PJM Manual 14B Updates

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Planning Committee
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• PJM Manual 14B – PJM Region Transmission Planning Process

• PJM Planning is updating three sections of M14B
  1. Light Load Reliability Analysis and Winter Peak Reliability Analysis (2.3.11 and 2.3.13)
  2. Determination of SOL used for planning the Bulk Electric System (Attachment F)
  3. Updates to Attachment G including compliance language (Attachment G.9.6)
• Updated analysis section with required in service dates
  – Summer analysis enhancements required in service by June 1 of the Study Year (Long standing requirement)
  – Seasonal analysis (Light Load and Winter Peak) needed corresponding required in-services dates
  – PJM is recommending:
    • Light Load enhancements required in-service by November 1 of the year under study
    • Winter Peak enhancements required in-service by December 1 of the year under study
2.3.11 Light Load Reliability Analysis

The light load reliability analysis ensures that the Transmission System is capable of delivering the system generating capacity at light load. The 50% of 50/50 summer peak demand level was chosen as being representative of an average light load condition. The system generating capability modeling assumption for this analysis is that the generation modeled reflects generation by fuel class that historically operates during the light load demand level.

The starting point power flow is the same power flow case set up for the baseline analysis, with adjustment to the model for the light load demand level, interchange, and accompanying generation dispatch. The PJM portion of the model is adjusted as well as areas surrounding PJM that impact loadings on facilities in PJM. Interchange levels for the various PJM zones will reflect a statistical average of typical previous years interchange values for off-peak hours. Load level, interchange, and generation dispatch for non-PJM areas impacting PJM facilities are based on statistical averages for previous off-peak periods. Thus the same baseline network model and criteria apply. The flow gates ultimately used in the light load reliability analysis are determined by running all contingencies maintained by PJM planning and monitoring all PJM market monitored facilities and all BES facilities. The contingencies used for light load reliability analysis will include NERC TPL P1, P2, P4, P6 and P7. NERC TPL P0, normal system conditions will also be studied. All BES facilities and all non-BES facilities in the PJM real-time congestion management control facility list are monitored. The same single contingency power flow solution techniques also apply. Details of the light load reliability analysis procedure, including methods of creating the study dispatch, can be found in Attachment D.2. The resulting system enhancements from all Light Load reliability analysis are expected to be in-service prior to November 1 of the Delivery Year under study.

2.3.13 Winter Peak Reliability Analysis

The winter peak reliability analysis ensures that the Transmission System is capable of delivering the system generating capacity at winter peak. The PJM 50/50 winter peak demand level was chosen as being representative of a typical winter peak condition. The system generating capability modeling assumption for this analysis is that the generation modeled reflects generation by fuel class that historically operates during the winter peak demand level.

The starting point power flow is the same power flow case set that is used for the baseline analysis, with adjustments to the model for the winter peak demand level, winter peak load profile, winter ratings (50°F rating), interchange, and accompanying generation dispatch. The PJM portion of the model is adjusted, and the MMWG winter model is used for areas surrounding PJM. Interchange levels for the various PJM zones will reflect all yearly long term firm (LTF) transmission service, except MAAC which will reflect the historical average. Load level, interchange, and generation dispatch for non-PJM areas impacting PJM facilities are based on statistical averages for previous winter peak periods. Thus the same baseline network model and criteria apply. The flow gates ultimately used in the winter peak reliability analysis are determined by running all applicable contingencies maintained by PJM planning and monitoring all PJM market monitored facilities and all NERC BES facilities. The contingencies used for winter peak reliability analysis will include NERC TPL category P1, P2, P3, P4, P5, P6, and P7. NERC TPL Category P0, normal system conditions will also be studied. All BES facilities and all non-BES facilities in the PJM real-time congestion management control facility list are monitored. The same single contingency power flow solution techniques used in other baseline reliability tests also apply. Details of the winter peak reliability analysis procedure, including methods of creating the study dispatch, can be found in Attachment D.3. The resulting system enhancements from all Winter Peak reliability analysis are expected to be in-service prior to December 1 of the Delivery Year under study. The Winter peak studies December of 2021 through February of 2022, System enhancements identified in this study are expected to be in-service prior to December 1, 2021.
Determination of SOL used for planning the BES

• Administrative Update to correct references to TPL-001-4

PJM Planning SOL Methodology
Consistent with the requirements of NERC Standard TPL-001-4 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-001-4 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 001-14 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.
• Updates to Attachment G.9.6 including compliance language

G.9.6 Implementation of the NPIR for Planning Analysis

PJM incorporates the Nuclear Plant Interface Requirements (NPIRs) into its planning processes in accordance with the applicable NERC standards. PJM performs these planning analyses consistent with the NPIR planning requirements and its Regional Transmission Expansion Planning requirements.

PJM is required to incorporate the Nuclear Plant Interface Requirements (NPIRs) into its planning processes according to the applicable NERC standards. PJM performs these planning analyses consistent with the NPIR planning requirements and its Regional Transmission Expansion Planning requirements. PJM Manuals 149 and 39 are the two principal sources that document these requirements, among various other planning and operating process business rules. It is the responsibility of the Planning engineer to monitor changes to the planning requirements contained in the NPIR source documents (kept in confidence by PJM System Operating) and Manual 39 and to update this manual to reflect changes as appropriate per the protocols of Manual 39 section 3.1.

The following material are the excerpted planning requirements and criteria contained in the NPIR’s that must be incorporated into PJM Planning analyses. This material must only be changed to be consistent with the source documents.

• The remaining portion of G.9.6 is also being removed, please see redline document for full detail
• Planning Committee
  – First Read
    • 5/12/2016 (Today)
  – Seek Endorsement
    • 6/9/2016

• Markets and Reliability Committee
  – First Read
    • 5/26/2016
  – Seek Endorsement
    • 6/30/2016
• Any additional questions can be directed to RTEP@pjm.com
• V1: Original Posted to PJM.com for 5/12/2016 Planning Committee Meeting