

# Old Dominion Electric Cooperative

## Transmission Planning Criteria

### Transmission Reliability Guidelines

#### 1. General Overview

The reliability guidelines used to plan the transmission system of Old Dominion Electric Cooperative (ODEC) are the criteria by which the ability of the transmission system to serve the future load is determined. In addition to load growth, any significant changes to the generation capacity on ODEC's or neighboring utility systems must also be included in any evaluation.

#### 2. Transmission Criteria

The ODEC service territory is governed by the reliability standards established by the North American Electric Reliability Corporation (NERC), ReliabilityFirst Corporation (RFC), SERC Reliability Corporation (SERC), PJM Interconnections, LLC (PJM), and the legacy Mid-Atlantic Area Council (MAAC) organizations. The exact planning requirements of these regulated institutions can be found on their websites and external publications. ODEC will adhere to any requirements directed by these agencies in order to meet their established reliability planning criteria.

In addition to these external organizations, ODEC also has its own internal planning criteria which will meet or exceed the planning standards above. The following criteria will be used for all solely owned 69 kV ODEC transmission facilities.

#### Thermal Requirements

- For system peak load conditions with no line, transformer, or generation unit out of service: all transmission facilities should not exceed their normal (continuous) rating.
- For system light load conditions (30% of peak) with no line, transformer, or baseload (includes wind and solar) generation unit out of service, all transmission facilities should not exceed their normal (continuous) rating.
- For a contingency loss of any one facility (line, transformer, or generator), the system should not exceed its emergency (4 hour) rating. (Include all generation for peak load conditions, baseload generation for light load conditions.)

- For a contingency loss of any one facility (line, transformer, or generator) and the discrete outage of one generator, the system should not exceed its emergency (4 hour) rating. (Include all generation for peak load conditions, baseload generation for light load conditions.)

Reactive Requirements

For all the conditions listed under the thermal requirements, voltages shall be within the ranges shown in the following chart:

<b>ODEC Line Voltage Limits</b>		
<b>High</b>	kV <b>per unit</b>	74 <b>1.07</b>
<b>Normal Low</b>	kV <b>per unit</b>	65.5 <b>0.95</b>
<b>Emergency Low</b>	kV <b>per unit</b>	65 <b>0.94</b>
<b>Voltage Drop</b>	kV <b>percent</b>	6.9 <b>10%</b>

Configuration Requirements

- A radial 69 kV transmission line shall feed no more than 10,000 consumers or 50 megawatts of load.
- Circuit breakers will be installed on all line terminal positions in substations. Circuit switchers or circuit breakers are acceptable for all transformer high side terminals. Fuses may be used on transformers rated 10 MVA or less than, subject to review of protective relay coordination with the high-side device. Use of a ground switch and motor-operated air-break switch (MOAB) is not permitted.
- Tapped transformers shall have their own high-side, fault interrupting protection for all operating conditions.