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NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Project 2015-10 Single Points of Failure

Proposed TPL-001-5

PJM RSCS update

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Feb 15, 2018

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- Project 2015-10 TPL-001-5
- This is the third posting
 - One informal posting
 - One formal posting
- TPL-001-5 addresses:
 - FERC Order 754 (Single Points of Failure)
 - FERC Order 786 (Maintenance Outages in the Near Term Transmission Planning Horizon; stability analysis for loss of long lead time equipment)
- Separate ballot for standard and implementation plan

- Changes to TPL-001-5:
 - “Revision to Table 1 – Steady State and Stability Performance Planning Events”
 - Modified Category P5 event to include SPF
 - Added a new Category P8 Planning Event
 - Footnote 13 – describes the non-redundant Protection System components considered for Category P5 and new Category P8 events
 - Table 1:
 - Performance requirements for new Category P8
 - System shall remain stable, no cascading or uncontrolled islanding, for a 3-phase fault and failure of a non-redundant component of a Protection System
 - When analysis indicates an inability to meet Performance Criteria, assessment must include CAP

- New P8 Planning Event defined for SPF to include a 3-phase fault and failure of a non-redundant component of a Protection System
- Creates a “Bright Line” distinction between Planning and Extreme events
- SPF P8 Planning Event:
 - 3-phase fault are low probability – single phase not properly cleared often evolves to a 3-phase fault
 - The specific locations of SPF are known
 - SPF role in system disturbances – 1,600 data request results – SPCS/SAMS recommendation
 - Lower probability event is reflected in the P8 performance requirements
- Extreme Events unchanged with SPF codified as a Planning Event in Category P8

- Changes to requirement R1 is not a prescriptive, continent-wide procedure
- Entity must have a process and procedure that conform with a technical rationale which must be made available
 - Consistent with other requirements in TPL-001-4, such as Voltage Criteria, Low Voltage Ride Through, etc.
- Removed the six month time horizon for significant outages occurring within the period of the Near Term Assessment studies (Year 1 or 2 and Year 5)
- Categories P3 and P6 do not sufficiently cover planned maintenance outages
- Proposed revisions to requirement R2 also include stability studies for long lead equipment that does not have a spare equipment strategy

- The issue is “raising the bar” on a continent-wide basis
 - Close coordination between Protection and Planning
 - Some entities may require extensive coordination efforts that involve multiple substation outages
- “Raising the bar” issue was addressed in TPL-001-4 by:
 - 5 year time period for those requirements that “raised the bar”
 - Providing temporary relief from the performance requirements by permitting Operating Procedures during the phase in period to include Non-Consequential load loss and curtailment of Firm Transmission Service that would not otherwise be permitted by the requirements of TPL-001-4

- The relief provided in TPL-001-4 is not portable to TPL-001-5
 - In TPL-001-4, a P5 (non-redundant relay failure) event which does not meet performance requirements must have Operating Procedure until the redundant relay is installed
 - Options provided in bullets under 2.7.1 may cause a BES reliability issue that is more severe than a low probability P5 event
 - There is not time to install the added redundancy of the protection system for P5 or the added P8
- The performance requirements in Categories P5 and P8 (Relay Failure) are achieved in the dynamic time frame
- The solution to a relay issue is often to implement the CAP
- Another reliability concern is the potential impact of a lower probability event (P8) vs. scheduling outages required for the CAP

- The implementation plan is being balloted separately and contains:
 - 3 year study period to perform the “raising the bar” events in P5 and P8
 - 2 year period to identify CAPs

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A stylized map of North America, including the United States, Canada, and Mexico. The map is rendered in shades of blue and purple. A horizontal bar with a gradient from dark blue to light blue is overlaid across the middle of the map, containing the title text.

Questions and Answers