and Supplemental Projects projected to be in service by

- April 15 of the reference year are including in the system model for the Light Load RTEP Base case
- June 1 of the reference year are including in the system model for the Summer RTEP Base case
- December 1 of the reference year are including in the system model for the Winter RTEP Base case

Load is modeled at a non-diversified forecasted 50/50 load level for the period being examined.

- Light Load Period: Those hours between 10AM and 3PM where the PJM coincident peak load is between 40-60% of the annual peak. In the Light Load base case, load levels are modelled at 50% of each area's non-coincident summer peak forecast[1].
- Summer Period: June through August hours 2PM-6PM
- Winter Period: December through February hours 5AM-9AM and 6PM-10PM

---

1 **Note:** For regions experiencing greater than 50% average light loads, PJM will model light loads in excess of 50% of 50/50 peak load in planning cases in coordination with the service provider. PJM will share the updated LL modeling ratio part of the reliability assumptions at the beginning of the RTEP cycle in January.

H.1.5 Stability Analysis Models

Stability and dynamics base cases:

- Stability is assessed using a summer peak load and a light load condition. The summer peak stability case has the load profile of the RTEP summer peak case and corresponds to the demand expected to be served in the specific planning year. The light load stability case represents 50% of the summer peak load and is developed by scaling down the summer peak load case at the same power factor[1].
- For simplicity, it is recommended to first build the summer peak case and then update that case to reflect the second load condition (light load). This approach provides two cases that are common in bus numbers and network information. Updates to both cases, such as addition or removal of proposed lines or interconnection projects would be easy to handle due to the uniformity.

After the power flow case has been finalized and revised, the dynamic data file from the dynamic data file will be updated to reflect the changes that were introduced by the addition of the PJM areas from the RTEP case and generation interconnection studies. It is important to note that the RTEP case and the ERAG case complement each other. RTEP case information is used for future generation projects and transmission upgrades which don't exist in the ERAG case and ERAG case consists of information of existing units.

The light load case (50% peak) is derived from the summer peak case. This approach ensures consistent bus numbers and network information in both cases, making addition or removal of proposed lines or interconnection projects easy to handle. After the summer peak case is completed, the PJM load is scaled down to a load representing 50% of the 50/50 load[1]. The areas outside PJM are updated with the light load case from the corresponding ERAG MMWG case. Note that generation and shunt capacitors may be turned off or disabled in order to achieve convergence of the power flow. In addition, all pumped storage hydro units are modeled in the pumping mode with their governors and power systems stabilizers deactivated or adjusted to reflect the appropriate operating condition.

---

1 **Note:** For regions experiencing greater than 50% average light loads, PJM will model light loads in excess of 50% of 50/50 peak load in planning cases in coordination with the service provider. PJM will share the updated LL modeling ratio part of the reliability assumptions at the beginning of the RTEP cycle in January.

- **NERC Project 2015-09 Establish and Communicate System Operating Limits**
  - Revises the requirements for determining and communicating SOLs and IROLs used in the reliable planning and operation of the BES
  - Creates new paradigm regarding the coordination of the Planning Assessment under TPL-001 with the establishment of SOLs used in operations
  - New construct causes the retirement of FAC-010(1) & revisions to FAC-011 (2) & FAC-014(3)
  - Provides a mechanism to bound modeling data and performance criteria that are equally limiting or more limiting then those used by the RC's SOL methodology
    - Facility Ratings, System steady state voltage limits, and stability performance criteria

(1)FAC-010: System Operating Limits Methodology for the Planning Horizon
(2)FAC-011: System Operating Limits Methodology for the Operations Horizon
(3)FAC-014: Establish and Communicate System Operating Limits

- **Attachment F Determination of System Operating Limits used for planning the Bulk Electric System** is being revised to align with FAC-010 retirement and FAC-014 revisions
  - Incorporate revised NERC definition of SOL
  - Remove embedded FAC-010 language
  - Include language to align with FAC-014 requirement R6 with respect to Facility Ratings
    - ***R6.*** *Each PC and each TP shall implement a documented process to use Facility Ratings, System steady-state voltage limits and stability criteria in its Planning Assessment of Near-Term Transmission Planning Horizon that are equally limiting or more limiting than the criteria for Facility Ratings, System Voltage Limits and stability described in its respective Reliability Coordinator's SOL methodology.*
      - *The PC and/or TP may use less limiting Facility Ratings, System steady-state voltage limits and stability criteria if it provides a technical rationale to each affected Transmission Planner, Transmission Operator and Reliability Coordinator.*
  - Make minor administrative/grammatical updates

Attachment F Redlines

Attachment F: Determination of System Operating Limits used for planning the Bulk Electric System

This document describes the process and measures used by PJM to develop System Operating Limits (SOL) and ~~Interconnected~~ Interconnection Reliability Operating Limits (IROL) used for the planning horizon. In PJM Planning, all BES facilities and "Reliability and Markets" sub-BES facilities, as listed on the PJM Transmission Facilities pages, are considered System Operating Limits (SOL).

Definitions

A System Operating Limit (SOL) is defined in the NERC Glossary of Terms as:

All Facility Ratings, System Voltage Limits, and stability limits, applicable to specified System configurations, used in Bulk Electric System operations for monitoring and assessing pre- and post- Contingency operating states.~~The value (such as MW, MVAr, Amperes, Frequency or Volts) that satisfies the most limiting of the prescribed operating criteria for a specified system configuration to ensure operation within applicable reliability criteria. System Operating Limits are based upon certain operating criteria. These include, but are not limited to:~~

- ~~Facility Thermal Ratings (Applicable pre- and post-Contingency equipment or facility ratings)~~
- ~~Transient Stability Ratings or Limits (Applicable pre- and post-Contingency Stability Limits)~~
- ~~Voltage Stability Ratings or Limits (Applicable pre- and post-Contingency Voltage Stability)~~
- ~~System Voltage Ratings or Limits (Applicable pre- and post-Contingency Voltage Limits)~~

PJM's Planning analyses are designed to ensure all applicable PJM, NERC, regional and Transmission Owner criteria are enforced. This is accomplished through exhaustive application of established PJM facility ratings in the on-going system power flow and short circuit analysis. PJM ensures that its exhaustive application of facility ratings are also within system dynamic limits through system dynamic testing. This dynamic testing confirms that PJM system operating limits are not more limiting than the limits established using facility ratings.

A Facility Rating~~s are~~is defined ~~by NERC~~in the NERC Glossary of Terms as:

- The maximum or minimum voltage, current, frequency or real or reactive power flow through a facility that does not violate the applicable equipment rating of any equipment comprising the facility.

Facility ratings determine the fundamental limits of transmission system equipment. SOLs shall not exceed the facility ratings. The facility rating is based on which ever device or component is the limiting element of the facility such as a conductor, current transformer, disconnect switch, circuit breaker, wave trap or protective relay. PJM plans its system such that no facility exceeds the limit/rating consistent with NERC Standard TPL-001-5.1. In general, Facility ratings included in the planning models are equally limiting or more limiting than the facility ratings established in accordance with PJM Operation's SOL methodology. Less limiting facility ratings are used in instances where future Corrective Action Plans (CAPs) are implemented and/or ambient temperature assumptions in the seasonal planning models vary from the assumptions used in the operational analyses and monitoring in real time. Additional information concerning SOL can be found in the **PJM Transmission Operations Manual (M-03)**, and **PJM Reliability Coordination Manual (M-37)**. ~~located on the PJM web page at the following link:~~

~~(http://www.pjm.com/-/media/documents/manuals/m37.ashx)~~ Interconnected Reliability Operating Limits are defined as:

An ~~Interconnected~~ Interconnection Reliability Operating Limit (IROL) is defined in the NERC Glossary of Terms as:

- A ~~System Operating Limits~~ that, if violated, could lead to instability, uncontrolled separation or Cascading Outages that adversely impact the reliability of the Bulk Electric System.

As part of the development of the PJM Regional Transmission Expansion ~~plan~~Plan, SOLs which could result in system instability or uncontrolled cascading outages are identified and system reinforcements are developed. All SOLs are monitored for violations.

SOL and IROL use in Planning

PJM plans its system based on the most restrictive System Operating Limits (such as MW, MVAr, Amperes, Frequency or Volts) of its facilities for the system configurations and contingency conditions that represent the most stringent of the applicable PJM, NERC, regional or Transmission Owner criteria over the planning horizon. The System Operating Limits used to plan the system are consistent with the facility ratings, system voltage limits and stability limits used in Operations. Voltage limits and any exception to those limits are identified in the PJM Transmission Operation Manual (M-03).

Attachment F Redlines

PJM Planning SOL Methodology

~~Consistent with the requirements of NERC Standard TPL-001-5.1 P0, in the pre-contingency state and with all facilities in service, all facilities shall be within their facility ratings and within voltage and stability limits. In the determination of SOLs, the BES condition used shall reflect expected system conditions and shall reflect changes to system topology such as facility outages.~~

~~Following single contingencies as defined in NERC Standard TPL-001-5.1 P1 all facilities should be within their applicable facility ratings and the system shall be transient, dynamic and voltage stable. Cascading outages or uncontrolled separation shall not occur.~~

~~Starting with all Facilities in service, the response to a single contingency as defined in NERC Reliability Standard TPL-001-5.1 P1, may include any of the following:~~

~~Planned or controlled interruption of electric supply to radial customers or some local network customers connected to or supplied by the faulted facility. This is often referred to as consequential load loss.~~

~~System reconfiguration through manual or automatic control or protection actions.~~

~~To prepare for the next Contingency, system adjustments may be made, including changes to generation, uses of the transmission system, and changes to the transmission system topology.~~

~~Starting with all facilities in service and following any of the multiple contingencies identified in NERC Reliability Standard TPL-001-5.1 P2, P3, P4, P5, P6 and P7 the system shall be transient, dynamic and voltage stable and all facilities shall be within their applicable facility ratings and within applicable thermal, voltage and stability limits. Cascading Outages or uncontrolled separation shall not occur. In general, stability is not a limiting constraint in the PJM RTO. Stability limits that have been identified for certain system configurations or following multiple contingencies are identified in the PJM Transmission Operation Manual (M-03). New stability limits identified in Planning are communicated to PJM Operations and included in the Transmission Operation Manual (M-03).~~

~~In determining the response to any of the multiple contingencies, identified in NERC Reliability Standard TPL-001-5.1 P2, P3, P4, P5, P6 and P7, in addition to the actions identified above following single contingencies, the following shall be acceptable:~~

~~For all tests, as described in Attachment D-1, consequential load loss of up to 300 MW may occur. For those NERC TPL contingencies that permit non-consequential load loss, PJM will allow up to 300 MW of non-consequential load loss for facilities that become radial post-contingency.~~

PJM's Reliability Planning methodology for determining SOLs utilizes multiple standards and applicable planning procedures including the PJM Reliability Planning Criteria, NERC Planning Standards (TPL-001-5.1), Regional Reliability Organization criteria, and individual Transmission Owner FERC filed criteria. In all cases, PJM applies the most conservative of all applicable planning criteria when identifying reliability problems. PJM tests these criteria on a regional basis including all facilities within its footprint. All SOLs are monitored for thermal, voltage and stability violations. Remediation plans are developed to mitigate the violations that exceed the established SOL limits.

PJM's develops models for specific planning horizons using the latest Eastern Reliability Assessment Group (ERAG formerly MMWG) modeling information available for the applicable planning period. A detailed model is utilized for PJM's internal system (transmission owner under PJM's footprint) while the latest ERAG model for that planning period is used for facilities outside of PJM to incorporate critical modeling details of other control areas. Additional information about PJM's base case development procedures can be found in section 2 of this manual.

PJM reliability planning criteria requires that the system be tested for all BES single contingency outages and all common mode outages. Common mode outages consist of line faults coupled with a stuck breakers that result in multiple facility outages, double circuit towerline outages and bus faults in the PJM system. PJM's planning procedures require all NERC P0, P1, P2, P3, P4, P5, P6 and P7 conditions be tested.

When appropriate PJM will identify and implement Remedial Action Schemes. If the scheme is required for reliability purposes, operational performance, or to restore the system to a reliable state following a significant transmission facility event, operation of the scheme will be tested in the on-going planning analysis. See the Transmission Operations Manual (M-03) (http://www.pjm.com/~/media/documents/manuals/m03.ashx) for additional information concerning Remedial Action Schemes.

The PJM planning process includes a series of detailed analyses to ensure reliability under the most stringent of applicable NERC, PJM or local criteria. Through this process, violations of system operating limits are identified. System reinforcements required to mitigate the violations are developed and included in the Regional Transmission Expansion Plan for implementation. As a result PJM's application of its System Operating Limits for the planning horizon ensures system operation within Interconnection Reliability Operating Limits.

PJM Planning will communicate to PJM Operations any potential IROL facilities resulting from PJM deliverability criteria analysis. PJM Planning and Operations work to develop new IROL Reactive Interfaces and associated operating procedures as required.

PRC-023-6 Changes & M14B

- **Attachment G.10 NERC Standard PRC-023 – Transmission Relay Loadability** is being revised to align with the latest NERC standard language
  - Changes brought about by NERC Project 2015-09
- PJM will now identify circuits based on the annual RTEP Planning Assessment that satisfy the criteria under B2 of PRC-023 Attachment B

NERC Standard PRC-023 Transmission Relay Loadability - Attachment B

If any of the following criteria apply to a circuit, the applicable entity must comply with the standard for that circuit.

- The circuit is a monitored Facility of a permanent flowgate in the Eastern Interconnection, a major transfer path within the Western Interconnection as defined by the Regional Entity, or a comparable monitored Facility in the Québec Interconnection, that has been included to address reliability concerns for loading of that circuit, as confirmed by the applicable Planning Coordinator.
- The circuit is selected by the Planning Coordinator or Transmission Planner based on Planning Assessments of the Near-Term Transmission Planning Horizon that identify instances of instability, Cascading, or uncontrolled separation, that adversely impact the reliability of the Bulk Electric System for planning events~~The circuit is a monitored Facility of an IROL, where the IROL was determined in the planning horizon pursuant to FAC-010~~.
- The circuit forms a path (as agreed to by the Generator Operator and the transmission entity) to supply off-site power to a nuclear plant as established in the Nuclear Plant Interface Requirements (NPIRs) pursuant to NUC-001.
- The circuit is identified through the following sequence of power flow analyses performed by the Planning Coordinator for the one-to-five-year planning horizon
  - Simulate double contingency combinations selected by engineering judgment, without manual system adjustments in between the two contingencies (reflects a situation where a System Operator may not have time between the two contingencies to make appropriate system adjustments).
  - For circuits operated between 100 kV and 200 kV evaluate the post-contingency loading, in consultation with the Facility owner, against a threshold based on the Facility Rating assigned for that circuit and used in the power flow case by the Planning Coordinator.
  - When more than one Facility Rating for that circuit is available in the power flow case, the threshold for selection will be based on the Facility Rating for the loading duration nearest four hours.
  - The threshold for selection of the circuit will vary based on the loading duration assumed in the development of the Facility Rating.

PRC-026-2 Changes & M14B

- **Attachment G.13 NERC Standard PRC-026 – Relay Performance During Stable Power Swings** is being added to M14B to:
  - Document the process of determining PRC-026 BES Elements
  - Identify location of the PRC-026 list
  - Incorporate latest revisions to the Standard
    - Changes brought about by NERC Project 2015-09

G.13 NERC Standard PRC-026 – Relay Performance During Stable Power Swings

Background

The purpose of PRC-026 is to ensure that load-responsive protective relays are expected not to trip in response to stable power swings in non-Fault conditions.

As the Planning Coordinator, PJM is required to provide notification of each generator, transformer and transmission line BES Element in its area, at least once each calendar year, that meets one or more of the following criteria, if any, to the respective Generator Owner and Transmission Owner:

Criteria:

1. Generator(s) where an angular stability constraint, identified in Planning Assessments of the Near-Term Transmission Planning Horizon for a planning event, that is addressed by limiting the output of a generator or a Remedial Action Scheme (RAS), and those Elements terminating at the Transmission station associated with the generator(s).

2. Elements associated with angular instability identified in Planning Assessments of the Near-Term Transmission Planning Horizon for a planning event.

3. An Element that forms the boundary of an island in the most recent underfrequency load shedding (UFLS) design assessment based on application of the Planning Coordinator's criteria for identifying islands, only if the island is formed by tripping the Element due to angular instability.

4. An Element identified in the most recent annual Planning Assessment of the Near-Term Transmission Planning Horizon where relay tripping occurs due to a stable or unstable power swing during a simulated disturbance for a planning event.

Process to determine PRC-026 BES Elements

PJM staff will conduct an assessment at least once each calendar year, applying the criteria in accordance with requirement R1 of PRC-026 to determine the applicable BES Elements. PJM will maintain the list of BES Elements in Attachment A of PJM Manual 03B: Transmission Operating Procedures (CEII). Notification will be provided when the manual has been updated with the latest list.

The required access forms are located here:

- https://www.pjm.com/library/request-access.aspx

- **Attachment G.14 NERC Standard TPL-007 – Transmission System Planned Performance for Geomagnetic Disturbance Events** is being added to M14B to:
  - Document PJM's process for adherence to the NERC Standard
  - Consolidate prior PJM committee meeting TPL-007 presentations into one location
    - Overall process/criteria has not changed

TPL-007-4 Redlines

G.14 NERC Standard TPL-007 – Transmission System Planned Performance for Geomagnetic Disturbance Events Facility Interconnection Studies

Background

The purpose of TPL-007 is to establish requirements for Transmission system planned performance during geomagnetic disturbance (GMD) events.

As the Planning Coordinator and Transmission Planner, PJM is responsible for maintaining System models and GIC System models of its planning area, performing the study or studies needed to complete benchmark and supplemental GMD Vulnerability Assessments, and implementing process(es) to obtain GMD measurement data as specified in the standard.

Developing and maintaining GMD models is a collaborative effort between PJM and its members. Accurate modeling data is a key component of quality GMD studies. To that end, PJM will require the assistance of its members to provide the appropriate modeling data on a periodic basis. Modeling data from Transmission Owners are submitted via an Excel spreadsheet template that PJM will provide while modeling data from Generator Owners are submitted through the Planning Center: Gen Model tool.

Steady State Voltage Criteria

To assess system steady state voltage performance during the benchmark and supplemental GMD events that are described in Attachment 1 of the Standard, PJM has developed criteria for acceptable system steady state voltage performance for its system.

Steady state voltage criteria is established pursuant to the following PJM manuals:

- PJM Manual 03: Transmission Operations
  - Section 3: Voltage & Stability Operating Guidelines
- PJM Manual 14B: PJM Region Transmission Planning Process
  - Section 2: Regional Transmission Expansion Plan Process
- PJM Manual 39: Nuclear Plant Interface Coordination
  - Section 1: Nuclear Plant Interface Requirements

Voltage performance during GMD events are examined in three stages:

- **Stage 1:** Initial Condition
  - The System may be postured in anticipation of a GMD event with adjustments that are executable in response to space weather information. Steady state voltage performance shall be consistent with Category P0 (No Contingency) per the TPL-001 standard. Voltage limits for planning purposes applied during Stage 1 will be the same as applied in PJM Operations for normal scenarios.
- **Stage 2:** GMD Event
  - A GMD event occurs but prior to loss of elements per Event description in Table 1 of TPL-007. The effects of GMD are modeled as reactive losses on the transmission system where reduced voltages are expected. Steady state voltage performance shall be consistent with Category P1 (Single Contingency) per the TPL-001 standard. Voltage limits for planning purposes applied during Stage 2 will be the same as applied in PJM Operations for contingency scenarios.
- **Stage 3:** GMD Event with Outages
  - Facilities that are susceptible to harmonics are removed from service as a result of protection system operation / misoperation. Voltage limits applied during Stage 3 will be the Load Dump (LD) limit used in PJM Operations.

Before and during the GMD event, all PJM Transmission System facilities 100 kV and greater will be monitored. Cascading, voltage collapse and uncontrolled islanding shall not occur, Nuclear Plant Interface Requirement (NPIR) voltage limits will be respected and TO criteria if more restrictive than baseline voltage limits will be used.

Geomagnetically-Induced Currents (GIC)

PJM will provide GIC flow information to be used for the benchmark and supplemental thermal impact assessment of transformers specified in requirements R6 & R10 of TPL-007 respectively to each impacted Transmission Owner and Generator Owner that owns an applicable Bulk Electric System (BES) power transformer in the planning area.

Benchmark and Supplemental Vulnerability Assessments

PJM will conduct benchmark and supplemental GMD Vulnerability Assessments of the Near-Term Transmission Planning Horizon at least once every 60 calendar months. The benchmark and supplemental GMD Vulnerability Assessments shall use a study or studies based on models identified in requirement R2 of TPL-007, document assumptions, and document summarized results of the steady state analysis.

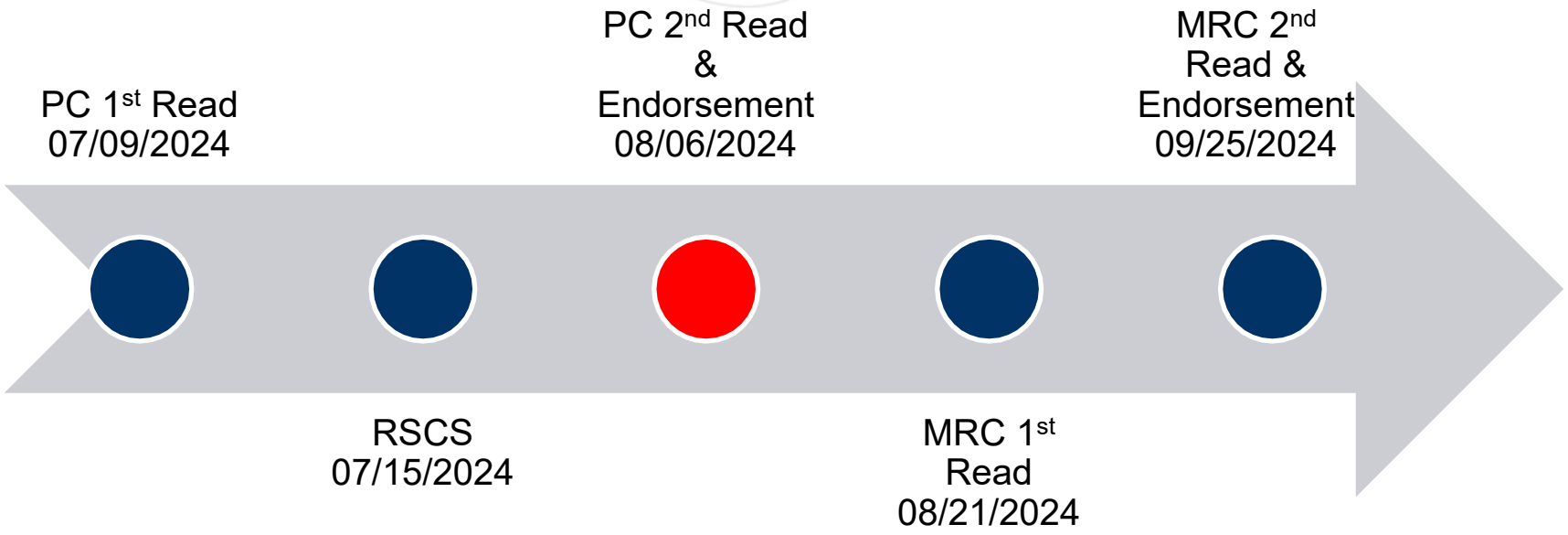
If PJM concludes through the benchmark and supplemental GMD Vulnerability Assessments that the System does not meet the performance requirements for the steady state planning benchmark and supplemental GMD events contained in Table 1 of TPL-007, PJM shall develop a Corrective Action Plan (CAP) addressing how the performance requirements will be met. The Corrective Action Plan shall list system deficiencies and associated actions needed to achieve required system performance.

GMD Measurement Data Processes

PJM will obtain GIC monitor data from at least one GIC monitor located within the PJM footprint as per requirement R12 of TPL-007. GIC values are currently sent to PJM via the Inter-Control Center Communications Protocol (ICCP). Data will be collected for the duration of a space weather event where the Kp index ≥ 7 and stored. Future GIC monitor installations will be based on system studies. Monitor specifications (i.e., data range & ambient temperature ratings) will be determined based on input from impacted entities.

PJM will obtain magnetometer data from United States Geological Survey (USGS) geomagnetic observatories. Currently the closest one is in Fredericksburg, VA. Data will be collected for the duration of a space weather event where the Kp index ≥ 7 and stored.

Review and Approval Timeline



Contact

Facilitator:
Becky Carroll,
Rebecca.Carroll@pjm.com

Secretary:
Ashwini Bhat,

Ashwini.Bhat@pjm.com

SME/Presenter:
Stan Sliwa,
Stanley.Sliwa@pjm.com

Manual 14B – Version 57

Summary of Changes

Member Hotline

(610) 666 – 8980

(866) 400 – 8980

custsvc@pjm.com

Revision History

Version No.	Date	Description
1	07/30/2024	• Original slides posted
2	08/01/2024	• Updated language on slide 3 & redlines on slide 4 to provide clarity on Light Load assumptions.

PROTECT THE POWER GRID

THINK BEFORE YOU CLICK!

Be alert to malicious phishing emails.

Report suspicious email activity to PJM.

(610) 666-2244 / it_ops_ctr_shift@pjm.com