Planning Committee
Dayton FERC Form 715

October 17, 2019
In 2018, Dayton Transmission Planning began an initiative to review our FERC Form 715 Transmission Planning Criteria. This review entailed analyzing transmission and generation topology, working with operational engineering staff, and also looking at external best practices for system planning.

Voltage Limits

Updated 2019 criteria provides additional detail on limits

- The table below shows the voltage limits for the Dayton transmission system under both normal (P0 of NERC TPL-001-4) and emergency (P1-P7 of NERC TPL-001-4) conditions.

<table>
<thead>
<tr>
<th>Nominal Voltage (kV)</th>
<th>Normal Voltage Limits</th>
<th>Emergency Voltage Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimum</td>
<td>Maximum</td>
</tr>
<tr>
<td></td>
<td>(%)</td>
<td>(%)</td>
</tr>
<tr>
<td>345</td>
<td>95%</td>
<td>105%</td>
</tr>
<tr>
<td>138</td>
<td>95%</td>
<td>105%</td>
</tr>
<tr>
<td>69</td>
<td>95%</td>
<td>105%</td>
</tr>
</tbody>
</table>

- In addition, transmission bus voltage shall not drop more than 10% below its pre-contingency value in the post-contingency state.
Overview of Form 715 Updates - 2

Thermal Limits
• Updated 2019 criteria provides detail on ratings and limits with specific references to NERC contingency categories
  • For general planning purposes, summer ratings are based on an ambient temperature of 95 degrees F and winter ratings are based on 32 degrees F.
  • No facility shall exceed its normal rating in the system normal state (P0 of NERC TPL-001-4).
  • No facility shall exceed its emergency rating in the post-contingency state (P1-P7 of NERC TPL-001-4).

Stability
• Updated criteria provides additional detail in alignment with PJM’s stability criteria.
  • The stability of The Dayton Power and Light Company’s transmission system is in accordance with NERC TPL-001-4. TPL-001-4 R4.1.3 acceptable damping and R5 transient voltage response criteria may be found in PJM Manual 14B Attachment G2.2.

Fault-Duty
• Updated criteria to include fault duty.
  • All circuit breakers shall be capable of interrupting the maximum fault current duty imposed on the circuit breaker.
Overview of Form 715 Updates - 3

• Updated contingency definitions to provide more specific event definitions.
  • Single contingencies
    • The thermal and voltage limits shall not be violated for either normal operations or under the loss of:
      a) A single generating unit
      b) A single transmission circuit
      c) A single transformer
      d) A single shunt device
    • An entire peaking plant or intermittent plant will be considered as a single generator for NERC Planning Events P1 and P3 for certain non-peak study scenarios. The DP&L transmission system shall be planned to handle a variety of generation dispatch scenarios and generally, depending on load levels, shall not be dependent on peaking plants or intermittent resources to mitigate thermal overloads or low voltage conditions.

• Multiple and extreme contingencies
  • Additional reference and detail in alignment with NERC standard.
    • NERC Reliability Standard TPL-001-4 includes a table that describes the steady state and stability performance planning events that must be evaluated for multiple contingencies (P3-P7). The table also describes the “Extreme Events” that shall be simulated.