Contents

1. Scope and Purpose

This Transmission Facility Rating Methodology (Methodology) describes the methodology EPE presently uses to rate its transmission BES Facilities and reflects compliance with NERC Reliability Standard FAC-008. The Methodology covers Facilities solely and jointly owned by EPE, for which EPE has the responsibility of providing ratings. EPE bases its Methodology on manufacturer's specifications, industry standards, and ambient weather conditions specific to EPE's service territory as outlined below. These industry standards have changed over the years with EPE modifying its rating methodology accordingly to keep pace with accepted industry standards and practices. EPE reserves the right to alter its ratings temporarily under certain real-time conditions, using ambient weather as the main driver on a case-by-case basis. This document describes EPE's current methodology and makes no assumptions as to the design criteria of legacy equipment and facilities.

The Facilities identified in this document are comprised of various electrical equipment or Elements connected in series in a transmission line. EPE Facilities may contain one or more Elements in series. Different Elements may be associated with each Transmission Line Facility and would normally include conductors, jumpers, connectors, switches, and breakers. Line traps and overcurrent protective relays, if present, are also included as part of the Transmission Line Facility. All this equipment, or Elements operate together to comprise the Transmission Line Facilities, the limiting facility ratings are obtained from the individual equipment ratings. Thus, the Facility ratings will be limited by the most limiting equipment or Element rating and will not exceed the most limiting MVA rating of any equipment or Element that comprises the Facility.

All capitalized terms, which are not defined within this document, shall carry the meanings set out in the NERC Glossary of Terms.

The scope of equipment or Elements addressed in this document includes the following:

- Transmission Lines

- Transformers
- Series and Shunt Compensation Devices[1]
- HVDC Back to Back Terminal
- Terminal Equipment

Terminal Equipment includes circuit breakers, circuit switchers, disconnect switches, substation conductors, mechanical and/or compression connectors, instrument transformers, line traps, and protective relays.

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[1] EPE has no series reactive devices. EPE's shunt reactive devices are utilized for voltage control only and the loss of such device will not result in the loss of another transmission Element. EPE utilizes the manufacturer's nominal rating for these devices.

2. Methodology

Transmission Facilities

Transmission Lines

EPE transmission lines are defined as transmission circuits that terminate at substation buses protected by protective relays and circuit breakers with fault interrupting capacity with the maximum overall rating of a transmission line being the current-carrying capability of the most limiting element in series between its two end points. These lines may serve one or more distribution (load serving) substations or switching stations, or they may import, export or deliver power from external or local resources. The lines between distribution substations and switching stations are termed "transmission line sections or segments."

Transmission line Facilities are rated by three main sets of equipment: substation termination equipment in series with the transmission line, switching station equipment in series with the transmission line, and transmission line conductors. All EPE transmission line conductors are overhead. EPE's transmission system does not include underground transmission cables. The substation terminal equipment includes circuit breakers, circuit switchers, disconnect switches, substation conductors, mechanical and/or compression connectors, instrument transformers, wave traps[1], line traps, and protective relays. Switches and bus work also comprise substation and switching station equipment. This associated transmission line equipment is also used in other Facilities besides transmission lines, which rating methodology for this equipment is shown under a separate section, "Terminal Equipment." Each transmission line may consist of line sections, which may have multiple conductor sizes, types and ampacity ratings.

Overhead Transmission Line

Overview

The process for determining the thermal limit of an overhead transmission line is described below, where the limiting element of an overhead transmission line is its thermal limitation.

Normal and Emergency Rating Criteria

Normal and Emergency Ratings for ***solely owned*** overhead transmission conductors are determined using the rating methodology described in the document "New Conductor Capacities Base Ratings," dated May 25, 2015. In 2019, a new wind study memo, "Wind Speed Verification for Conductor Rating Increase" dated January 31, 2019 justified using a higher wind speed and angle in its ampacity program which thereby increased line conductor ampacities. The conductor ampacities currently used by EPE were established using the current version of Southwire's SWRate Overhead Conductor Thermal Rating Program using parameters for EPE's local service territory.

Currently, Normal Ratings and Emergency Ratings for ***jointly owned*** overhead transmission conductors are determined using the rating methodology described in the document "Analysis of Overhead Conductors," dated April 15, 1977. [2]

However, going forward EPE will also be utilizing the "New Conductor Capacities Base Ratings," dated May 25, 2015, along with the information in the new wind study memo, "Wind Speed Verification for Conductor Rating Increase" dated January 31, 2019 for its ***jointly owned*** overhead transmission conductors. EPE is currently in the process of transitioning to this new wind speed and angle for its ***jointly owned*** overhead transmission conductor.

Industry Standards

Bare overhead transmission conductor ratings at EPE are consistent with and use the methodology described in the IEEE Standard for Calculating the Current-Temperature Relationship of Bare Overhead Conductors (IEEE Standard 738 -2011).

Input Criteria Assumptions

EPE's current criteria for its Methodology is summarized utilizing the IEEE Standard for Calculating the Current-Temperature Relationship of Bare Overhead Conductors (IEEE Standard 738-2011).

The thermal ampacities used by EPE for rating ***solely owned*** overhead 345kV transmission conductors is based upon the following ambient weather conditions and configurations specific to EPE's service territory:

- Ambient Air Temperature: 40°C (104°F)
- Wind Speed: 3.7 fps (2.5 mph)
- Wind to Conductor Angle: 60°
- Altitude: Highest structure elevation for each particular transmission line
- North Latitude: Highest Structure
- Line Azimuth: 180° (North – South)
- Emissivity: 0.5 (average oxidized conductor)
- Solar Absorption: 0.5 (average oxidized conductor)
- Atmosphere: Clear (sunny day)
- Local Time: 4 p.m.
- Solar Day: June 21
- Frequency: 60 Hz

[2] Jointly owned transmission lines currently use 1.7 mph (2.5 fps) wind speed with a 90° wind-to-conductor angle in line rating calculations.

- Conductor Temperature: 75°C (normal rating) 100°C (4-hour emergency rating) or otherwise sag-limited conductor temperature from the most clearance impaired structure.

The thermal ampacities used by EPE for rating ***solely owned*** overhead 69 kV and 115 kV transmission conductors is based upon the following ambient weather conditions and configurations specific to EPE's service territory:

- Ambient Air Temperature: 40°C (104°F)
- Wind Speed: 4.0 fps (2.73 mph)
- Wind to Conductor Angle: 90°
- Altitude: 3918 feet (El Paso International Airport)
- North Latitude: 31.8°
- Line Azimuth: 180° (North – South)
- Emissivity: 0.5 (average oxidized conductor)
- Solar Absorption: 0.5 (average oxidized conductor)
- Atmosphere: Clear (sunny day)
- Local Time: 4 p.m.
- Solar Day: June 21
- Frequency: 60 Hz
- Conductor Temperature: 75°C (normal rating) 100°C (4-hour emergency rating)

Jointly owned overhead transmission conductors utilize the same assumptions except for the following parameters:

- Wind Speed: 2.5 fps (1.7 mph)
- Wind to Conductor Angle: 90°
- Local Time: 4 p.m.

As stated above, EPE is currently in the process of changing the wind speed and angle parameters for its ***solely owned*** overhead 345 kV transmission line conductors from the present 3.7 fps (2.5 mph), 60 degree wind-to-conductor (WTC) angle and its ***jointly owned*** overhead transmission line conductors from their present 2.5 fps (1.7 mph), 90 degree WTC angle, to a wind speed and angle of 4.0 fps (2.73 mph), 90 degree WTC. This will be accomplished in a staggered approach, in which EPE will review and/or update the protection system settings for those conductors to ensure the relay loadability requirements under PRC-023 are met prior to changing the wind speed. During this approach some ***solely and jointly owned*** overhead 345 kV transmission lines may still have their presently used wind and angle parameters described above or they may have already been updated with the 4.0 fps (2.73 mph), 90-degree WTC angle assumptions. These updates will be reflected in the Facility Rating documentation spreadsheet as they are completed.

Summarized in the table below are the normal and emergency conductor operating temperatures of different conductor types for solely and jointly owned overhead lines used by EPE:

ACSR	75°C Normal, 100°C Emergency*
AAC (this conductor is utilized for Substation equipment jumpers)	75°C Normal, 100°C Emergency*
ACSS	Various Continuous Temperatures from 100°C up to 200°C*
Copper Hard Drawn	75°C Normal, 100°C Emergency*

*Additional conditions could exist that would limit the transmission line rating. Lines with sag limitations are sag limited based on minimum clearances determined by field inspections and special engineering software. The minimum clearance of a transmission line determines the maximum conductor operating temperature (MCOT) of the entire transmission line. The MCOT of the sag rated line may or may not be lower than the normal rating of the conductor itself but it will be lower than the emergency rating limitation of the conductor. In this case, the normal rating still applies to the sag rated line but the MCOT determined by the minimum clearance of the line becomes the new emergency rating of the transmission line. If the MCOT is lower than both the normal and emergency ratings of the conductor, then the line will have a continuous rating based on the MCOT due to the minimum clearance found. Accordingly, the new transmission line ratings will be lower than the non-sag rated conductor capacity and associated ratings.

As a matter of practice, EPE also adjusts its conductor ratings in the operating time frame based on real-time or expected temperature and/or wind speed deviations from the above listed values. These real time weather ratings are used in short time studies and emergency operating procedures of the transmission system.

Transformers

Transformer Facilities include Transformers (transformers with the primary terminal and secondary terminal with at least one of the terminals operated at 100kV or higher unless it serves a radial load), GSU transformers, distribution power transformers and associated connected equipment. Associated equipment connected to the transformer such as circuit breakers, bus work, switches and protective relays associated with Transformer Facilities are shown under section entitled “Terminal Equipment.” The Terminal Equipment are designed above the ratings of the transformer to avoid limiting the capacity and operation of the transformer. Therefore, the transformer ratings become the limiting ratings of the Transformer Facility.

Autotransformers

Transmission system autotransformers on the BES are rated on an individual basis. These ratings are maintained on a list, which include the substation name, the EPE equipment company asset number or location within the substation, the autotransformer nameplate rating in MVA (megavolt-amperes), and the Emergency rating in MVA. The emergency ratings are determined by the following methods:

Application of Standard IEEE C57.91 - 2011, Guide for Loading Mineral-Oil Immersed Power Transformers Rated in Excess of 100 MVA (65° C Winding Rise).

Limitations of the transformer bushings as established and evaluated by the original bushing manufacturer or by the bushing nameplate rating.

Transformer's normal and emergency ratings are determined using IEEE Standard C57.91-2011.

The limiting assumptions under overloads are as follows:

- 15% above highest nameplate rating for 4 hours, 25% above highest name plate rating for 30 minutes. Differences in ratings can be applied on a case-by-case basis.
- Top oil temperature shall not exceed 105°C during the 24-hour period.
- Winding hottest-spot temperature shall not exceed 130°C during the 24-hour period.
- The maximum ratings in some cases are limited by the ampacity of the transformer bushings.

The rating for any given autotransformer is the nominal thermal capacity of the unit. Please note, however, that the maximum thermal rating of any autotransformer is dependent upon the actual transformer's operating conditions, which include ambient temperature, preloading conditions, tap setting at the time of the overload and the direction of flow. Additionally, the rating of the tertiary winding of any autotransformer is the manufacturer's nameplate rating.

Phase Shifting Transformer

EPE's Phase Shifting Transformer (PST), designed to control power flow on the WestMesa – Arroyo 345 kV transmission line, and is located at the end of the line at Arroyo Substation. The PST's nameplate normal ONAF rating is 400 MVA at 65°C rise. This rating is calculated to consider an emergency rating of 125% or 500 MVA for 30 minutes. These ratings are based on the assumptions of an ambient temperature of 45°C, up to full load (400 MVA) preloading condition and a 65°C rise.

The rating given for the PST is the nominal thermal capacity of the unit. Please note, however, that the maximum thermal rating of the PST is dependent upon the actual PST operating conditions such as ambient temperature, preloading conditions, including tap setting at the time of the overload and the direction of flow.

In addition to the PST thermal ratings detailed above, the PST also has an angular limitation of +/- 34 degrees.

Generator Step-Up Transformers

Transmission Generator Step-Up Transformer (GSU) at EPE are specified and rated according to:

- IEEE C57.12.00-2006, Standard for Standard General Requirements for Liquid Immersed Distribution, Power, and Regulating Transformers
- IEEE C57.12.10-2010, Standard Requirements for Liquid Immersed Power Transformers
- IEEE C57.12.90-2006, Standard Test Code for Liquid Immersed Distribution, Power, and Regulating Transformers
- IEEE C57.116-1989, Guide for Transformers Directly Connected to Generators

Transmission GSU's are specific to the generating unit they service and are designed and applied for the full range of normal system loading conditions and ranges to which they will be subjected. The Normal Rating for EPE transmission GSU's is rated per the manufacturer's nameplate. EPE does not have ratings above normal for GSU's therefore no Emergency Ratings are provided, as they would be equal to the Normal Ratings.

Other associated power system equipment connected to the GSU such as breakers, switches, bus work, and relays are designed not to be limiting Elements for the operation of the GSU. Therefore, the GSU ratings become the limiting ratings of the GSU Facility. Additionally, because capacitors are connected in parallel to other EPE Facilities, these capacitors are not the limiting Element for any other Facility. The rating methodology for these other devices is provided under section, "Terminal Equipment".

Shunt Capacitors

Transmission shunt capacitors at EPE are specified and rated according to:

- IEEE 18, Standard for Shunt Power Capacitors
- IEEE 1036, Guide for the Application of Shunt Power Capacitors
- IEEE C37.99, Guide for the Protection of Shunt Power Capacitors

Transmission shunt capacitors are specified, designed and applied for the full range of normal system voltage conditions and ranges to which they will be subjected. The Normal Rating for EPE transmission shunt capacitors is rated per the manufacturer's nameplate at a nominal 69kV and 115kV. EPE does not have ratings above normal for shunt capacitor banks therefore no Emergency Ratings are provided, as they would be equal to the Normal Ratings.

Other associated power system equipment connected to the shunt capacitor bank such as circuit breakers, switches, bus work and relay settings are designed not to be limiting Elements for the operation of the shunt capacitor bank. Therefore, the shunt capacitor bank ratings become the limiting ratings of the shunt capacitor bank Facility. The rating methodology for these other devices is provided under section, "Terminal Equipment."

Series Capacitors

EPE does not utilize series capacitors on its system.

Shunt Reactors

Shunt reactors in support of the BES are specified and rated according to:

- IEEE C57.21, Standard Requirements, Terminology, and Test Code for Shunt Reactors Rated Over 500 KVA
- IEEE C57.12.00-2006, Standard for Standard General Requirements for Liquid Immersed Distribution, Power, and Regulating Transformers
- IEEE C57.12.10-2010, Standard Requirements for Liquid Immersed Power Transformers
- IEEE C57.12.90-2006, Standard Test Code for Liquid Immersed Distribution, Power, and Regulating Transformers

Shunt reactors in support of the BES System are specified, designed and applied for the full range of system voltage conditions and ranges to which they will be subjected. The Normal Rating for EPE shunt reactors is rated per the manufacturer's nameplate adjusted to a nominal system voltage of 345kV.

Other associated power system equipment connected to the reactor such as circuit breakers, switches, bus work and relay settings are designed not to be limiting Elements for the operation of the reactor. Therefore, the reactor ratings become the limiting ratings of the Facility. Additionally, because reactors are connected in parallel to other EPE Facilities, these reactors are not the limiting Element for any other Facility. The rating methodology for these other devices is provided under section "Terminal Equipment".

Series Reactors

EPE does not utilize series reactors on its system.

High Voltage Direct Current

EPE's High Voltage Direct Current (HVDC) terminal is rated per the manufacturer's specifications and is designed to operate at 200 MW continuous rating with a 10% overload rating up to 220 MW including a minimum power transfer level of 35 MW in either east to west or west to east directions. The Continuous Rating for the HVDC terminal is given on the manufacturer's nameplate. EPE does not provide ratings above the normal and overload rating for the HVDC terminal therefore no Emergency Rating are provided.

Other associated power system equipment connected to the HVDC terminal such as breakers, switches, bus work, and relays are designed not to be limiting Elements for the operation of the

HVDC terminal. Therefore, the HVDC terminal rating becomes the limiting rating of the HVDC terminal Facility. The rating methodology for these other devices is provided under section "Terminal Equipment."

Terminal Equipment

Substation Conductors

Overview

The process for determining the ampacity of conductors and rigid bus used in outdoor substations, which is based on single bus conductors in free air and described below.

Input Criteria Assumptions

EPE generates its substation conductor ratings using SWRate Version 4.2, therefore, EPE's criteria for calculating conductor ratings is based on IEEE 738-2011, ASTM 02.30-2011, and Southwire calculation methods. For rigid bus, EPE's criteria for calculating conducting ratings is based on IEEE 605-2008.

The thermal ampacities used by EPE for rating substation conductors is based upon the following ambient weather conditions and configurations specific to EPE's service territory:

- Ambient Air Temperature: 40°C (104°F)
- Wind Speed: 4.0 fps (2.73 mph)
- Wind to Conductor Angle: 90°
- Altitude: 3918 feet (El Paso International Airport)
- North Latitude: 31.8°
- Line Azimuth: 180° (North – South)
- Emissivity: 0.5 (average oxidized conductor)
- Solar Absorption: 0.5 (average oxidized conductor)
- Atmosphere: Clear (sunny day)
- Local Time: 4 p.m.
- Solar Day: June 21
- Frequency: 60 Hz
- Conductor Temperature: 115°C (continuous rating)

Continuous Conductor Operating Temperatures:

Summarized in the table below are the normal conductor operating temperatures of different conductor types used at the substations.

ACSR	115°C continuous rating

AAC (this conductor is utilized for Substation equipment jumpers)	115°C continuous rating
ACSS	200°C continuous rating
Copper Hard Drawn	115°C continuous rating

The ratings for aluminum and copper rigid bus conductors, including bar, angle, tube, and integral web are based on the recommendations found in IEEE's Guide for Design of Substation Rigid-Bus Structures (IEEE Std. 605-2008). For tubular bus, all ratings are obtained directly from tables B.4 and B.5 found in IEEE Std. 605-2008.

ACSR conductors are normally used at EPE substations in high voltage areas and are rated with 4.0 fps wind velocity. The ACSR conductor ratings at EPE are consistent with and use the methodology described in the IEEE Standard for Calculating the Current-Temperature Relationship of Bare Overhead Conductors, IEEE 738 and the current version of Southwire's SWRate Overhead Conductor Thermal Rating Program.

Bare copper conductors are rated with 4.0 fps wind velocity. Bare copper cable conductor ratings at EPE are consistent with the ratings listed in the Southwire's SWRate Overhead Conductor Thermal Rating Program.

EPE does not have ratings above normal for substation conductors therefore no Emergency Ratings are provided, as they would be equal to the Continuous Ratings.

Circuit Breakers

AC High-Voltage Circuit Breakers are specified by operating voltage, continuous current, interrupting current and operating time in accordance with IEEE Standards C37 series, "Symmetrical Current Basis." These ratings are indicated on the individual Circuit Breaker nameplate. The following standards are referenced in the breaker specifications:

- IEEE C37.04, Standard Rating Structure for AC High-Voltage Circuit Breakers
- IEEE C37.06, Standard for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis - Preferred Ratings and Related Required Capabilities for Voltages Above 1000V
- IEEE C37.09, Standard Test Procedure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis
- IEEE C37.10, Application Guide for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis
- IEEE C37.010b, Standard for Emergency Load Current-Carrying Capability

- IEEE C37.010e, Application Guide for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis (Supplement to IEEE C37.010)

EPE's rates transmission circuit breakers according to the manufacturer's specifications. The Normal Rating for EPE transmission circuit breakers are rated as shown on the manufacturer's nameplate. Nameplate interrupting ratings are adjusted for reclosing of oil circuit breakers per ANSI C37.04, IEEE Standard Rating Structure. EPE does not have ratings above normal for transmission circuit breakers therefore no Emergency Ratings are provided, as they would be equal to the Continuous Ratings.

Instrument Transformers

Freestanding current transformers, metering units or voltage transformers, are rated according to:

- IEEE C57.13, Standard Requirements for Instrument Transformers

EPE rates transmission instrument transformers according to the manufacturer's specifications. The Normal Rating for EPE transmission instrument transformers is rated as shown on the manufacturer's nameplate. EPE does not have ratings above normal for transmission instrument transformers therefore no Emergency Ratings are provided, as they would be equal to the Continuous Ratings.

Switches

The following Standards are used to rate High-Voltage switches:

- IEEE C37.30.1, Standard Requirements for AC High-Voltage Air Switches Rated Above 1000 V.

Transmission switches are rated according to the manufacturer's specifications. The Normal Rating for EPE transmission switches is rated as shown on the manufacturer's nameplate. EPE does not have ratings above normal for transmission switches therefore no Emergency Ratings are provided, as they would be equal to the Normal Ratings.

Line Traps

Line traps are rated according to:

- ANSI C93.3, Requirements for Power-line Carrier Line Traps.

Line traps are rated according to the manufacturer's specifications. The Normal Rating for EPE line traps is rated as shown on the manufacturer's nameplate. EPE does not have

ratings above normal for line traps therefore no Emergency Ratings are provided, as they would be equal to the Continuous Ratings.

Relay Settings

EPE follows applicable NERC Reliability Standard PRC-023 ensuring EPE meets the relay loadability requirements as outlined in Reliability Standard PRC-023 for 345 kV relays.

EPE currently applies the 345kV methodology indicated above to set its 115kV and 69kV relays in order to establish a consistent practice for setting these relays. This process involves EPE's P&C Engineering Department verification of the relay settings based on a previous loadability review performed by an independent source, and identification of relays which need to be corrected.

The verification involves the use of the emergency rating of the line for all settings, utilizing the lowest value of the listed current values from the entire transmission circuit, to determine the maximum rated line current. Facilities using parallel circuit breakers, will be evaluated using the lowest rated circuit breaker. Once established this will determine the most limiting facility rating for this transmission circuit. Relay loadability is then checked and confirmed that is meets the PRC-023 R1 Requirement that was applied when the settings were developed. If a relay setting does not meet the loadability requirement, Protection & Control Engineers will document the issue and schedule the relay for correction, or if the identified relay requires other changes, the correction will be made at that time.

Over-current relays on the transmission lines used for switch-onto-fault (SOTF) tripping should be designed and set above the maximum loading of the line. When the available single-contingency fault current is less than the rating of the transmission line; then the SOTF trip will be supervised by line-voltage magnitude, such that an SOTF trip will not occur when the measured line voltage is greater than 75% of its nominal value.

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3. Documenting Results

This Methodology along with any other applicable documentation supporting EPE's assumptions under this Methodology, which may include manufacturer's specifications, industry standards, engineering analysis and/or rating calculation software, shall be retained in Livelink under FAC-008 R3.

4. Detective Control

This Methodology acts as a preventive control, establishing expected performance.

This detective control section outlines the detective controls to be utilized for this Methodology. One of the detective controls is a review process. This detective control is an annual Oati webCompliance tracking record for an NCG Member, System Planning, and other applicable business developed to review this Methodology, thereby ensuring the Methodology continues to accurately reflects the most accurate calculations, specifications, and assumptions.

5. Corrective Controls

If a risk is identified or an event has occurred relative to this Methodology, System Planning with the assistance of an NCG Member will determine next steps for mitigating and recovering from an event, as well as for preventing future occurrences. One or more of the following corrective controls can be utilized.

- Revisions/Updates
- Event Learning Analysis
- Discipline
- Training/Education

6. Training Through Collaborative Review

The ***annual review*** cycle shall be a collaboration of all applicable parties. This collaboration includes in person meetings and electronic communication until the procedure is reviewed and adjusted, as necessary.

Additionally, a tabletop simulation may be conducted from time to time to familiarize applicable parties with the steps of this procedure.

7. Acronyms

AAC – All Aluminum Conductors
ACSS – Aluminum Conductor Steel Reinforced (a.k.a. SSAC – Steel Supported Aluminum Conductor)
ACSR – Aluminum Conductor Steel Reinforced
ANSI – American National Standards Institute

ASTM - American Society for Testing and Materials
BES – Bulk Electric System
EPE – El Paso Electric Company
fps – feet per second
IEEE – Institute of Electrical and Electronics Engineers
mph – miles per hour
MVA – Mega Volt Amp
NERC – North American Electric Reliability Corporation
ONAF – Oil natural, air forced PST – Phase Shifting Transformer
TSR – Transmission, Substation & Relay

8. Document Management

Review Cycle and Update Responsibility
Storage location: An electronic copy of the Methodology will be retained in Livelink.
Review Responsibility: System Planning, Transmission, Substation and Protection & Control Engineering Departments, and NERC Compliance Group
Review Cycle: The Methodology shall be reviewed annually, and/or updated as necessary
Review Procedure: Document shall be cross referenced to cite any relevant policies, contracts, contact information, other Standards, source documents and procedures to confirm target user actions are current and correct.

9. Approvals

Date	Signature	Name and Title
6/24/2021		David Tovar Manager – System Planning

10. Revision History

Date	Version	Revised By	Revision History
06/24/2021	10.0	System Planning Transmission, Substation, and Protection & Control Engineering NCG	Review and revised Methodology to update the wind speed assumption for its solely and jointly overhead transmission conductors. Added internal controls language.

8/28/2020	9.0	System Planning Transmission, Substation, and Protection & Control Engineering NCG	Review and revised Methodology to refine language to better define line ratings, transformer and relay sections.
1/15/2020	8.0	System Planning Transmission, Substation, and Protection & Control Engineering NCG	Annual review with errata changes
2/12/2019	7.0	System Planning Transmission, Substation, and Protection & Control Engineering	Review and update input assumption criteria
8/1/2017	6.0	System Planning Transmission, Substation, and Protection & Control Engineering	Revised
4/25/2017	5.0	System Planning, Transmission, Substation, and Protection & Control Engineering	Revised substation rating methodology
10/1/2016	4.0	System Planning Transmission, Substation & Protection and Control Engineering Rhonda Bryant	Reformatted document and updated with changes to equipment specifications
1/1/2013	3.0	Rhonda Bryant Dennis Malone	Revised to correct NERC Standard references, updated autotransformer rating references, added Information Availability section and clarified limiting rating references concerning various Facilities
1/13/2012	2.0	Dennis Malone	Revised overhead transmission lines section to include an overview

5/31/2011	1.0	Rhonda Bryant Dennis Malone Claudia Deneen	Revised relay section to include reference on NERC guidelines for loadability; and updated version history format
1/9/2009	0.0	Dennis Malone Adrian Aguirre	New Document

11. Distribution

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