



# **NERC Alert and Recommendation to Industry Regarding Facility Ratings**

Rick S. Johnson, PE, MBA  
Otter Tail Power Company Manager, Delivery Engineering

South Dakota Public Utilities Commission  
Docket No. EL14-090  
February 13, 2015

# NERC – North American Reliability Corporation

- Subject to oversight by the FERC (Federal Energy Regulatory Commission): Independent agency that regulates the interstate transmission of electricity, natural gas, and oil.
- Is a not-for-profit entity whose mission is to ensure the reliability of the Bulk-Power System in North America.
- Develops and enforces Reliability Standards
- Annually assesses seasonal and long-term reliability
- **Monitors the Bulk-Power System through system awareness**
- Educates, trains, and certifies industry personnel
- Midwest Reliability Organization (MRO) tasked by NERC to ensure utilities in their region were responding to the Alert in a satisfactory manner

# NERC Alerts

Designed to get information out to industry quickly. Three levels of NERC Alert:

- Industry Advisory
  - Purely informational
- **Recommendation to Industry**
  - **Recommend specific action be taken**
  - **Requires a response as defined in the alert**
- Essential Action
  - Identifies actions deemed to be “essential” to reliability
  - Requires NERC Board of Trustees approval prior to issuance
  - Requires a response as defined in the alert

# NERC Facility Rating Alert

- Issued October 7, 2010
- *Recommendation to Industry*
  - *Consideration of Actual Field Conditions in Determination of Facility Ratings*
  - *NERC and the Regional Entities have become aware of discrepancies between design and actual field conditions...*
  - *Review your Facility Rating Methodology and verify that the methodology is based on actual field conditions*
- Outcome of 2003 East Coast Blackout root-cause analysis
- Issued to all utilities owning 115 kV and above facilities (Bulk Power System)
- *“I am confident that the effective handling of this significant issue will demonstrate our industry’s commitment to reliability... This, in turn, should culminate in greater confidence on the part of the applicable governmental authorities of our commitment to reliability.” (Gerry W. Cauley, President and CEO of NERC, in letter to Industry CEO’s dated November 30, 2010.)*

# Otter Tail's Approach

- Otter Tail's approach accepted by the MRO on January, 2012.
- Otter Tail's approach is similar to the majority of the industry (LiDAR/PLS-CADD—this is relatively new technology, not available at the time of original construction)
- Differences between design and actual field conditions were found on every line section
- The type and quantity of differences found were similar to other utilities' findings

# Findings

- Need to increase line-to-ground clearances
- Need to increase some phase-to-guy wire clearances
- Need to increase clearances between transmission conductors and underbuild
- Need to increase clearances over some water bodies, where water levels have risen
- Need to increase clearances between conductor and objects/structures constructed after original line construction (bins, garages, deer stands, etc.)
- **Without making these changes, lines would have had to be de-rated or, in some instances, taken out of service**

# Mitigation Strategies

- Physical changes to the facilities were needed to ensure the reliability of the Bulk Power System in the region, to avoid significant de-rates, and in many cases to keep the lights on.
- PhaseRaisers were used to a great extent
  - Increase ground clearance
  - Gain clearance over foreign line crossings
  - Increase clearance to foreign objects
- Structure replacements necessary for reasons stated above and in instances where the structure needed to be relocated or raised greater than 10 feet
- Guy wire modifications
  - Fiberglass insulator guy strains
  - Relocate pole attachment point
  - Relocated anchor location

# Mitigation Strategies

- Line crossings
  - First attempt to work with line crossing owner to lower facility
  - If unsuccessful, either implement PhaseRaiser or structure replacement.
- Underbuild
  - First attempt to lower underbuild on existing poles
  - If unsuccessful, replace structure



# PhaseRaisers



# Structure Replacement



# Guy wire



# Line Crossing



# Underbuild



# This NERC Alert work increased the function of these facilities

- If these changes had not been made:
  - Significant impact to the reliability of the regional Bulk Power System
  - Significant de-rates
  - Could not serve current customer loads
- Because of these changes:
  - Allows Otter Tail to increase the ratings to where they need to be
  - Enables Otter Tail to meet the electrical demand of our customers
  - Facilitates increased electrical flows across our transmission

# Contrast this NERC Alert Work with Routine Maintenance

- Maintenance activities are used to preserve facilities in current condition; generally performed continuously (or on regular cycle):
  - Vegetation management
  - Pole ground-line inspection
  - Pole and hardware inspection
  - Like-for-like replacement as found in inspection process
- NERC Alert work is unique, one-time effort that will change the facilities and their function, so that higher demands can be met and larger amounts of energy can be transferred.
- MISO includes the NERC Alert work as MTEP projects; Maintenance work is not included in MISO MTEP.

# Thank you!

Rick S. Johnson, PE, MBA  
Manager, Delivery Engineering