PJM RTEP – 2014 Project Proposal Window #2
Problem Statement & Requirements Document

Scope: Transmission Owner Criteria, 2019 Baseline N-1 Voltage, 2019 N-1-1 Voltage and 2018 Light Load Reliability Criteria

PJM Interconnection

Original Document: October 17, 2014

Version 1

Email: RTEP@pjm.com with any questions or clarifications and include a reference to 2014 RTEP Proposal Window #2

2014 RTEP Project Proposal Window #2

I. Purpose of Proposal

PJM seeks technical solution alternatives (hereinafter referred to as "Proposals") to resolve potential reliability criteria violations on facilities identified below in accordance with planning criteria (PJM, NERC, SERC, RFC, and Local Transmission Owner criteria).

II. Criterion applied by PJM for this proposal window:

A) Baseline Voltage N-1 Contingency Analysis

B) N-1-1 Voltage

C) Light Load Reliability Criteria

D) Transmission Owner specific Criteria

III. Terminology

For Proposal windows, PJM will distribute an Excel workbook of potential violations on facilities identified through a series of analyses. The following column headings are generally representative of the data fields that will be used to identify the specific facility and other factors of the output of this analysis. Not all column headings will appear in every sheet within the workbook. Additional information deemed necessary by PJM will be provided on a separate sheet along with the results file.

Typical thermal analysis column headings:

Column Headings	Title	Description
FG #	Flowgate Number	A sequential numbering of the identified potential violations
Fr Bus	From Bus Number	PSSE model Bus number corresponding to one end of line identified as a potential violation
Fr Name	From Bus Name	PSSE model Bus name corresponding to one end of line identified as a potential violation
To Bus	To Bus Number	PSSE model Bus number corresponding to other end of line identified as a potential violation

To Name	To Bus Name	PSSE model Bus name corresponding to other end of line identified as a potential violation
Monitored Facility	Monitored Facility	The circuit on which a potential violation is occurring
Base Rate (MVA)	Base Rate (MVA)	Normal Facility Rating (Rate A)
% Overload	Percentage Overload	Percentage above base rate
CKT	Circuit	Circuit number of identified potential violation
KVs	Kilovolt level (A/B)	Kilovolt level of both sides of potential violation, if A does not equal B, potential violation is a transformer
Areas	Area Numbers (A/B)	Area numbers of both ends of potential violation (A=From Bus Area Number, B=To Bus Area Number) If A does not equal B, potential violation is a tie line
Rating	Line Rating	Applicable Thermal rating (MVA) of line
DC Ld(%)	Direct Current Loading percentage	Percentage above 'Line Rating' determined from DC testing
AC Ld(%)	Alternating Current Loading percentage	Percentage above 'Line Rating' determined from AC testing
Cont Type	Contingency Type	Contingency Categorization (potential options include: Single, Bus, Line_FB, Tower)
Cont Name	Contingency Name	Contingency Name as identified in associated contingency file or embedded in the spreadsheet
Contingency	Contingency	Contingency Description
Violation Date	Violation Date	Date on which violation is expected to occur
Analysis Case	Analysis Case	Case title to use in replicating analysis

Typical voltage analysis column headings:

Column Headings	Title	Description
FG #	Flowgate Number	A sequential numbering of the identified potential violations
Bus #	Bus Number	PSSE model Bus number corresponding to bus identified as a potential violation
Name	Bus Name	PSSE model Bus name corresponding to bus identified as a potential violation
KV	Kilovolt level	Kilovolt level of bus identified as potential violation
Area	Area Number	Area number of bus identified as potential violation
ContVolt	Contingency Voltage (P.U.)	Per Unit Voltage at identified bus after contingency is applied
BaseVolt	Basecase Voltage (P.U.)	Per Unit Voltage at identified bus before contingency is applied
Low Limit	Low Voltage	Threshold of Per Unit Low voltage, if ContVolt is under this limit,

	Limit(P.U.)	a potential violation is identified
Upper Limit	High Voltage Limit(P.U.)	Threshold of Per Unit High voltage, if ContVolt is over this limit, a potential violation is identified
Cont Type	Contingency Type	Contingency Categorization (potential options include: Single, Bus, Line_FB, Tower)
Vdrop(%)	Voltage drop	The Percentage that the voltage has dropped as a result of the contingency
Contingency	Contingency Name	Contingency Name as identified in associated contingency file
Contingency 1	First Contingency	N-1 (First) Contingency identified
Contingency 2	Second Contingency	N-1-1 (Second) contingency identified in N-1-1 analysis
Violation Date	Violation Date	Date on which violation is expected to occur
Analysis Case	Analysis Case	Case title to use in replicating analysis

IV. Analysis Procedure

PJM Planning follows a documented procedure for all RTEP analysis as set forth in PJM Manual 14B. This problem statement requires participants to perform analysis and identify solutions to potential violations identified using RTEP procedures detailed in Manual 14B, section 2.3, RTEP Reliability Planning at:

http://pjm.com/~/media/documents/manuals/m14b.ashx

Additionally, all proposed solutions must meet the performance requirements outlined in PJM Transmission Owner Criteria:

http://www.pjm.com/planning/planning-criteria/to-planning-criteria.aspx

PJM performs a preliminary quality assessment of the analysis in coordination with PJM Transmission Owners, Generation Owners, Neighboring Transmission Owners, and any other affected parties. In this quality assessment PJM reviews potential violations as determined by the analytical tools used throughout RTEP analysis. Through this coordination PJM seeks to identify only the violations for inclusion in the proposal window process. As PJM works through this quality assessment and continues to develop the RTEP analysis, it is possible that identified potential violations will be removed from the potential violation list as determined by PJM Planning. It is also possible that as the analysis continues, other potential violations that were not on the potential violation list originally are added to that list as deemed necessary by PJM Planning.

This process is intended to develop upgrades to address system reliability criteria violations and market efficiency projects. PJM will regularly retool analysis based on updated system information to ensure that solutions address the identified violations, do not cause any new violations, and are still needed to address reliability criteria and/or market efficiency projects.

V. Scope of Work

Through this Proposal window PJM is seeking solutions to identified Reliability Criteria violations.

Objectives

1. Develop solutions to identified potential violations;
2. Solutions should not cause any additional violations (Such as: Thermal, Voltage, Short Circuit or Stability). If additional violations are caused by the solutions, this should be addressed within proposal package; and
3. Adhere to all PJM, NERC, SERC, RFC and Local Transmission Owner Criteria

What PJM Provides:

The following data and related information is required for this analysis and is expected to be available from PJM:

Modeling Data:

The following data is provided (Please note these files are Critical Energy Infrastructure Information (CEII) and should be handled accordingly):

1. **Base Power Flow Case.**
    a. This window addresses a variety of reliability criterion that span several corresponding power flow cases. The data in the Excel spreadsheet notes which case(s) correspond to each identified reliability criteria violation.
2. **Contingency List.** All Contingency Types (Single, Bus, Tower, Line w/ stuck breaker).
3. **Subsystem File**. Identifying all subsystem zones to be considered in analysis.
4. **Monitor File** Identifying specific ranges of facilities by area and kV level to be considered in analysis.
5. **Applicable Ratings (if different from what is in case)**
6. **Excel Workbook** containing the detailed power flow results and any additional technical comments.

Response back to PJM (Deliverables)

The following must be provided no later than the close of the window. Please use the PJM provided templates to describe the high level details of your proposal. If the proposer wishes to include more detail, additional narrative may be added to address specifics of your proposal including, but not limited to:

1. Description of the proposed solution and corresponding violation(s) it resolves.
    a) Describe to PJM if the project should be considered only as a whole or if portions of the project should be considered as well.

2. Detailed analysis report on proposed solutions, including:
    a) Breaker one-line diagrams to illustrate system topology
    b) Spreadsheets (e.g. Output of analysis showing solution to identified issue)
    c) High level estimate of:
        i. Time to construct the proposed solutions
        ii. Cost estimates with a description of assumptions (e.g. base cost, risk and contingency (R&C) costs, and total cost)
        iii. Availability of right of ways
3. Equipment parameters and assumptions
    a) All parameters (Ratings, impedances, mileage, etc.)
    b) For reactive devices, settings and outputs
    c) For synchronous machines, MW and MVAR output assumptions
4. Complete set of power flow and dynamic cases containing proposed solutions (all cases should be solvable, not containing any non-convergence issues, in line with industry standards). If possible, provide a PSS/E IDEV file so that the modeling of the proposal may be easily applied to other models (please only use unused bus numbers for the creation of new busses). Please contact PJM with any questions. Provide any other necessary data including critical contingency files to reproduce the proposed solutions. All cases and data files for dynamic simulations must be in PSS/E ver. 32 format.
5. Any other supporting documentation required by PJM that is required to perform verification review, that isn't explicitly stated in this document.
6. Submission of Deliverables
    a) Preferred - VIA electronic mail to RTEP@pjm.com
    b) Alternate (e.g.: DVD or flash/thumb drive) - VIA FedEx to Nancy Muhl, PJM Interconnection, 2750 Monroe Boulevard, Audubon, PA 19403

PJM requires all proposal solutions, both upgrades to existing facilities and Greenfield projects, to complete the 2014 RTEP Proposal Window Template:

http://pjm.com/~/media/planning/rtep-dev/expan-plan-process/ferc-order-1000/rtep-proposal-windows/2014-rtep-proposal-window-template.ashx

If the proposal is a Greenfield solution then, the 'Greenfield Project Proposal Template' must also be included in the project proposal package to provide company evaluation and constructability information:

http://www.pjm.com/~/media/planning/rtep-dev/expan-plan-process/ferc-order-1000/order-1000-greenfield-project-proposal-template.ashx

Proposing entities are required to provide a public and non-public version of the project proposal. Proposing entities should expect that PJM will post the public version of the proposals after the close of the window. The public version must include redactions for any CEII

information and information which the proposing entity deems is business proprietary and confidential (Note: PJM reserves the right to review the proposing entity's proposed redactions to ensure the appropriate level of transparency while protecting confidential and proprietary information and CEII)

Proposal Fees

There are no proposal fees for the 2014 RTEP proposal window #2.

Timeline

Friday, 10/17/2014, Opening of 2014 RTEP Project Proposal Window 2
Monday, 11/17/2014, Close of 2014 RTEP Project Proposal Window 2

- All proposals and pre-qualification documentation due by 11/17/2014

Action	Target Date
Recipients submit pre-qualification packages and updates to PJM*	On or before 11/17/2014
PJM distributes Problem Statement to RTEP proposal window participants	10/17/2014
Recipients submit questions to PJM	10/17/2014 – 11/17/2014
PJM distributes answers to questions to all recipients*	10/17/2014 – 11/17/2014
Recipients submit proposals to PJM**	On or before 11/17/2014

*PJM will maintain confidentiality of individual proposals for the duration of the window.

**Any proposals received after close of the proposal will not be accepted.

Document Revision History

October 17, 2014
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