



M14B Annual Review

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Planning Committee
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- PJM performs an annual review of M14B to ensure that all procedural language is in line with current analytical practices.
- This review has resulted in administrative updates to the following areas:
 - 1) Sections 1.3 and H.1: Updates to NERC Requirement Standard Numbering
 - 2) Section 2.3.8: Cleaning up formatting of bullets
 - 3) Section 2.3.13: Aligning winter case creation method with existing practices
 - 4) Section C.7.3: Updates to Generator Deliverability procedure
 - 5) Section D.2.2: Correcting references to contingency types for light load studies
 - 6) Section C.5.3.3: Adding OVEC to Study Area Definition (Western Region)

- Sections 1.3 and H.1: Updates to NERC Requirement Standard Numbering
 - Section 1.3: Planning Assumptions and Model Development
 - Update references to current MOD-032 standard
 - Administrative change
 - Section H.1: Power System Modeling Data
 - Update references to current MOD-032 standard
 - Administrative change

- Section 2.3.8: Cleaning up formatting of bullets
 - Section 2.3.8: NERC P3 and P6 “N-1-1” Analysis
 - Reformatting bullets for clarity of reading
 - Administrative change, no analytical or procedural changes

- Section 2.3.13: Aligning Winter case creation method with existing practices
 - Section 2.3.13: Winter Peak Reliability Analysis
 - Removing language on winter temperature ratings sets, to align with existing practices.

- Section C.7.3: Updates to Generator Deliverability procedure
 - Section C.7.3: General (Generator Deliverability) Procedures and Assumptions
 - Updating language in “Step 4” and “Step 5” regarding which voltage of a transformer is considered for ranking of units allowed to contribute to the cumulative ramping impact. (Previously: included if highest terminal voltage level is greater than or equal to 500 kV. Proposed: included if lowest terminal voltage level is greater than or equal to 500 kV)

- Distribution factors highly correlated with the impedance between source and sink
- EHV transmission lines have low impedance by design
- Transformers are high impedance devices
- Distribution factors for transformers connecting the EHV transmission system to the lower voltage transmission are generally much closer to the distribution factors for the lower voltage transmission facilities they connect to
- Therefore, distribution factor thresholds for transformers connecting the EHV transmission system to the lower voltage transmission system should more closely match the distribution factor thresholds used for the lower voltage transmission system

- Average Distribution Factor (DFAX) Magnitude of lines and transformers that share same low side voltage level are highly correlated
- 500 kV and 765 kV have a higher average DFAX than lines and transformers whose lowest terminal voltage is >500kV.

	Avg DFAX Magnitude	Avg DFAX Magnitude
<u>Lowest Terminal kV</u>	<u>All 500 & 765 kV Transformers</u>	<u>All Transmission Lines</u>
138	0.4%	0.3%
230	0.9%	0.9%
345	1.4%	1.2%
500	4.7%	4.4%
765	N/A	4.2%

- ~190 transformer loadings potentially impacted by this procedural change
- PJM performed sensitivity analysis to understand impacts
 - 2 transformers potentially overloaded
 - Wescosville 500/138 kV transformer for a single contingency
 - Cost to resolve this overload = \$18M
 - Ladysmith 500/230 kV transformer for a single contingency
 - Cost to resolve this overload = \$25M
 - 1 additional transformer potentially overloaded in the queue case if this rule was in place today*
 - Juniata 500/230 kV transformer for a common mode outage
 - Cost to resolve this overload = TBD

*Note: If endorsed by stakeholders, this rule would not apply to interconnection analysis procedures until the AF1 queue

- Section D.2.2: Correcting references to Contingency types
 - Section D.2.2: Light Load Reliability Analysis Procedure
 - Correcting references to contingency types in table 2 and “Step 3”
 - Administrative change, no analytical or procedural changes

- Section C.5.3.3: Adding OVEC to Study Area Definitions
 - Section C.5.3.3: Study Area Definitions-Zonal and Global
 - Adding OVEC to Western Region Locational Deliverability Area
 - Administrative change due to integration of OVEC
- New item since 1st read

- PC First Read – 1/11/2018
- MRC First Read – 1/25/2018
- PC additional review (endorsement request delayed to March)– 2/8/2018
- **Request for PC Endorsement– 3/8/2018**
- Request for MRC Endorsement – 3/22/2018