

NERC and Texas RE Update

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**ERCOT/Texas RE Generator Winter Weatherization
Workshop**

September 7, 2017

NERC Reliability Metric 6 – Reduced Risks in Targeted Areas

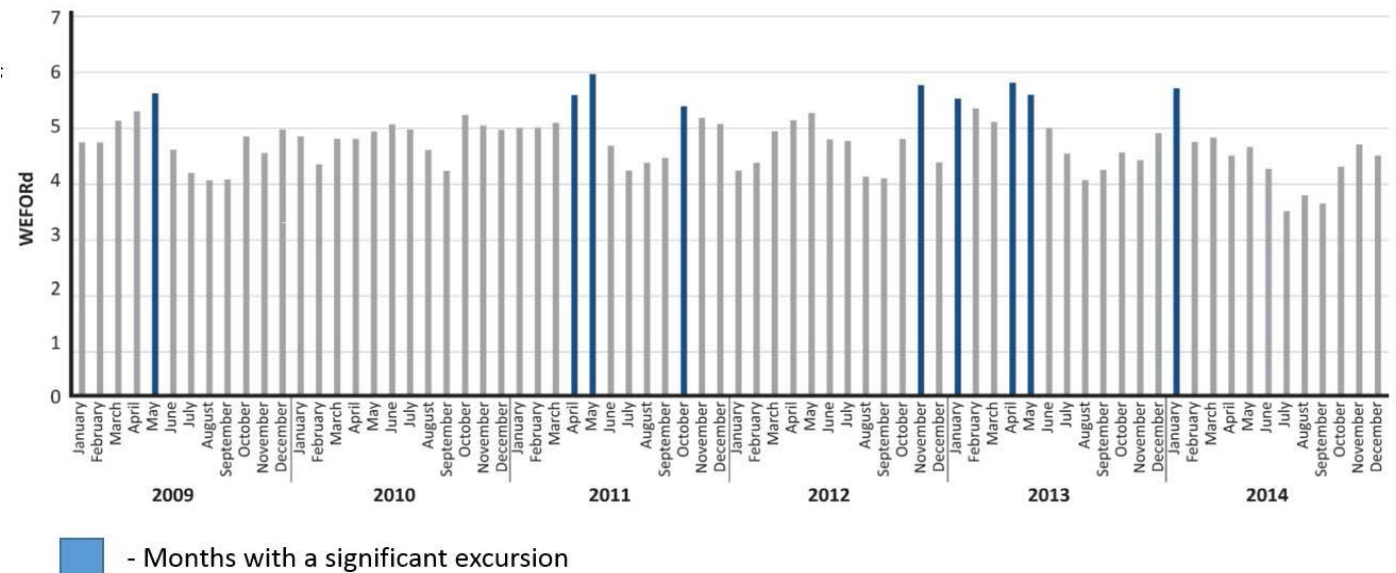
Measure of Success

Item a: Events caused by generating unit forced outages due to cold weather

Threshold - No firm load shed occurs from generating unit forced outages caused by cold weather.

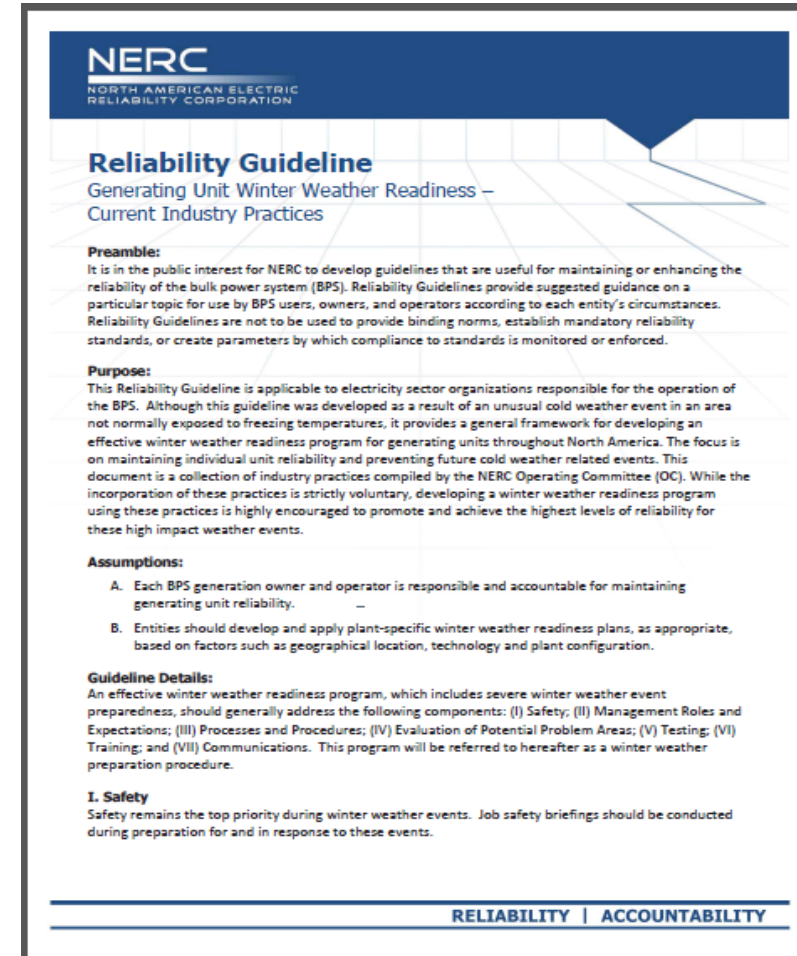
Target - Using most extreme cold winter months, the Effective Forced Outage Rate (EFOR) decreases compared to a rolling previous five year benchmark average for each Regional Entity.

Monthly Capacity Weighted EFORd 2009-2014



NERC Winter Weather Readiness Guideline

- Approved by the Operating Committee on March 5, 2013
- 5 year review by team from industry, NERC, and Regional Entities
- Posted for comments, final review for Operating Committee approval in September 2017



NERC Winter Weather Readiness Guideline Update – Details

Assumptions Section Addition

Item b : Balancing Authorities and Market Operators should consider strategies to start-up and dispatch to minimum load early and anticipate severe cold weather units that are forecasted to be needed for the surge in demand, since keeping units running through exceptional cold snaps can be accomplished much more reliably than attempting start-up in the teeth of such event.



Photo: Erik Pederson/Kelly Aerospace

NERC Winter Weather Readiness Guideline Update – Details

Section 1, Safety:

Typically, robust safety programs to reduce risk to personnel include identifying hazards involving cold weather such as personnel exposure risk, travel conditions, and slip/fall issues due to icing. **A Job Safety Analysis (JSA) should be completed to address the exposure risk, travel conditions and slip/falls related to icing conditions. Winter weather Alerts should be communicated to all impacted entities. A Business Continuity and Emergency Response Plan should also be available and communicated in the event of severe winter weather event.**



Guideline Update Details – Continued

Section IV, Evaluation of Potential Problem Areas:

- Subsection 1 and 2 – Add the word “critical” in several places related to instrumentation, equipment and components
- New Subsection 2d on Instrument Air System, to assure:
 - Automatic blow downs, traps, dew point monitoring and instrument air dryers are functioning correctly
 - Low points in lines are periodically drained by operators to remove moisture during extreme cold

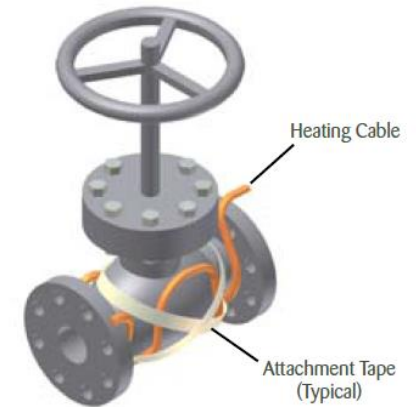


Photo: iStock

Guideline Update Details – Continued

Attachment 1, Section 3B, Heat Trace – additions

- Inspection of heat tracing installations covered by insulation
 - Extra cable length specified by the designer meant to be bunched at valves and supports, not applied as a constant-pitch spiral over the length of the line.
- Require heat tracing calculations from the **contractor**
 - Reference to heat tracing calculations IEEE Standard-515
 - Valve bonnets, actuators and pipe supports should reflect actual insulation conditions; they may not be fully encapsulated with insulation, which could lead to mismatch.



Heating Cable Serpentine on Valve



Circuit Layout on Valve

Attachment #1, updates to Item 4, Supplemental Materials List

- **Item p:** Cold weather Personal Protective Equipment (PPE) has been inspected and is available to personnel as appropriate.
- **Item q:** Service vehicles to ensure they are properly winterized and that the 4WD is functioning.

12 Winter Weather-Related Lessons Learned

- **LL20110902 Adequate Maintenance and Inspection of Generation Freeze Protection**
- **LL20110903 Generating Unit Temperature Design Parameters and Extreme Winter Conditions**
- **LL20111001 Plant Instrument and Sensing Equipment Freezing Due to Heat Trace and Insulation Failures**
- **LL20111002 Plant Fuel Switching and Cold Weather**
- **LL20120101 Plant Onsite Material and Personnel Needed for a Winter Weather Event**
- **LL20120102 Plant Operator Training to Prepare for a Winter Event**
- **LL20120103 Transmission Facilities and Winter Operations**
- **LL20120901 Wind Farm Winter Storm Issues**
- **LL20120902 Transformer Oil Level Issues During Cold Weather**
- **LL20120903 Winter Storm Inlet Air Duct Icing**
- **LL20120904 Capacity Awareness During an Energy Emergency Event**
- **LL20120905 Gas and Electricity Interdependency**

Observed Issues by Texas RE Since Lessons Learned Published



Questions?

Thanks to Bob Collins for support.

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