East River Electric Power Cooperative, Inc.

Local Transmission Planning Criteria

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1. Purpose

This document contains the planning criteria East River uses to ensure the East River transmission system is adequate to reliably deliver power to its member distribution cooperatives and other interconnected distribution systems, to receive power from interconnected generation facilities, and to not adversely impact neighboring transmission systems.

These planning criteria are intended to be used in East River's planning assessments and assessments conducted by others to identify facilities or areas in East River's transmission systems that do not meet East River's reliability requirements. Unless otherwise noted, when the planning criteria specified below are exceeded or violated, a system upgrade(s) should be planned and implemented to eliminate the violation.

This document and the criteria described below may be revised from time to time at East River's discretion. Revisions may be in response to, but are not limited to: new system conditions, operating procedures, member requests, study procedures, Southwest Power Pool (SPP) requirements, NERC requirements, or other regulatory or public policy requirements.

2. Applicability

East River conducts power flow and short circuit assessments to evaluate system performance and reliability on East River transmission facilities rated 60-kV and higher within the SPP transmission system. These planning criteria also supplement the planning criteria specified by others for use in zonal and regional planning assessments involving East River's transmission system.

For East River's assessments, specific planning criteria may be applicable for different operating conditions. System Normal Condition refers to the normal, steady-state, system intact, operating condition before any disturbances or contingencies are applied to the transmission system. Contingency Condition refers to the steady-state, operating conditions after a single contingency (i.e., an outage or failure of a system component) on the transmission system.

3. Voltage Criteria

a. Voltages are evaluated at all East River buses and for all operating conditions. Voltage levels will be considered acceptable when they are within the voltage range specified for the indicated operating condition:
   i. System Normal Condition: 0.95 to 1.05 per unit.
   ii. Contingency Condition: 0.90 to 1.10 per unit.

b. East River's transmission system is primarily a looped system operated normally open (i.e., radial) with the capability for transferring load between adjacent facilities for extended periods. East River will evaluate its facilities to ensure Contingency Condition voltage criteria are not exceeded during typical load transfers from adjacent facilities.

c. Switching of reactive devices (i.e., capacitors and reactors) should not result in a bus voltage step-change of more than 0.03 per unit.

4. Thermal Limit Criteria

a. Normal Ratings and Emergency Ratings will be established for summer and winter seasons (and other seasons as applicable) for all transmission lines, substation bus, and substation equipment in accordance with East River's Facility Rating Methodology.

b. Transmission line Normal Ratings are based on the maximum conductor temperature that maintains acceptable ground clearance requirements as specified by the National Electric Safety Code (NESC) standards in effect at the time the line was built. East River has transmission lines designed to 50°C, 75°C and 100°C conductor temperatures.

c. Unless specified otherwise in an operating guide, the Normal Rating is the same as the Emergency Rating for all East River transmission lines, substation bus and substation equipment, except power transformers (see below).

d. East River's transmission system is primarily a looped system operated normally open (i.e., radial) with the capability for transferring load between adjacent facilities for extended periods. East River will evaluate its facilities to ensure Normal Ratings are not exceeded during typical load transfers from adjacent facilities.

5. Transformer Loading Criteria

a. Transformers loading limits are based on the manufacturer specified MVA rating for each winding as follows:

   i. System Normal Condition (Normal Rating): 100% of the highest nameplate rating based on a 55°C rise.

   ii. Contingency Conditions (Emergency Rating): 125% of the highest nameplate rating based on a 55°C rise for a period of 30 minutes or less.

b. East River's transmission system is primarily a looped system operated normally open (i.e., radial) with the capability for transferring load between substations for extended periods. East River will evaluate transformer loading and schedule transformers for replacement when the Normal Rating of the transformer is exceeded during typical transfers from adjacent substations.

6. Transmission Line Loading and Exposure Criteria for System Normal Conditions

a. Criteria to be applied to each radial transmission circuit:

   i. MW-mile loading should not exceed 300 MW-miles.

   ii. MW loading should not exceed 25 MW.

   iii. Total miles of transmission line in the circuit (exposure) should not exceed 60 miles.

   iv. Total number of connected substations should not exceed 5 substations.

b. Criteria to be applied to each networked transmission circuit:

   i. Breaker-to -breaker MW-mile loading (sum of load and generation on a given networked circuit multiplied by the mileage between networked breakers) should not exceed 1000 MW-miles.

7. Short Circuit Rating Criteria

Short circuit studies are performed to determine whether circuit interrupting devices (circuit breaker, circuit switchers, etc.) have adequate interrupting capability for fault currents they would be expected to interrupt. The maximum fault current an interrupting device is expected to interrupt should not exceed 90 percent of the applicable short circuit rating of the device.