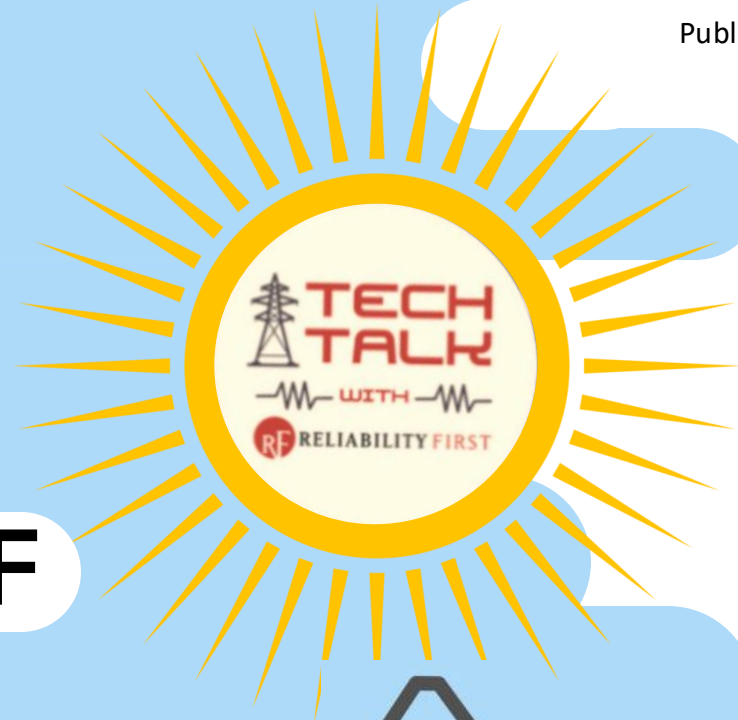


WELCOME TO TECHNICAL TALK WITH RF

July 13, 2026



WELCOME TO TECHNICAL TALK WITH RF



Winter in July Edition

July 13, 2026



TECHNICAL TALK WITH RF

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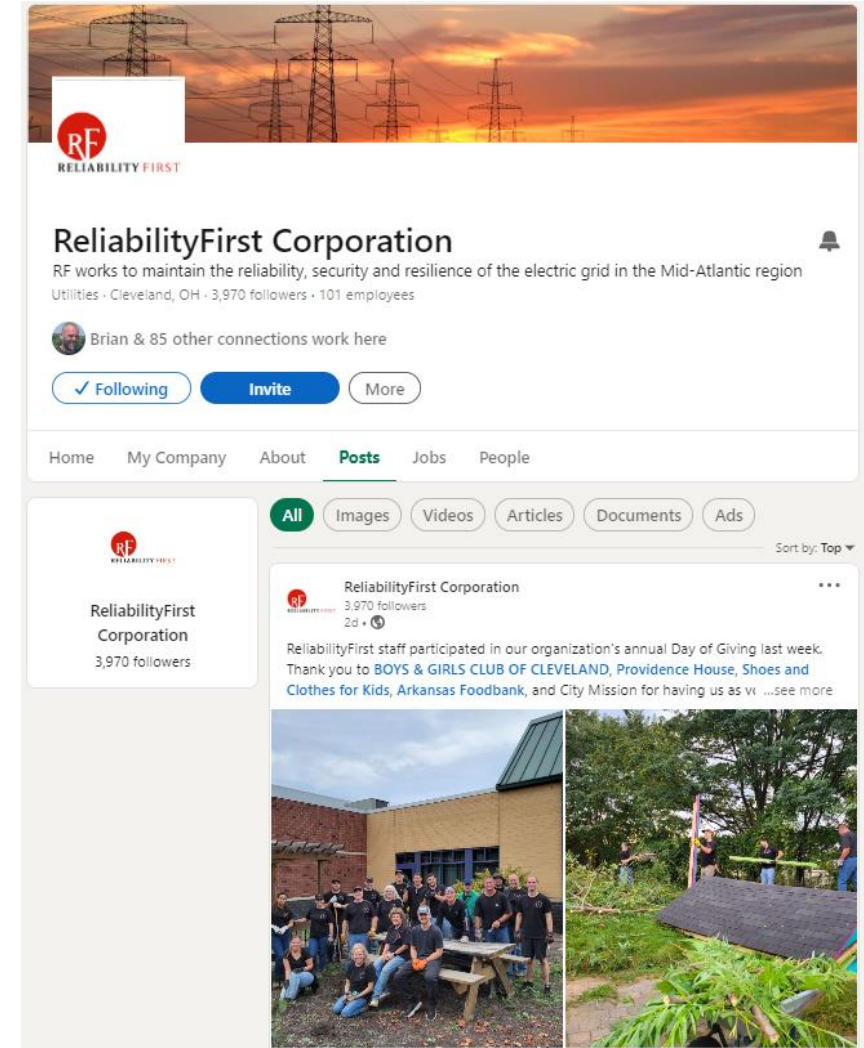


TECHNICAL TALK WITH RF

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TECH TALK REMINDERS

Please keep your information up-to-date

- CORES and Generation Verification Forms

Following an event, send EOP-004 or OE-417 forms to disturbance@rfirst.org

CIP-008-6 incident reports are sent to the [E-ISAC](#) and the [DHS CISA](#)

Check our [monthly CMEP update](#) and [newsletter](#):

- [2026 ERO Periodic Data Submittal schedule](#)
- Timing of Standard effectiveness

BES Cyber System Categorization (CIP-002-5.1a)

- Assess categorization (low, medium, or high) regularly and notify us of changes

CIP Evidence Request Tool V10 was released and is on NERC's [website](#)



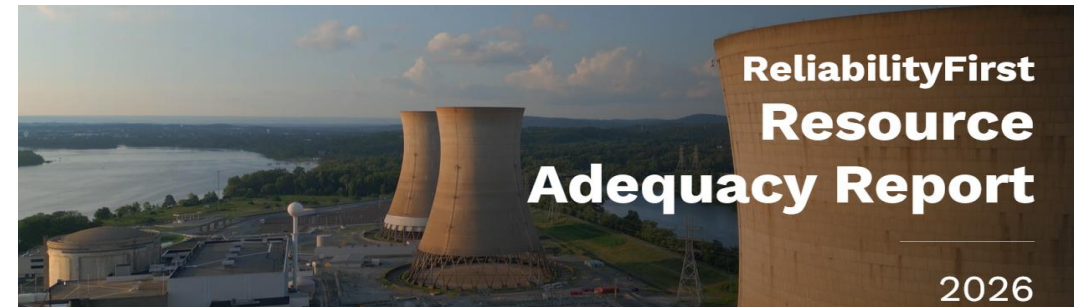
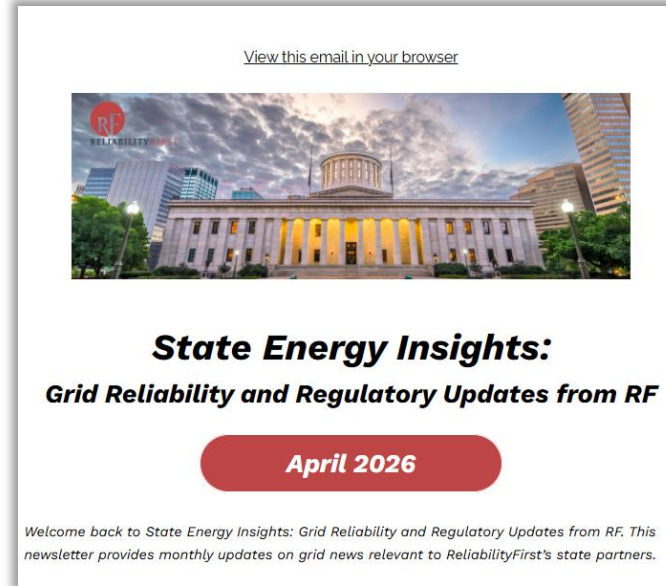
TECH TALK REMINDER

Are you getting our newsletter
First Things RFirst?

- Sign up today [here](#)

Make sure to check out our
[2025 Impact Report](#) and [video](#)

Visit our website to read RF's
2026 Resource Adequacy Report



WELCOME TO TECHNICAL TALK WITH RF



Winter in July Edition

July 13, 2026



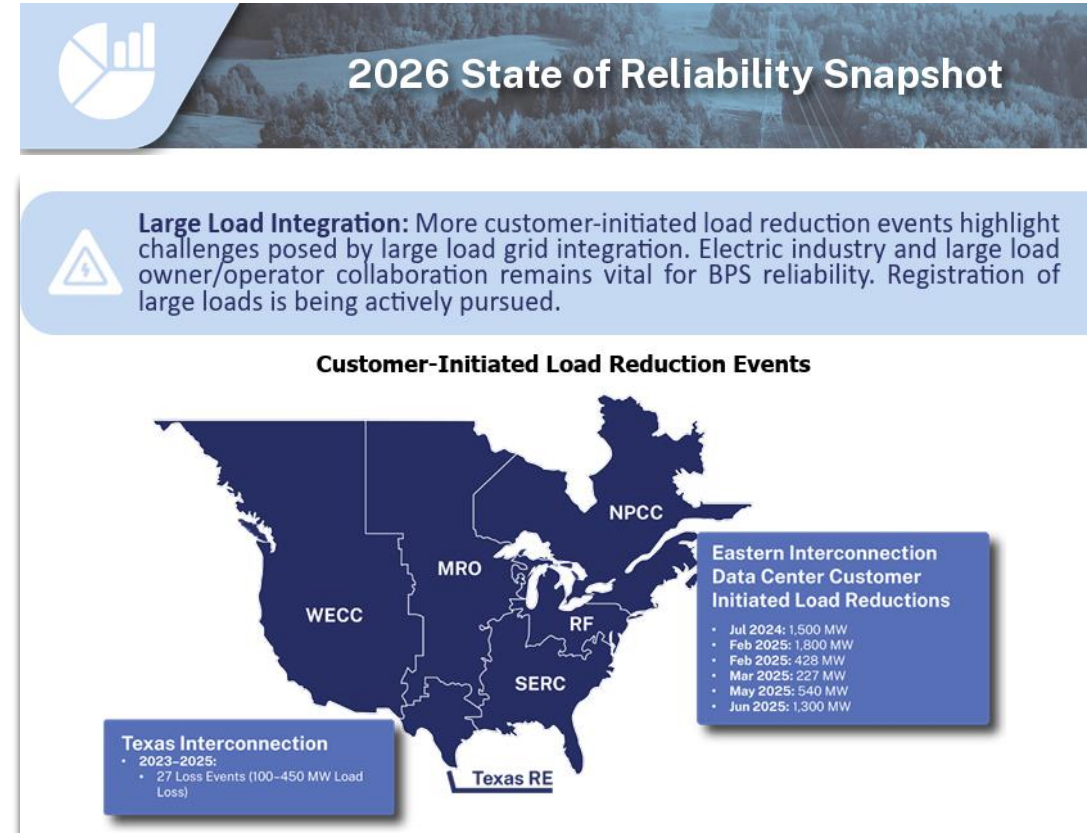
TECH TALK ANNOUNCEMENT



NERC Releases 2026 State of Reliability Report [Announcement](#) | [Overview](#) | [Technical Report](#) | [Snapshot](#)

NERC delivers the SOR as a two-part report that consists of the 2026 SOR Overview and the 2026 SOR Technical Assessment. The 2026 SOR Overview serves as a high-level summary of the most important and actionable topics impacting the BPS and how they are being addressed, while the 2026 SOR Technical Assessment provides NERC's comprehensive annual analytical review of BPS reliability for the 2025 calendar year.

In the assessment, NERC finds that the North American bulk power system (BPS) remained reliable in 2025. Focal points of the report are a significant increase in combustion-based generation forced outage rates, ongoing demand growth and large load challenges, and resource mix transformation information on various inverter-based resource topics. Calmer weather through most of the year contributed to better operating conditions as the BPS remains in a precarious position.



TECH TALK ANNOUNCEMENT



NERC Releases

Reliability Insights: Supply Chain Security

[Full Document](#) | [Reliability Insights Library](#)

North America's grid reliability is heavily dependent on the security of the energy sector's supply chain, which is inherently sensitive to geopolitical events, manufacturing shortfalls, and cyber attacks. This dependence is expected to intensify as industry transitions to the grid of the future, expanding transmission infrastructure and adding new generation resources that further strain an already vulnerable supply chain. Taking a proactive approach through robust mitigation measures such as information sharing, enhanced risk management practices, and situational awareness will better position the electric industry to mitigate the significant risks that supply chain security presents.

The three-page document covers the definition of supply chain security, describes how supply chain reliability affects overall reliability and security of the US, shares common supply chain cyber attacks, and lists recommended actions to enhance supply chain security and risk management.



Reliability Insights

Supply Chain Security
June 2026

North America's grid reliability is heavily dependent on the security of the energy sector's supply chain, which is inherently sensitive to geopolitical events, manufacturing shortfalls, and cyber attacks. This dependence is expected to intensify as industry transitions to the grid of the future, expanding transmission infrastructure and adding new generation resources that further strain an already vulnerable supply chain. Taking a proactive approach through robust mitigation measures such as information sharing, enhanced risk management practices, and situational awareness will better position the electric industry to mitigate the significant risks that supply chain security presents.

Two Sides of the Supply Chain Security Coin

The phrase "supply chain security" is commonly used as an all-encompassing term but has two distinct definitions:

1. Securing against risks associated with the availability and reliability of the supply chain
2. Securing against cyber security risks within the supply chain

It is important for entities to clearly define the policies and practices and training associated with each when implementing a supply chain risk management program.

How Availability Affects Reliability and Security

The need to modernize and increase the capacity of the North American electric grid to meet the significant increase in demand for electricity and address aging infrastructure has revealed significant gaps in the sector's supply chain reliability. In response to this, the current U.S. administration issued a [presidential memorandum](#) classifying the United States' constrained electric grid as a threat to national defense and stating that risks to the electric supply chain leave the United States vulnerable in the event of "war, disaster, or economic disruption."

Overreliance on imported parts and equipment coupled with long production lead times poses the most significant risk to supply chain reliability. Domestic manufacturing capacity for many of the critical components supporting grid operations is limited; in particular, the United States is severely lacking the ability to manufacture large power transformers (LPT) and high-voltage direct current (HVdc) transmission in a timely and reliable manner. The testing and procurement of new or replacement equipment can involve lead times of up to 10 years. The ongoing integration of more renewable energy resources, such as solar photovoltaic and battery storage assets, creates additional vulnerability as the manufacture of parts and equipment is dominated by foreign suppliers. Reliance on imports, for both new assets and those nearing end of life, leaves organizations vulnerable to market shifts, disruptions, and trade policies, all of which are affected by major world events and geopolitical maneuvering.



TECH TALK ANNOUNCEMENT



General Session Live Webinar New IBR Related Standards Effective in 2026 and 2027 - General Session

[Register](#) | [Event Details](#)

NERC, in collaboration with the Regional Entities, will host a General Session Live Webinar to discuss current and future phased implementation of the NERC Reliability Standards for IBRs.

The General Session will be held on Monday, August 10, 2026, from 2:00-3:30 p.m. ET.

Registration for a one-on-one session is not necessary to participate in this general session.

[Register](#) for Generation Session
Live Webinar

**Small Group Advisory
Session - New
Inverter-Based
Resources Related
Standards Effective in
2026 and 2027 General
Session**

Monday, August 10, 2026 2:00 PM - 3:30 PM
(UTC-04:00) Eastern Time (US & Canada)

Attendance is open to industry

TECH TALK ANNOUNCEMENT

Wednesday, August 5

VIRTUAL PROTECTION WORKSHOP

Topics include:

advanced line differential schemes impacts of inverter-based resources
recent international blackout events
transformer protection challenges high-speed system monitoring techniques

Thursday, August 6

VIRTUAL PLANNING WORKSHOP

Offers practical insights into planning methodologies, analytical approaches, and effective use of industry tools.

Attendees will gain valuable tips, techniques, and real-world perspectives to enhance their ability to perform a variety of transmission planning analyses



TECH TALK ANNOUNCEMENT



ELECTRIC GRID BOOTCAMP

POLICYMAKER PRIMER
ON RELIABILITY &
EMERGING SYSTEM RISKS

[Register Today!](#)

NERC & RF 101

Compliance &
Enforcement of
NERC Standards

Monitoring the System
& Events: OPS-X
Demonstration

Engineering
Assessments, Modeling,
Data Analysis, & Energy
Assessments

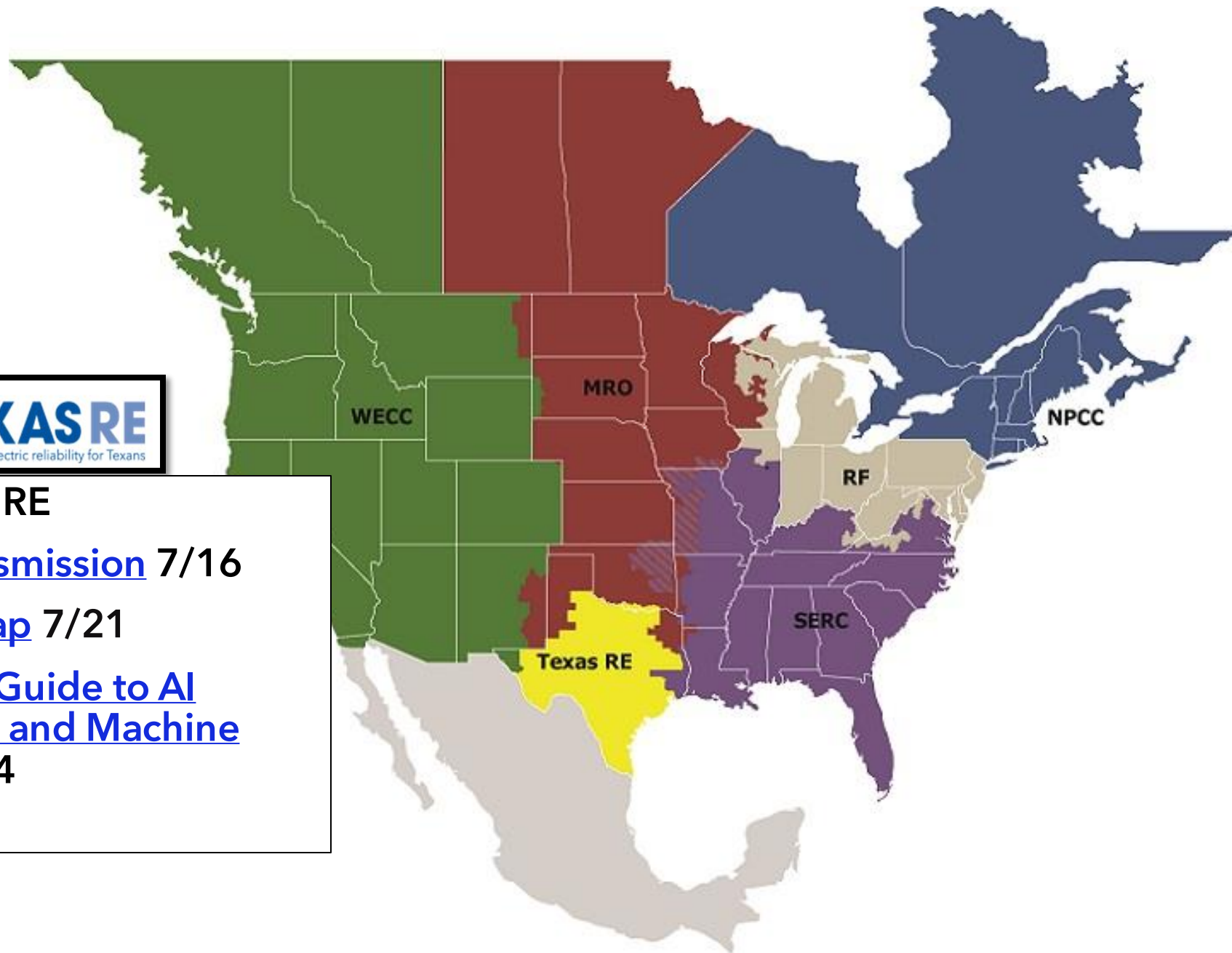
RTO Overview

EPA Generate:
The Game of
Energy Choices



Talk with Texas RE

- [765 kV Transmission](#) 7/16
- [CIP Roadmap](#) 7/21
- [Defender's Guide to AI Intelligence and Machine Learning](#) 8/4





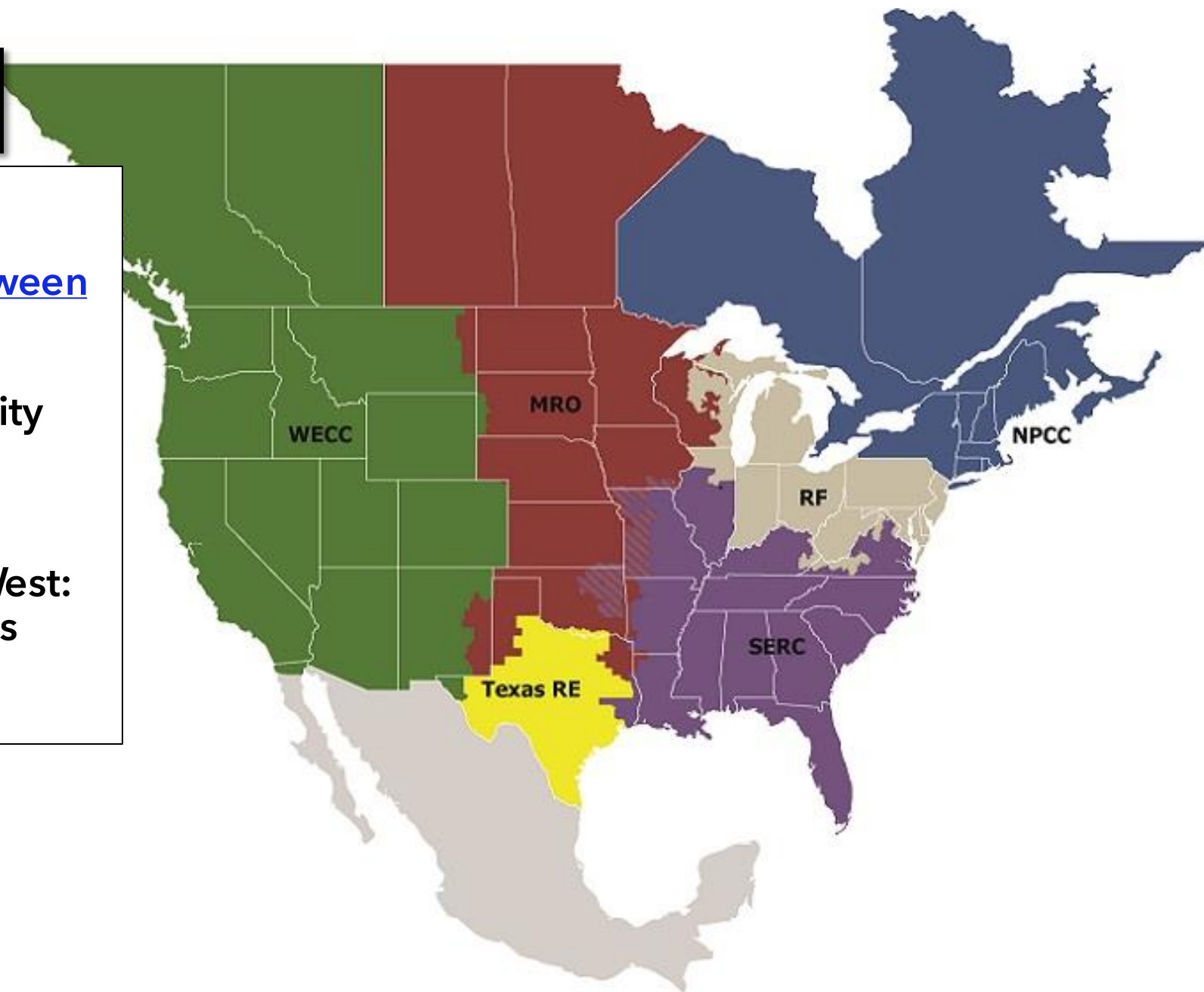
Report: [Wyoming Disturbance: A Collaboration between WECC and NERC](#)

Reliability & Security Oversight Update

- [July 16](#)

Reliability in the West: A Discussion Series

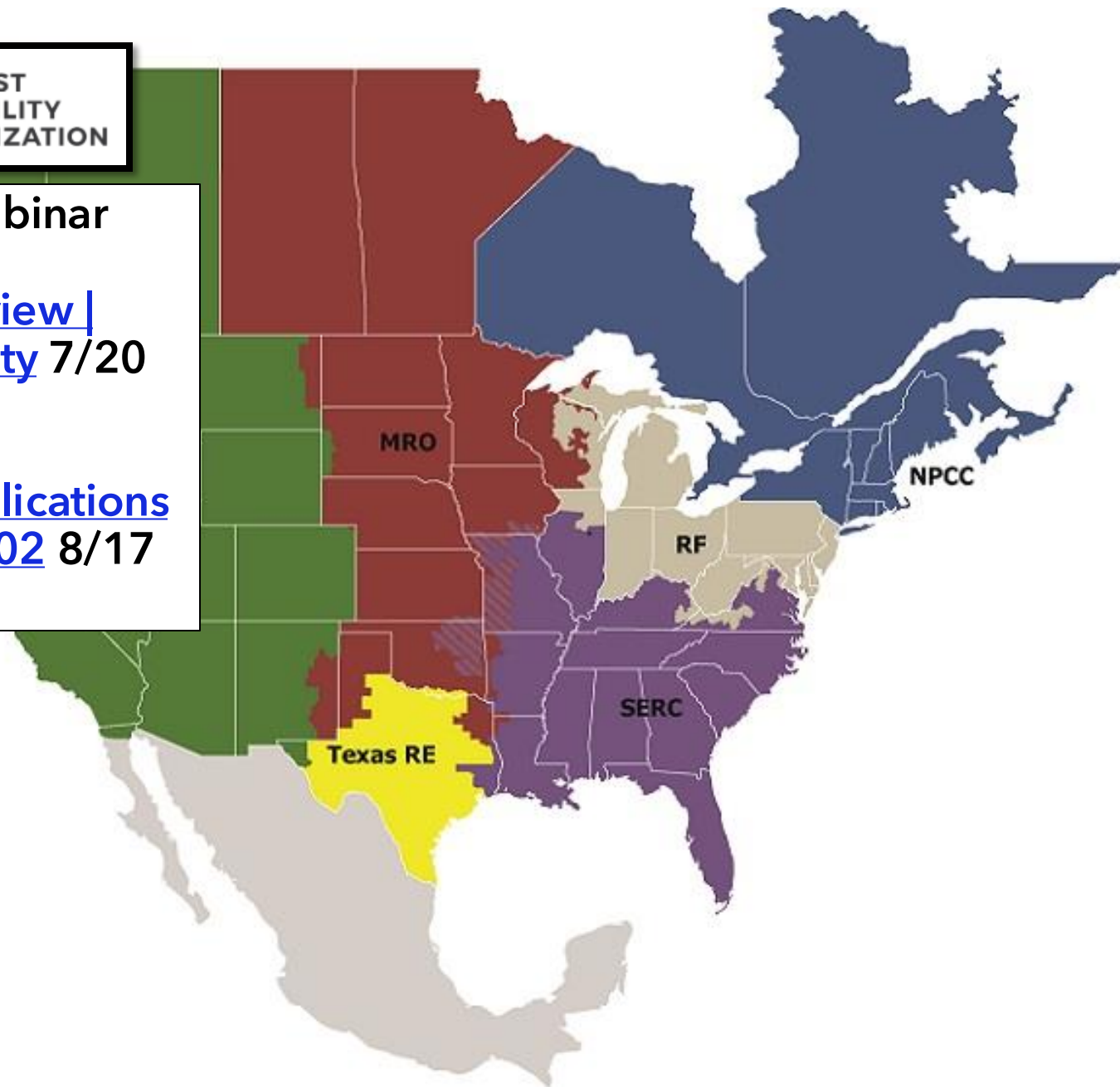
- [August 5](#)

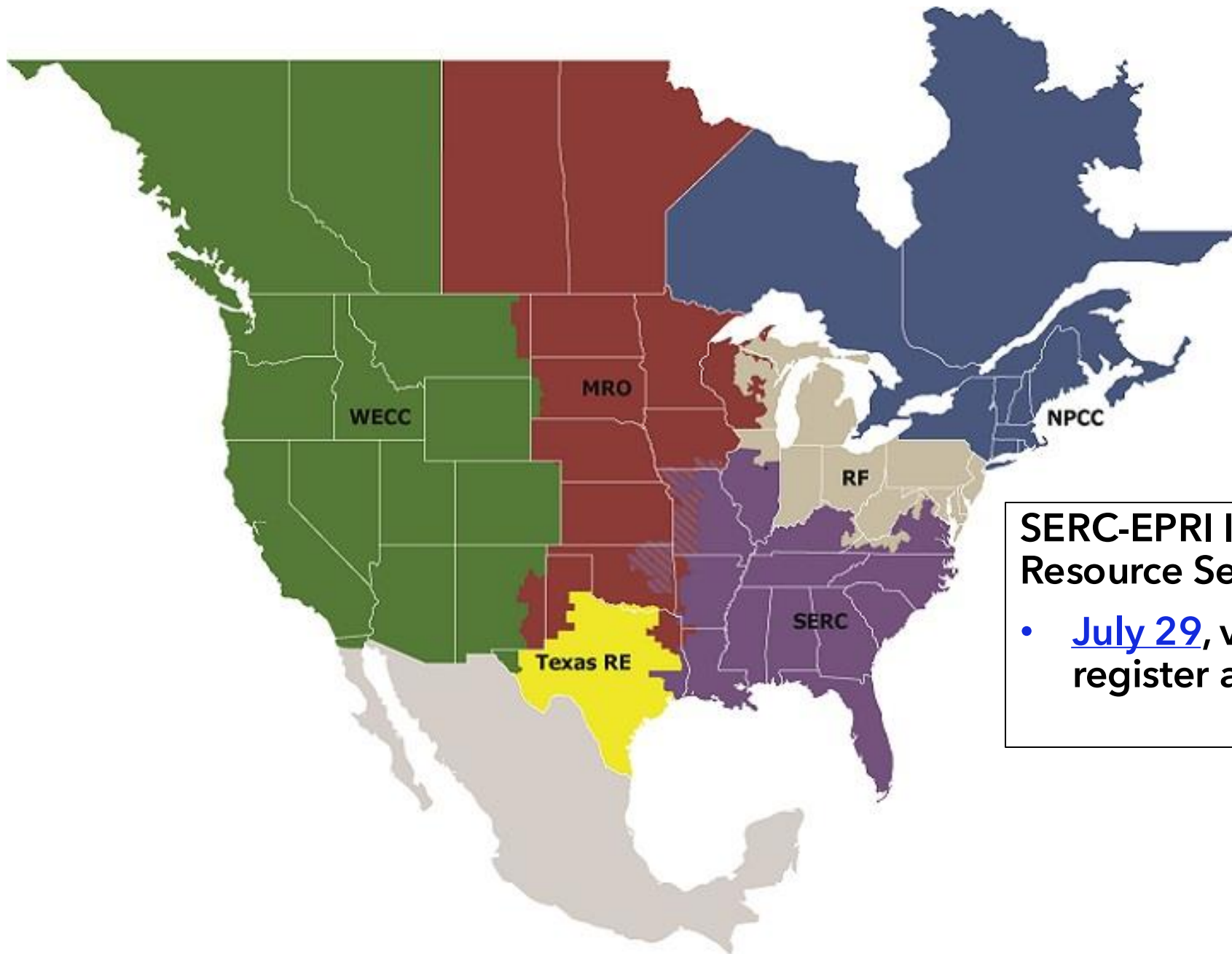




MRO Case Files Webinar Series

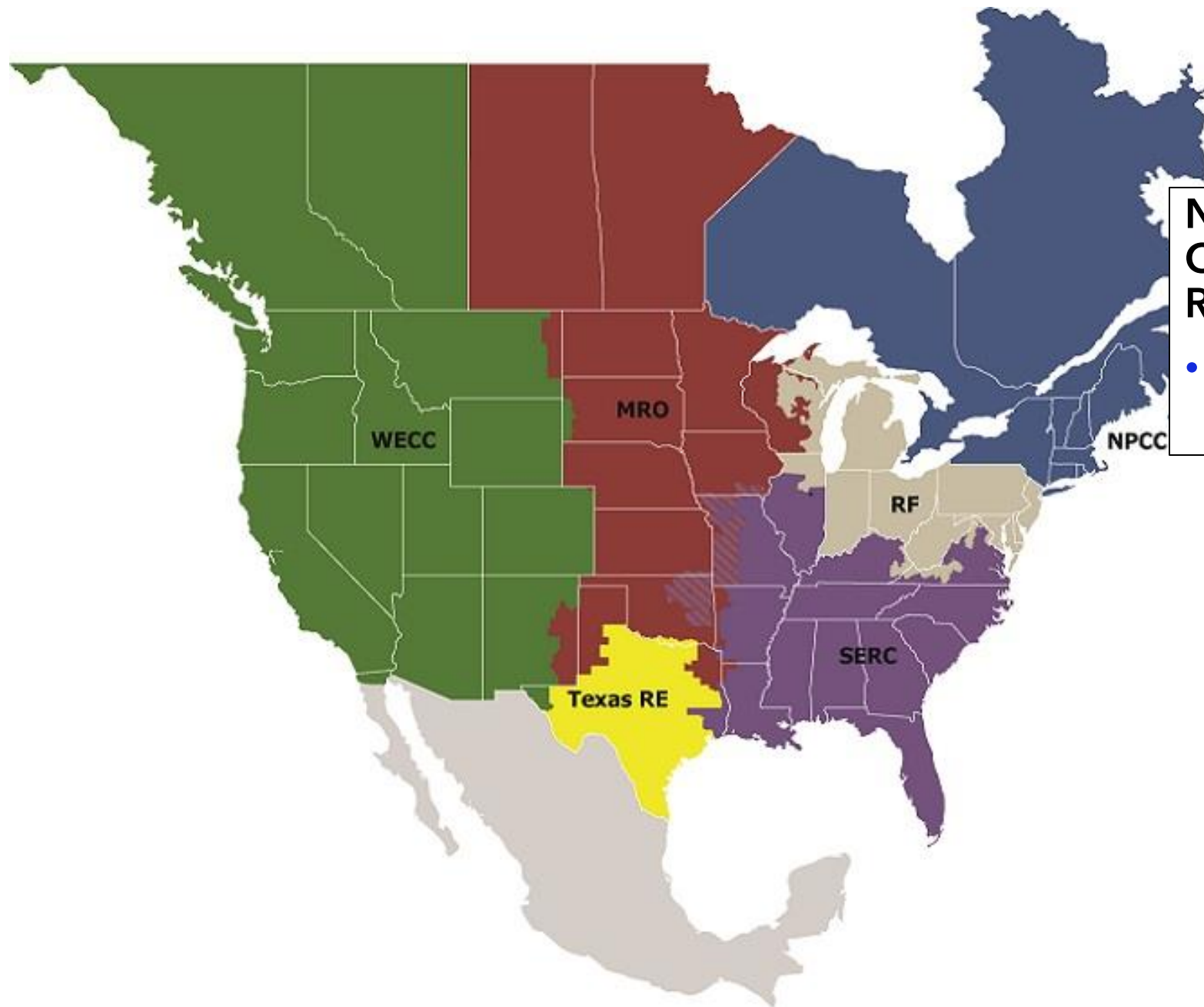
- [MOD-026-2 Review | Physical Insecurity](#) 7/20
- [Unpacking the Compliance Implications of Project 2016-02](#) 8/17





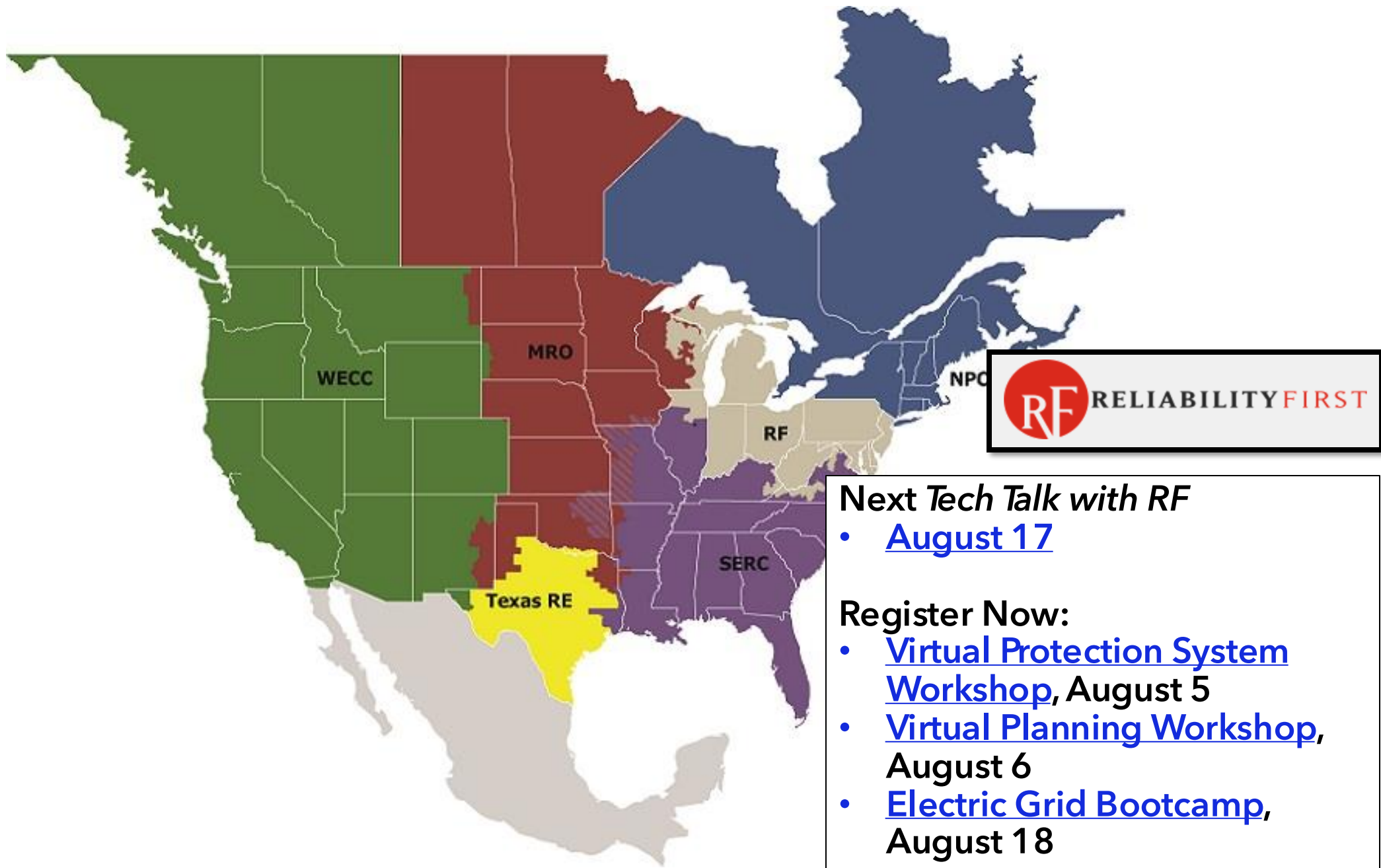
SERC-EPRI Inverter-Based Resource Seminar #3

- [July 29](#), virtual; register ahead



NPCC 2026 Fall Compliance and Reliability Conference

- [November 4-5,](#)
register early!



TECH TALK REMINDER

Technical Talk with RF announcements are posted on our calendar on www.rfirst.org under Calendar

CLICK HERE

MON
13

July 13, 2026 @ 2:00 pm - 3:30 pm

Technical Talk with RF

Virtual (Webex)

Technical Talk with RF is a monthly webinar ReliabilityFirst hosts to discuss key reliability, resilience and security topics with our stakeholders.



TECHNICAL TALK WITH RF

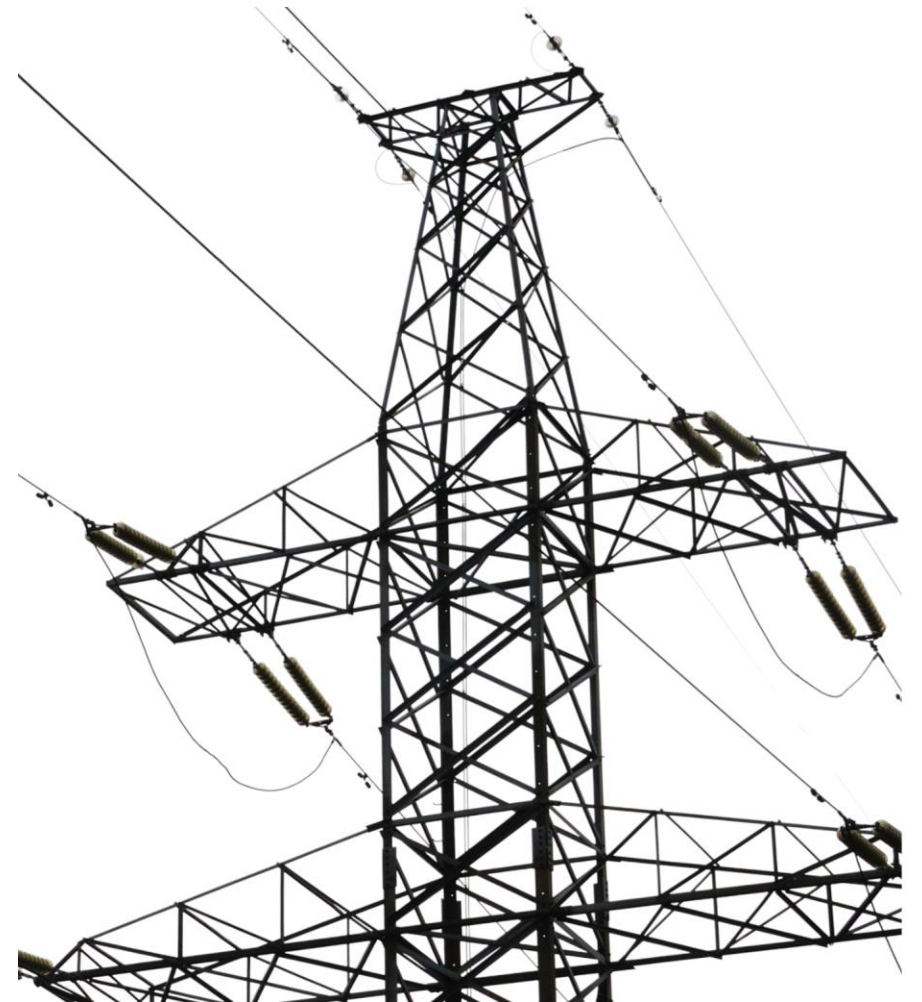
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Anti-Trust Statement

It is ReliabilityFirst's policy and practice to obey the antitrust laws and to avoid all conduct that unreasonably restrains competition. This policy requires the avoidance of any conduct which violates, or which might appear to violate, the antitrust laws. Among other things, the antitrust laws forbid any agreement between or among competitors regarding prices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that unreasonably restrains competition.

It is the responsibility of every ReliabilityFirst participant and employee who may in any way affect ReliabilityFirst's compliance with the antitrust laws to carry out this policy.



AGENDA

POWER PLANT WINTERIZATION BEST PRACTICES

MATTHEW HILS, LAWRENCEBURG & DARBY BUSINESS
MANAGER, TALEN ENERGY

RF COLD WEATHER WINTERIZATION (CWW) SITE VISIT PROGRAM

MIKE HUGHES, MANAGER, ENTITY ENGAGEMENT,
RELIABILITYFIRST

RELIABILITYFIRST • WINTER READINESS

Winter Readiness at Lawrenceburg Power, LLC

Cold Weather Preparedness, Standards Compliance, and Grid Reliability

Prepared for ReliabilityFirst Audiences

Action Items and Tracking – High level view

We utilize an Action Item List to capture any items that need addressed with Action item Owners and a Due Date for each task. This is reviewed during the weekly work management meetings and hard copies printed off for shift review in our Annex where the Operations & Maintenance staff can easily review.

September – 8 Actions	October – 74 Actions	November – 8 Actions	Through Winter
Begin building Winter Huts Heat Trace Megger Readings PJM / NERC Reliability Guidelines Review Manual Heat Trace “ON” runs to confirm good circuits Inventory Checks	Fall HVAC PMs Winter Readiness Drills Stage Ice melt cans Stage heat lamps and heaters on critical equipment Winter Huts Complete Heated mats at door entrances	Glycol % checks on CCW system Send Winter Ready certification to PJM Snow plow equipment ready for service / contracts in place for removal	Capture Lessons Learned as they happen

Action Items and Tracking

We utilize an Action Item List to capture any items that need addressed with Action item Owners and a Due Date for each task. This is reviewed during the weekly work management meetings and hard copies printed off for shift review in our Annex where the Operations & Maintenance staff can easily review.

September – Heat Trace & Inventory Checks and Regulations Review

Non-flammable plastic for tents (12 rolls for shelters and minimum of 6 for standby) CID 143746090
Inspect current 480 VAC heater extension cords. Have designated area for these cords. Determine if we need more.
Audit Heat Trace panel checks after megger checks are completed
Review PJM 14D for updates (Specifically Attachment N)
Review NERC Reliability guidelines for Winter weather (Energy Assurance on the link)
Inspect current 480 VAC heaters. Determine if we need more.
Start Building Winter huts
Turn on heat trace panels in manual to allow run time to identify failures

NERC

<https://www.nerc.com/comm/Pages/Reliability-and-Security-Guidelines.aspx>



Attachment N: Cold Weather Preparation Guideline and Checklist

<https://www.pjm.com/-/media/DotCom/documents/manuals/m14d.pdf>

Action Items and Tracking

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Due October 15th

Winter readiness Drill including report out preparation	Inspect and 2-hr test run portable electric heaters
PM natural gas heaters and check temperature control function (see winterization check list for list of heaters)	Inventory and order ice melt in 50# bags, 6 pallets is normal usage
PM electric heaters and check temperature control function (see winterization check list for list of heaters)	Inspect 120v hand held hot air heater blowers for emergency thawing. (minimum of 4)
Inspect and function check turbine building, aux boiler building and maintenance shop louvers while heating is in service.	Inspect electric extension cords rated for extreme cold weather. (minimum 24 - 50ft cold weather cords)
Inspect and repair all building entrance doors and overhead doors for proper function and sealing	Inspect 120v electric 10-1/2" brooder clamp lamps & bulbs (minimum 20 lamps, 24 heat bulbs (red or white)
Inspect manual salt spreaders (minimum of 2)	Inspect GFCIs, outdoor rated. (minimum of 12)
Add 120 VAC heater to Bisulfite skid	Inventory/buy weed burners if needed - One in aux sub 1, one in aux sub 2 and one in safety tool room.
Adjust packings on valves to prevent icicles	Space heater spare 110v office heater
Inspect diesel fuel transfer cans and labeling (minimum of 4 - 5 gallon cans)	Inspect shovels
Inspect & verify service water tank heater is functioning with thermostat control and maintaining expected temperature	Strategically locate poly cans with lids and non-spark scoop for ice melt (leave salt in the bags)
Inspect & verify oily/water separator tank heater is functioning with thermostat control and maintaining expected temperature	Inspect and PM portable trash pumps and hoses

Action Items and Tracking

We utilize an Action Item List to capture any items that need addressed with Action item Owners and a Due Date for each task. This is reviewed during the weekly work management meetings and hard copies printed off for shift review in our Annex where the Operations & Maintenance staff can easily review.

Due October 31st

Turn off cooling fans for the blue chemical storage bins for the winter	Open drain valves on oily water sump pump discharge lines	Install snow plows and check for safety and reliability, Ventrac done with mowing then perform	BFP and air compressor motor discharge air duct dampers swapped to supply warm air to building internal
Add heat lamp to Main Potable water tent	Ready to eat meals expiration check	Winterize GT evaps per procedures	Set up electric and fuel heaters in shelters
Add heater and heat lamp to Bisulfite Injection	Wrap the 18 valve REXA actuators (Make sure HRH xmtrs are also in the shelter area)	Isolate Service Water at WTP and open drains in TB	HRSG penthouses - vent fans "OFF" and louvers verified CLOSED, they may require assistance
Isolate Service Water Filter sample tubing and drain	Add heater to filter press feed pumps pump shack	X405 Drain valves set up to allow flow when below 32 deg F	Verify BSDG buildings and PDC thermostats are set to maintain 68-77 deg F for optimal battery performance
Add heat lamp to CTMU pH Probe sample areas	Add heater to potable water pump shack	Build wall between HRSG and Stack to support HRSG Skirting heat retention	Hose on west side of turbine building on standpipe ran to drain
Add heat lamp to Clearwell tank feed valve 5150 in pipe rack	Build shelter for clearwell pressure regulator	Add non plastic flooring for Sundecks winter huts	Wrap CT makeup valves in plastic to prevent ice build up
Add diesel heater to south side of HRSG 1 underskirting for extreme cold situations	Install door between penthouse and stack	Purchase filters, orifice and igniters for VAL6 heaters	Scour air blowers heat lamps plugged in
Ensure x418 pressure transmitters are wrapped inside the winter huts all the way to the root valve.	Add heater to Clearwell minflow area	Install heated mats at building entrance doors	Add floating device to thickner to keep top from freezing
White board updated (heat trace sections) after manual run has taken place.	Add plastic on north side of BMS 4 shelter and the south side of BMS 1 shelter (wind break)	Wrap Gas Yard valves with plastic bags to prevent ice build up	Install extension cords on CT & ACW basin level transmitters
Inspect, PM and repair VAL6 heaters. Store spare VAL6 heater in aux boiler building.	Create service agreement for snow removal	Wrap cold and hot gas valves to prevent ice build up	Repair all HRSG Skirting penetrations
Turn on heat trace panels in auto on Nov 1	Inspect leading edge of bucket/blade on CASE skidsteer	Wrap 80% HPFW valves with plastic to prevent ice build up	Cover louver/window area by safety shower inside Aux Boiler building
Build temporary shelters and wrap with plastic	Acid pump skid needs plastic roof put over top of them with a heat lamp installed with enough room to be able to work on the pumps if needed during the winter run.	Wrap Performance heater control valves	
Critical instruments and regulators - wrap with plastic with heat lamps (see winterization check list for list of items)	Add heat lamp to Raw Water pressure xmtr 5001	Inspect HRSG North side around easy bake oven for wind protection (Rubber seal)	

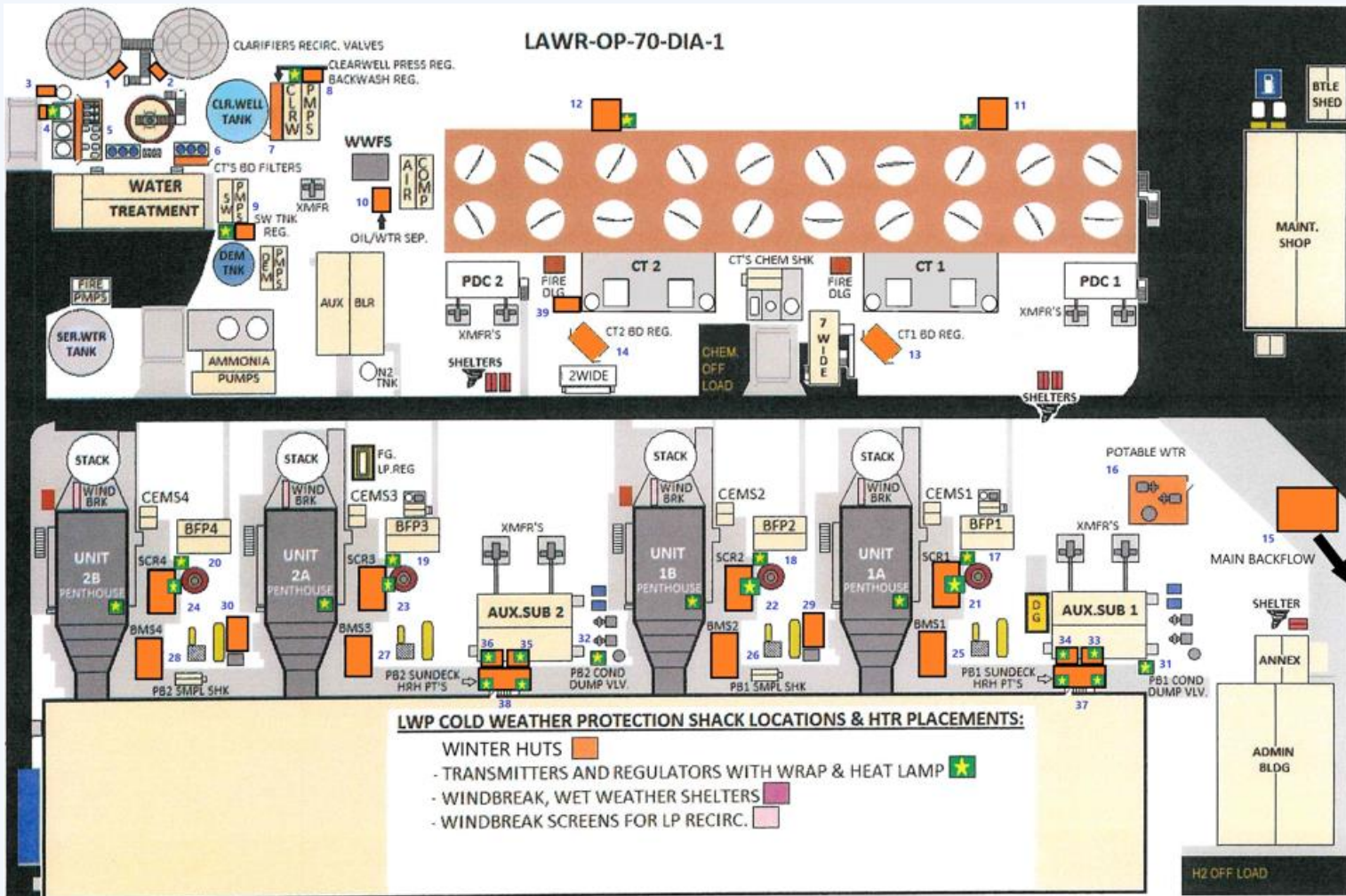
Action Items and Tracking

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November & December	
Open stock inventory sheet updated and performed weekly throughout winter months (Including the Aux Sub QR Cabinets)	Revise winterization preparation checklists
Winterize 7 Wide	Review any heat trace failures with group to have a plan for what protection is lost, Update CR Whiteboard
Check Block 1 & 2 CCW Glycol % with portable refractometer	Verify pre-operational checklist are located in the Polaris. Includes inspection and adjustment of the snow plow feet.
Put heat trace readings into an excel format to better track historical data	Barricade metal steps at the 7-wide & warehouse & restroom trailer during snow and ice events
Empty water wash sumps	Update excel checklist for Winter Tents
Send certification to PJM	Bird-b-gone PM
Case skid steer refresher training for operations teams	

Winter Ready by
November 15th

Winter Huts



Location	
1 Clarifier A Turbidity	21 SCR 1
2 Clarifier B Turbidity	22 SCR 2
3 Lime silo	23 SCR 3
4 Sulfuric Acid skid	24 SCR 4
5 Filter Press Feed Pumps	25 BMS 1
6 CT MMF	26 BMS 2
7 Clearwell Backwash & PRV	27 BMS 3
8 CT Makeup Acid Inj.	28 BMS 4
9 Service water tank regulator	29 Block 1 oily water sump
10 Oily Water separator tank	30 Block 2 oily water sump
11 Block 1 CW Bypass valve	31 Block 1 Condenser BD
12 Block 2 CW Bypass valve	32 Block 2 Condenser BD
13 CT1 BD line	33 HRSG 1 1412 Valve
14 CT2 BD line	34 HRSG 2 2412 Valve
15 Main potable water	35 HRSG 3 1412 Valve
16 Potable water skid	36 HRSG 4 2412 Valve
17 Outfall 102A	37 HRSG 1 1418 Valve
18 Outfall 102B	37 HRSG 2 2418 Valve
19 Outfall 102C	38 HRSG 3 1418 Valve
20 Outfall 102D	38 HRSG 4 2418 Valve
	39 CT2 Circ Pump A Lube Oil Skid

Winter Huts

Burner Management System - Wind Breaks



Winter Huts

Critical Valves and Instrumentation protection



Winter Huts

Critical Valves and Instrumentation protection



Winter Huts

Critical Valves and Instrumentation protection



Winter Huts

Critical Valves and Instrumentation protection



Snow Removal

Areas are prioritized based on traffic for the contracted snow removal company.



We maintain our own snow removal equipment as well for walking paths.

SNOW REMOVAL VEHICLES:

- 4A-1** Plant's snow removal vehicles should be serviced and checked for safety and reliability before cold weather.
- 4A-2** Plant's vehicle salt spreaders will need to be attached and checked for safety and reliability. *(If available)*
- 4A-3** Plant's vehicle snowplows will need to be attached and checked for safety and reliability. *(Vertrac, skid steer and Polaris ranger all have snowplows)*

IMPORTANT: Only personnel trained and qualified can perform snow removal with plant's vehicles.
IMPORTANT: Plant should have outside resources available for additional emergency snow removal.

Snow Removal

We have Ice Melt stationed around the facility for easy access and multiple areas with snow shovels available kept indoors. This also includes manual push salt spreaders for longer runs.

4A-6 Strategically located poly cans with lids used for ice melt storage should be filled with ice melt material and a non-spark scoop placed inside each can. List below.

- South Annex Door
- North Annex Door
- South Admin Door
- West Admin Door
- West Storeroom Door
- Maintenance Shop (5 gal. bucket)
- WTP Southwest Corner of building
- Each West & South side Man Door of the turbine building (5 gal. buckets)
- Each BFP Building (5 gal. buckets)
- AUX SUB 1 Building (5 gal. bucket)
- AUX SUB 2 Building (5 gal. bucket)
- HRSG 2 Elevator (5 gal. bucket w/lid)
- HRSG 4 Elevator (5 gal. bucket w/lid)



Quick Reaction Point of Use Cabinets



We have 2 of these cabinets on site, 1 in each of our Aux Subs with plenty of supplies to quickly allow someone to address a freezing issue.

WINTERIZATION QUICK REACTION CABINET

INSIDE OF CABINET

5x – HEAT LAMPS

5x – HEAT LAMP BULBS

4x – GFCI

1x – HEAT GUNS

1x – POWER BLANKETS

1x – ROLL OF DUCT TAPE

1x – PACK OF CABLE TIES

1x – ROLL OF FLAME-RESISTANT PLASTIC

1x – CID 500029761 (PLUG IN HEAT TRACE)

OUTSIDE OF CABINETS ON BOTH SIDES ON WALL HOOKS

4x – EXTENSION CORDS

4x – EXTENSION CORD HANGARS

Heat Trace Panels

We collect this data for each year to analyze the “trend” for any potentially degrading circuits.

WTP--A		8/25/2025	8/27/2024	8/8/2023	7/12/2022	8/25/2021			Notes:		
Ohm	Circuit	Readings	Readings	Readings	Readings	Readings			Date	Circuit	Info
M	1	3.08	2.86	3.74	0.12	0.21			9/6/2022	CKT 9	Repaired loose wires
M	2	54	1050	15500	83.4	34.9			10/29/2017	CKT 7	Repaired HT
M	3	2880	3090	1.18	1600	1120			10/23/2017	CKT 14	Bad breaker, replaced
M	4	23.4	106	73.4	22.5	12			5/1/2017	CKT 3	Lime HT repaired
M	5	15	17.4	50.8	16.7	130					
M	6	4.08	275	173	17.9	7.65					
M	7	1.4	2010	2.49	569	199					
M	8	8.63	31.6	10.8	11.8	3.95					
M	9	4.09	6.37	4.25	0.27	0.26					
M	10	39.2	32	72	53.5	104					
M	11	449	11.3	21.8	11.7	5.76					
M	12	5200	100000	7400	3830	2450					
M	13	1720	3150	530	668	276					
M	14	1030	3840	3060	136	538					
M	15	1.29	2610	941	144	91					
M	16	1.61	24.1	7.41	1.19	5200					
M	17	-	-	-	-	-					
M	18	789	7300	2280	1540	472					

Prior to Winter we have an Electrician megger all heat trace circuits one at a time to check the circuit and branches. These values are recorded along with any notes on what was fixed to correct any poor readings during the testing.



Heat Trace Panels - Upgraded

OLD



In 2025 we upgraded 2 of our existing heat trace panels in the Water Treatment Plant. The amp draw of each circuit is now monitored individually and can be observed on the Ovation DCS screens and trended at any time. There are also high/low limit alarms for each circuit to advise if it may be shorted and all circuits now alarm individually.

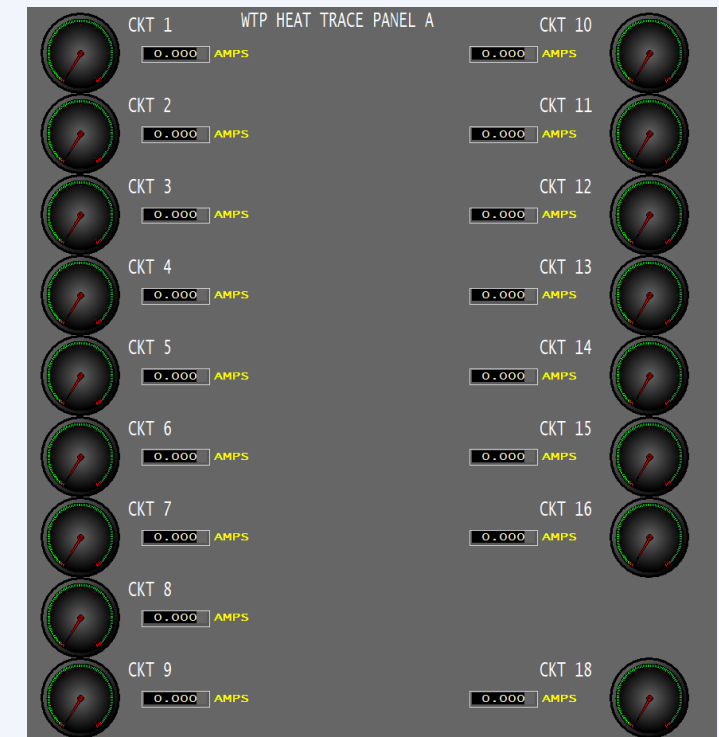
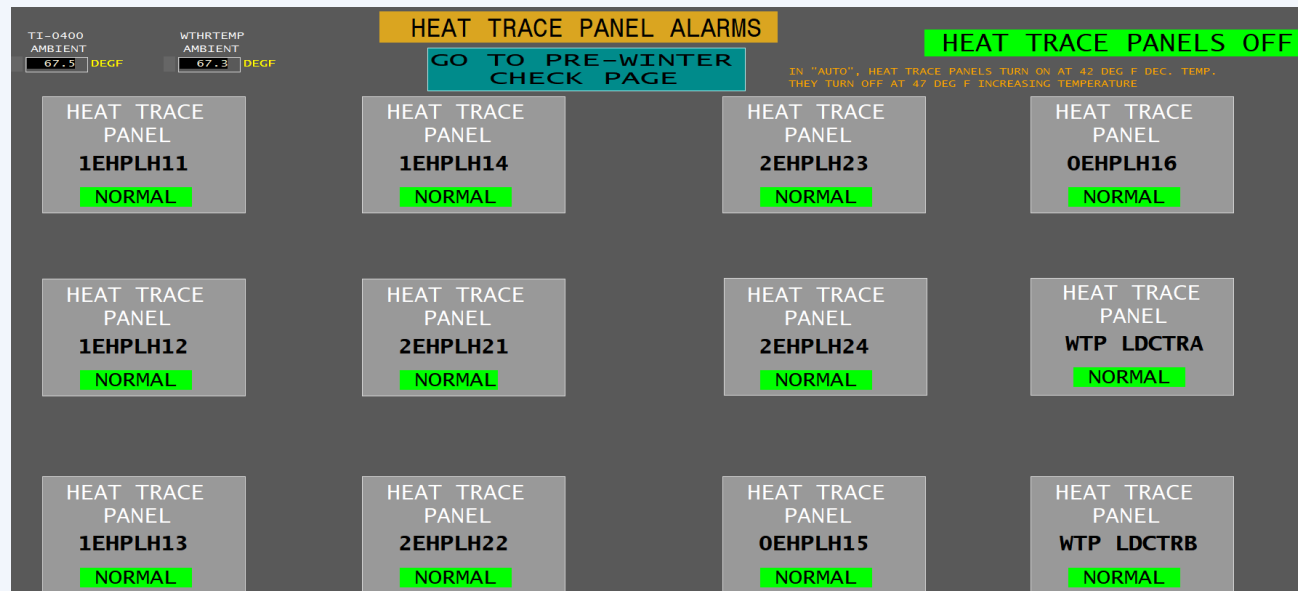
The old design has only 1 common alarm for the entire panel so if a circuit trips, you get an alarm. Then if another circuit trips, there is already an alarm in so the operators wouldn't know there was a new issue until they physically went and checked the panel.

NEW



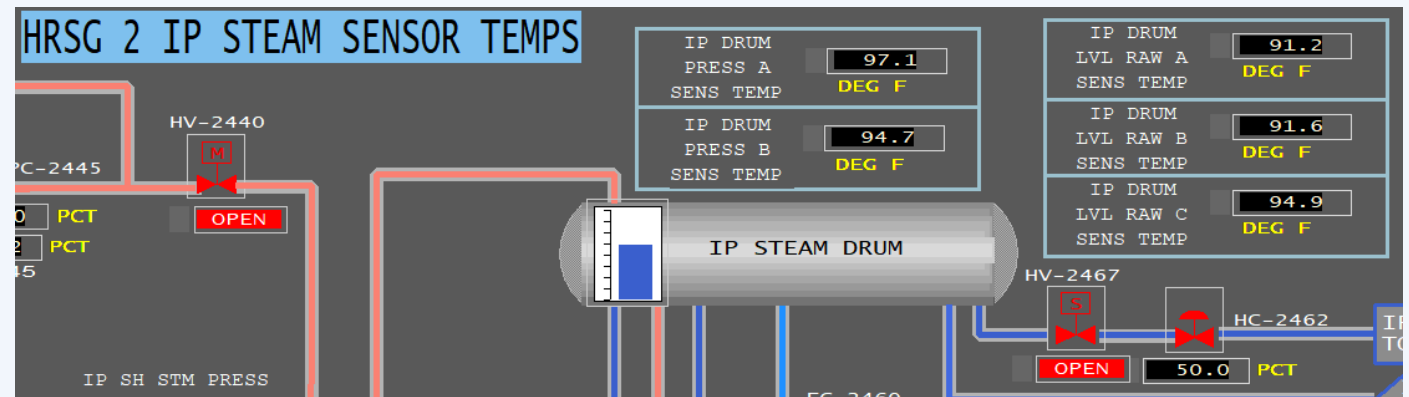
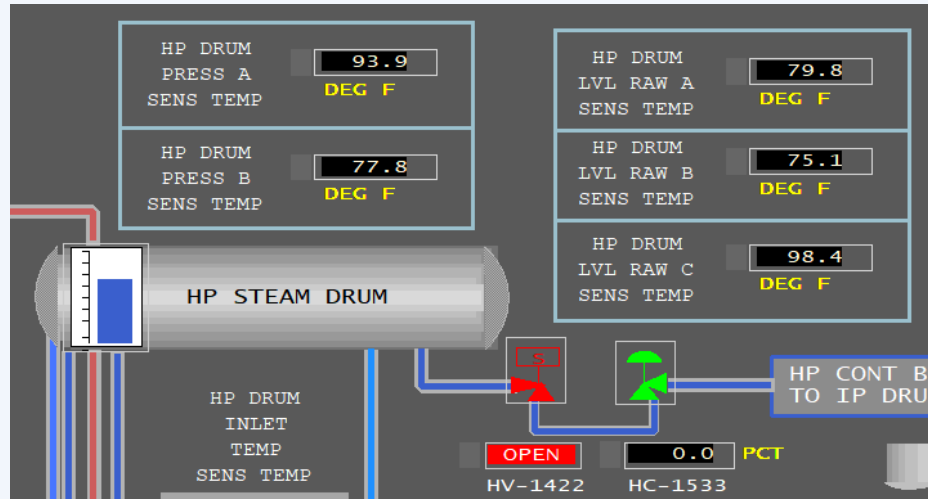
Heat Trace Panels – DCS Interface

The Control Room monitors the Heat Trace Panels for alarms. The new WTP Heat Trace Panels each have their own amp reading for the individual circuit for easy trending and troubleshooting.



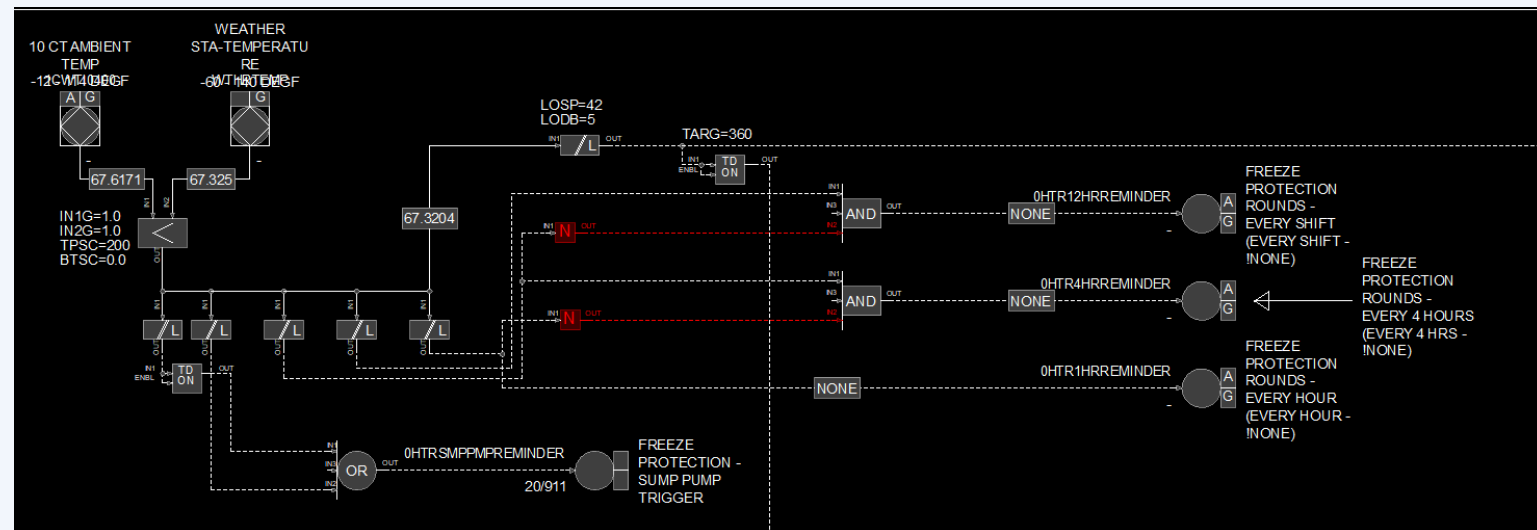
Using Ovation DCS – HART Transmitter Sensor temps

We have added sensor temperatures to many of our critical transmitters in the field. This allows us to see the actual temperature of the device itself. This doesn't require a spare set of wires, it is able to be communicated on the same pair of wires we use to display the measured variable. This does require a Hart module on the Ovation DCS.



Using Ovation DCS – Logic for Winter rounds & Reminders

We have Winterization rounds we perform through the Winter and the frequency of these rounds changes based on the ambient temperature. We created logic on Ovation to advise the CRO how often these rounds need to take place. We also created logic that notifies the CRO when they need to run some of our freeze protection on the Oily Water sumps. Additionally, we have logic that works in Automatic for our Cooling Tower fans to cycle them to reduce ice accumulation that occurs when it is in service to thaw the ice.



Winter rounds

Below is an example of what is checked during Winterization Rounds, which are performed based on the next slide.

Log Date

01/04/26 23:49

Log

Heat Trace and Freeze Prevention Rounds

Append

Copy

Edit



Log date

▼

Sort

16 log entries found

Entry ID 129101

Location Lawrenceburg Power, LLC -> BOP

Crew A team

Shift Night shift

Created by Donald R. Bovard - 01/04/26 23:50

Modified by Donald R. Bovard - 01/04/26 23:50

Heat Trace and Freeze Prevention Rounds

Date & Time

01/04/26 23:49

Control Tech

Donny Bovard

Outside Temperature

29 °F

Heat Trace Panels

1EH-PL-H13 (Manual On)

Pass

1EH-PL-H11 (Manual On)

Pass

1EH-PL-H14 (Manual On)

Pass

1EH-PL-H12 (Manual On)

Pass

2EH-PL-H23 (Manual On)

Pass

2EH-PL-H21 (Manual On)

Pass

2EH-PL-H24 (Manual On)

Pass

2EH-PL-H22 (Manual On)

Pass

0EH-TF-H16 (Manual On)

Pass

0EH-PL-H15 (Manual On)

Pass

3-LDCTRA (On)

Pass

3-LDCTRB (On)

Pass

Cooling Tower And WTP Freeze Prevention

Maintenance Shop

OK

CT1 Level Transmitters (check GFCI)

OK

CT1 Deluge Building

OK

Cooling Tower Chemical Tank Heaters

OK

CT Chemical Injection Building

OK

CT2 Deluge Building

OK

CT 2 Blowdown Shelter

OK

CT2 Forced Lube Oil Heat Trace

OK

Auxiliary Boiler Building

OK

Oily Water Separator

OK

Service Water Pump Building

OK

Water Treatment Building

OK

Ammonia Building

OK

Filter Press Feed Pumps

OK

WTP Sample Lines (Raw Water, Waste Water, CTMU)

OK

CT 1 Blowdown Shelter

OK

7 - Wide Building

OK

CT Offload Safety Shower

OK

CT2 Level Transmitters (Check GFCI)

OK

CT2 Forced Lube Oil Cooler Discharge Flow

OK

Air Compressor Building

OK

Demin Pump Building

OK

Clearwell Water Pump Building

OK

Fire Pump Building

OK

Lime Silo

OK

Heat lamps in WTP (raw water, bisulfite, recirc to clarifiers, acid injection, air scour blowers, etc.)

OK

HRSG Freeze Prevention

BFP 4 Building

OK

MAU #4

OK

BFP 3 Building

OK

Contractor Restroom

OK

BFP 2 Building

OK

Block 1 Sample Shack

OK

BFP 1 Building

OK

Block 1 Cond. Dump Valve heat lamp

OK

HRSG 1 Penthouse

OK

HRSG 3 Penthouse

OK

HRSG 1 HRH Attenuator Drain

Draining

HRSG 2 HRH Attenuator Drain

Draining

HRSG 3 HRH Attenuator Drain

Draining

HRSG 4 HRH Attenuator Drain

Draining

Stand Pipe Drum Drip 1 (HRSG 4)

Drained

Stand Pipe Drum Drip 3 (HRSG 2)

Drained

Block 2 Oily Water Pumps

OK

Block 1 and 2 Sun Deck Heat Lamps

OK

Block 2 Sample Shack

OK

Block 2 Chemical Shack

OK

MAU #3

OK

Is outside temp <10 degrees F? If yes then are louvers in Manual OFF?

No

MAU #2

OK

Block 1 Chemical Shack

OK

MAU #1

OK

Block 2 Cond. Dump Valve heat lamp

OK

HRSG 2 Penthouse

OK

HRSG 4 Penthouse

OK

HRSG 1 Under skirting heater

OK

HRSG 2 Under skirting heater

OK

HRSG 3 Under skirting heater

OK

HRSG 4 Under skirting heater

OK

Stand Pipe Drum Drip 2 (HRSG 3)

Drained

Stand Pipe Drum Drip 4 (HRSG 1)

Drained

Block 1 Oily Water Pumps

OK

ReliabilityFirst | Winter Readiness

03

Winter rounds

We base our Winterization checks on the left side snip from our LAWR-OP-70-HT Policy below. On the right side snip it shows our Portable Heater operation based on temperature.

3. Operations Check Process

- 3.1. Plant assigned system supervisor is responsible for oversight of electrical heat trace availability and performance. Preventive maintenance checks for all heat trace panels begin in mid-summer. Heat trace circuits insulation integrity is also checked out and problems mitigated as necessary.
- 3.2. Starting November 1st the Heat trace panels will be turned ON in Auto and this will continue through April 1st.
 - 3.2.1. Below 40 Deg F Operations will make checks on all electrical heat trace panels once per shift
 - 3.2.2. Below 30 Deg F, checks will be made every 4 hours.
 - 3.2.3. Below 10 Deg F, checks will be made every 1 hour, rotate staffing during this time.
 - 3.2.3.1. Turbine building Louvers will be placed in Manual/Closed when below 10°F per LAWR-OP-70 Section 7B
- 3.3. Issues found during rounds are to be noted on the TL Turnover and written up if the circuit will not reset.
- 3.4. During cold weather months heat trace circuit outages shall take priority for repairs.
- 3.5. All issues with tripped heat trace panels shall be communicated to Management
- 3.6. A JSA shall be provided to ALL personnel involved with opening electrical heat trace panels. Follow ARC FLASH WORK ACTIVITY TABLES for each work step. Also, follow the BREAKER RESET POLICY.

5C Cold weather shelter checks need to be done each shift to ensure the shelter's integrity is acceptable. Shelter's doors and plastic wrap fasteners should be looked over closely, any issues must be corrected promptly to ensure cold weather protection of the equipment. Increased shelter inspections are required when heating units are in use, during and after high winds and heavy snow that could impact the integrity of the shelters.

Operation of Shelter Portable Heaters:

Shelter's with portable electric heaters should have their thermostat settings adjusted accordingly as per outside ambient temperatures.

(**LOW** setting for Temperatures between 25 deg.F ~ 35deg. F) & (**HIGH** setting for Temperatures below 25deg. F.)

Shelter's with portable fuel oil heaters should have their Hi/Low setting adjusted accordingly as per outside ambient temperatures.

-(Place in **Service LOW** mode when temperatures 25deg. F or below) **NOTE:** *Should forecasted outside ambient temperatures remain below 35deg. F as the high, keep portable fuel oil heaters in service. Fuel oil heaters should be placed in HIGH mode only if deemed necessary to prevent freezing shack temperatures.*

Storeroom Checks

Weekly on Fridays the Storeroom Team performs item inventory we have created for Winterization related items. They send this report out to Management each week for review and items are ordered based on projected usage for any upcoming winter storms.

Cold Weather Preparation Check List							
CID	Bin Location	Stock Typ	Open Stock Items	Min	Max	Weekly Check	
						2/28/2025	Weekly Commen
138033351	M-S-SP-RAC-K00	D	1/16" Gasket Material (Roll)	1	2	1	
138033371	M-S-SP-RAC-K00	D	1/8" Gasket Material	1	2	1	
138033391	M-S-SP-RAC-K00	D	1/4" Gasket Material	1	2	1	
143746090	W-1-BN-010-D02	D	FR Plastic	6	10	7	
186126230	M-S-SP-RAC-K00	D	Fire Retardant Blanket	1	1	1	
No CID	Back of Warehouse	D	Propane - 33 lb.			8	
No CID		D	Propane - 20 lb.	4	4	6	
500085553	W-1-CA-01D-101	D	Cold Weather Gloves Size S			16	
600268444	W-1-CA-01D-102	D	Cold Weather Gloves Size M			20	
600268445	W-1-CA-01D-201	D	Cold Weather Gloves Size L			13	
600268446	W-1-CA-01E-101	D	Cold Weather Gloves Size XL			15	
500085554	W-1-CA-01E-201	D	Cold Weather Gloves Size XXL			18	
		D	100W Light Bulbs			50	
184603700	W-1-CA-08L-101	D	RTV Silicone			21	
500043283	W-1-CA-12T-202	D	4" X 25' Pipe Wrap Repair Kits			2	
500056704	W-1-CA-12T-203	D	2" X 12' Pipe Wrap Repair Kits			2	
500061637	W-1-CA-12T-204	D	4" X 12' Pipe Wrap Repair Kits			1	
500067750	W-1-CA-12T-205	D	2" X 4' Pipe Wrap Repair Kits			5	
500077818	W-1-CA-15T-202	D	Hand Warmers			2	
184697450	W-1-CA-13I-502	D	Putty/Sealing Compound			14	
143877380	W-1-CA-15T-303	D	Duct Tape			14	
182418600	W-1-CA-16D-102	D	Heat Lamp Bulbs			28	
144365150	W-1-CA-19T-201	D	Caulking Guns			10	
186427320	W-1-CA-21T-301	D	Hard Hat Liners			14	
0140215015		D	CONNECTOR, ELECTRICAL, WIRE NUT, SET SCREW, 14 AWG MIN, 12 AWG MAX, BLACK, PLASTIC SHELL/BRASS SLEEVE CONNECTOR, 600V MAX, 1000V MAX F/ FIXT			100	
142098480	Big Top	D	Salt Bags			205	
0500003944	No Location	D	CABLE, HEAT TRACE, FREEZE PROTECTION, 120V, 4.9W/ FT, (2) COND, 16 AWG COND, 54 FT LG, MINERAL INSUL, INCOLOY 825 JACKET, NICHROME ELEMENT W			0	

No CID	Aux Sub 1 & 2	D	Heat Lamps	10	10	10	
144424678	Aux Sub 1 & 2	D	Trouble Lights	2	2	2	
No CID	Aux Sub 1 & 2	D	Ice Melter			2	
No CID	Aux Sub 1 & 2	D	Small Heaters	2	2	2	
No CID	Aux Sub 1 & 2	D	Extension Cords	8	8	8	
No CID	Aux Sub 1 & 2	D	GFI's	8	8	8	
No CID	Maintenance Shop	D	Felt (Roll)	1	2	1	
0500030641	W-2-CA-18G-201	S	BREAKER, CIRCUIT, ***, 600VAC, 3 POLE, 100AMP, F/ GAS TURBINE	2	3	3	
0500034201	W-2-CA-18H-201	S	BREAKER, CIRCUIT, THERMAL MAGNETIC, 120/240VAC, 2 POLE, 30AMP, 10KA IC	1	2	1	
0500083980	W-2-CA-45C-103	S	RELAY, 8A, 115 VAC, DPDT, 2 FORM C, 2 C/O, MONSTABLE MAGNETIC COIL SYSTEM	1	3	3	
0500083427	W-2-CA-49G-102	S	SEAL, TUBING BUNDLE ENTRY FITTING F/ TRACEPAK	2	2	3	
0500033536	W-2-CA-52T-202	S	KIT, SPLICE, 3 COND, 277, SPLICE & TEE CONN KIT, F/ HEAT TRACE CABLE	2	4	7	
0115112606	W-2-CA-53B-203	S	SEAL, END	4	8	8	
0500024534	W-2-CA-53C-201	S	KIT, POWER CONN, F/ USE W/ HEAT CABLES, H311, H611, H612, H621 & H622	5	10	10	
0500049945	W-2-CA-53T-301	S	KIT, TERMINATION, HEAT TRACE, SPLICE & TEE, 480VAC, 50AMP, 8 AWG COND, NEMA 4X POLYMER JUNCTION BOX, F/ BT, QTVR, XTV, KTV, & VPL TYPE CABL	2	4	3	
0500043144	W-2-CA-54A-301	S	KIT, CORE SEALER, (1) CS-100 CORE SEALER, (1) YELLOW/GREEN TUBE, HEAT CABLE	5	10	9	
0115112465	W-2-CA-55T-201	S	KIT, SPLICE, *** COND, PKG QTY: 5/KIT	1	5	5	
0500070413	W-2-CA-59F-201	S	SWITCH, TOGGLE, MANUAL, 600VAC/230VDC MAX, 30AMP, 3 PH, 3 POLE, OFF/ON, NON-REVERSING, MOTOR STARTING	1	1	1	

Best Practices Lawrenceburg Plant - Summary



Freeze protection helps keeps units online during extreme cold.



Heat tracing on critical lines and instrumentation, Upgrading Heat Trace panels



Critical-component housing and weather enclosures checked on Winter rounds and completed by Nov. 15th



Insulation of pipes, valves, and transmitters – Insulation Survey is completed during the Summer run by all teams, pics uploaded.



Compressed-air and instrument-air drying systems PM's completed pre-winter



Pre-staged winterization supplies and spares, Heat lamps and Winter shelters in Critical areas



Pre-winter and daily cold-weather checklists and rounds completed based on ambient



Cooling tower fan logic reduces cooling tower ice build up and reminders are built into our DCS for Winterization rounds



Personnel training and specific temperature-based checks performed pre-winter



RELIABILITYFIRST COLD WEATHER WINTERIZATION (CWW) SITE VISIT PROGRAM

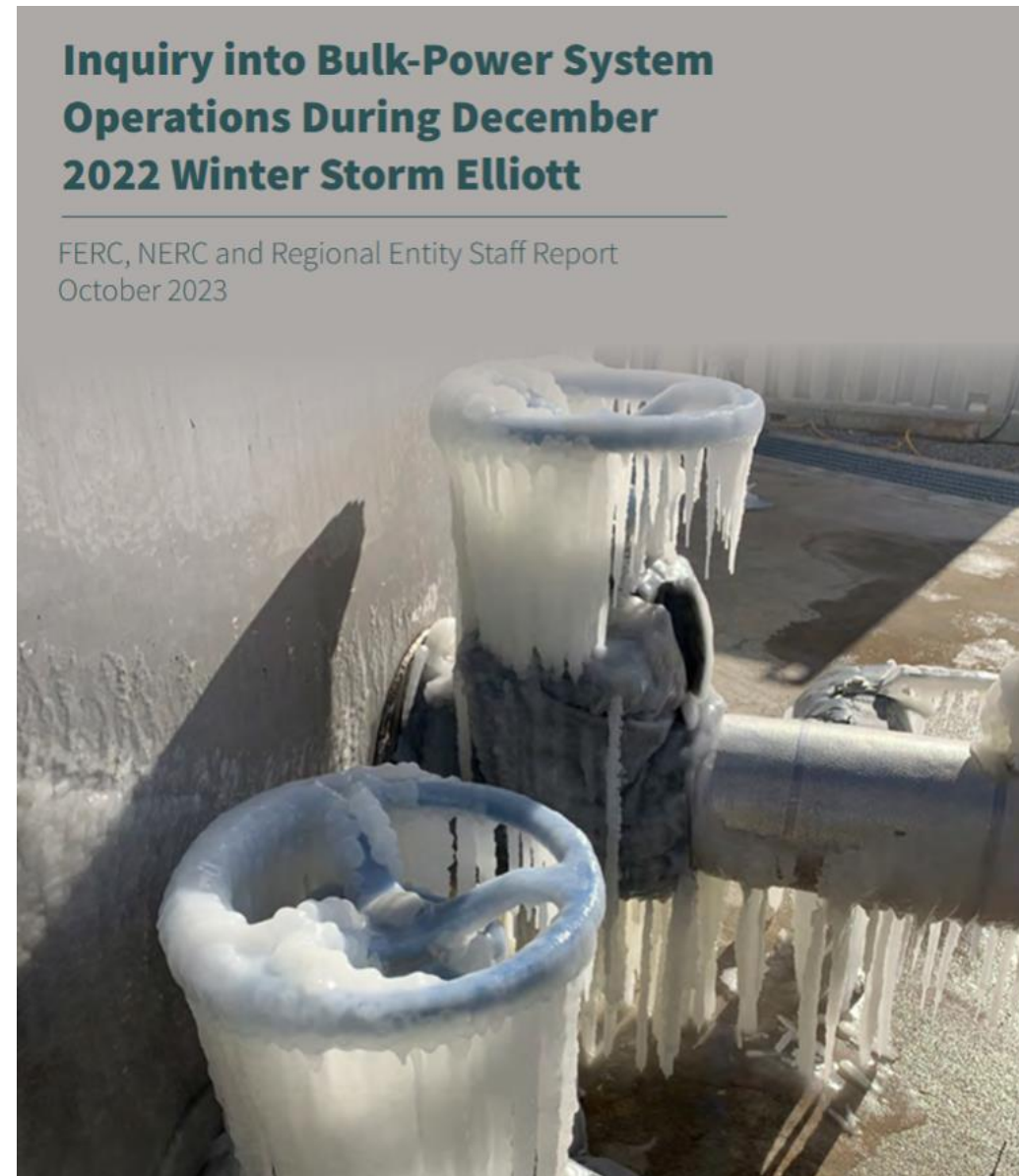
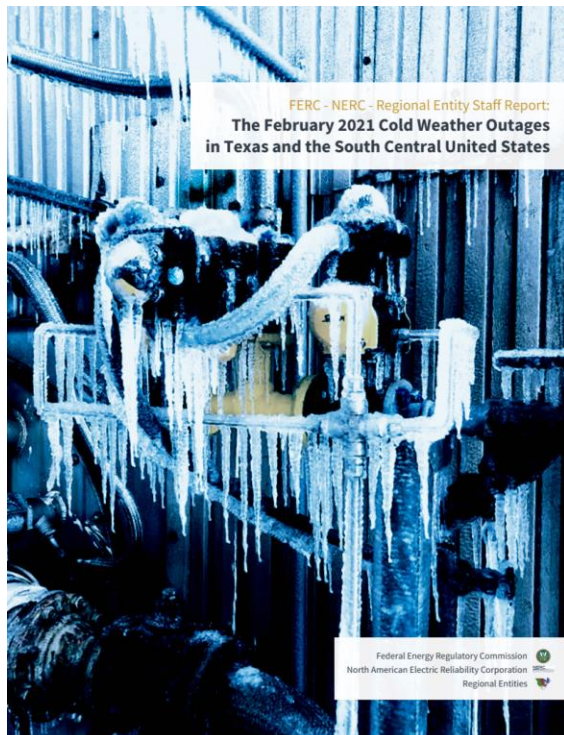
Mike Hughes, Manager, Entity Engagement

July 13, 2026 - Technical Talk with RF

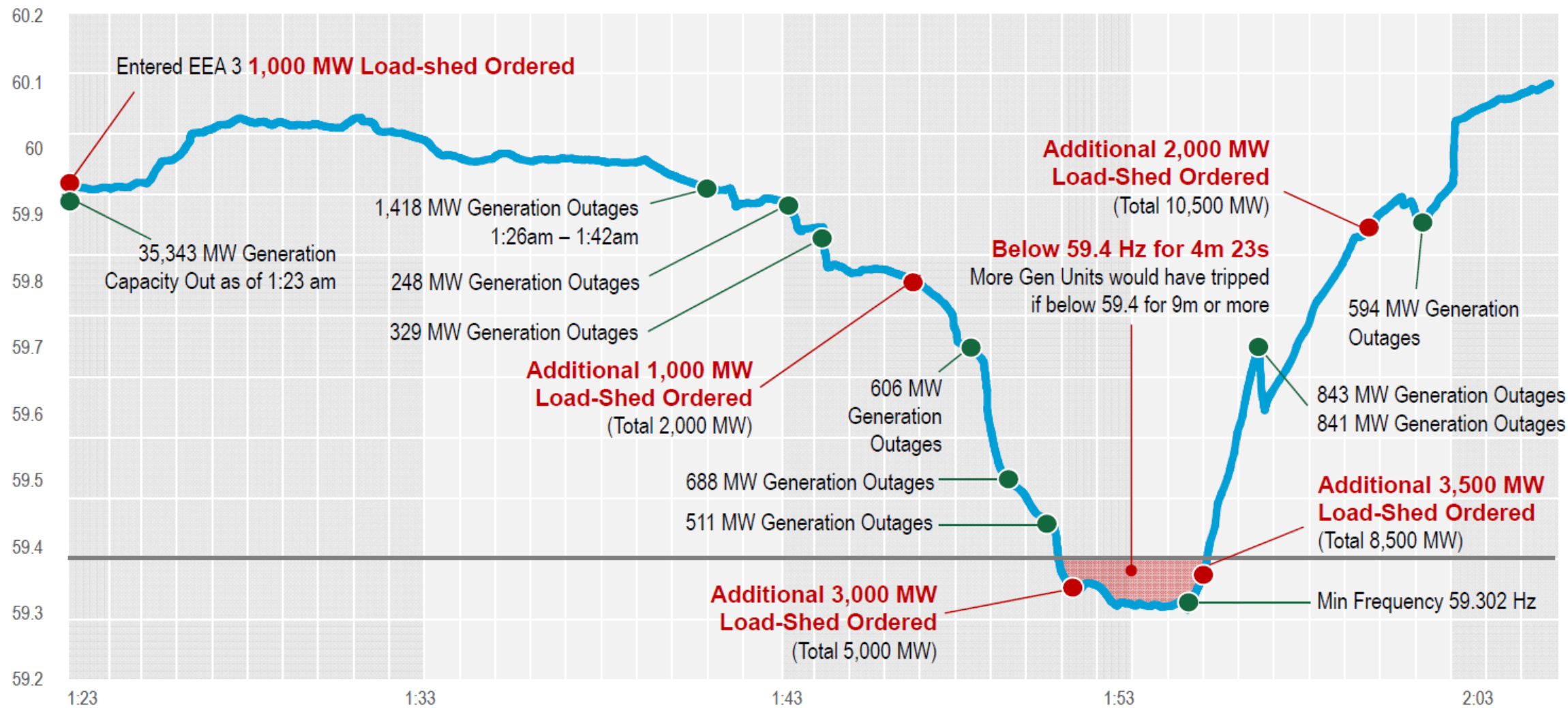


THE WHY

- 2014 Polar Vortex
- 2021 Winter Storm Uri
- 2022 Winter Storm Elliott

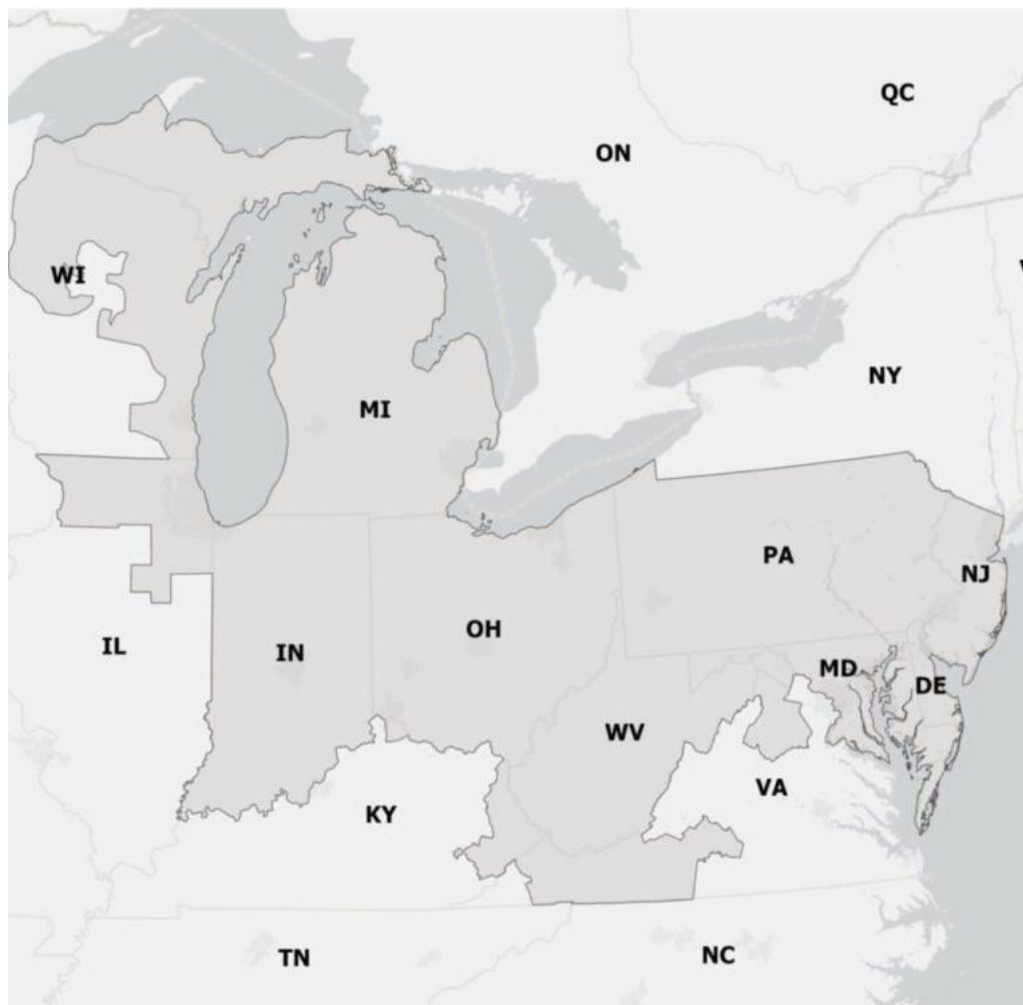


ERCOT LOAD SHED EVENT - URI

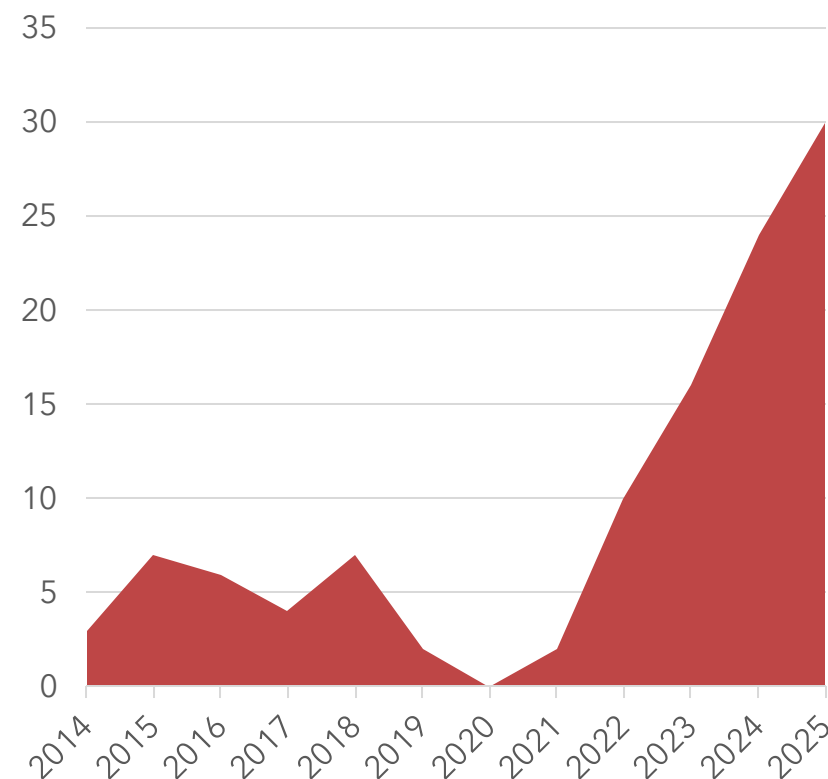


Source: [UT July 2021 Report \(page 27\)](#); Also, reference: [ERCOT 2021 Event Report \(slide 12\)](#)

CWW ASSIST VISITS PER YEAR



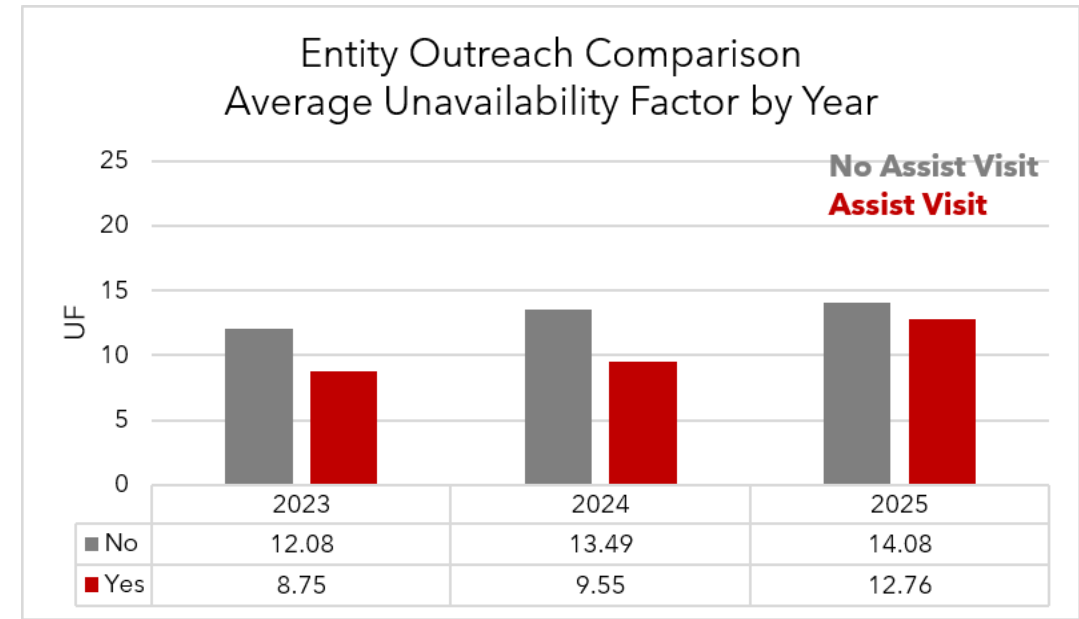
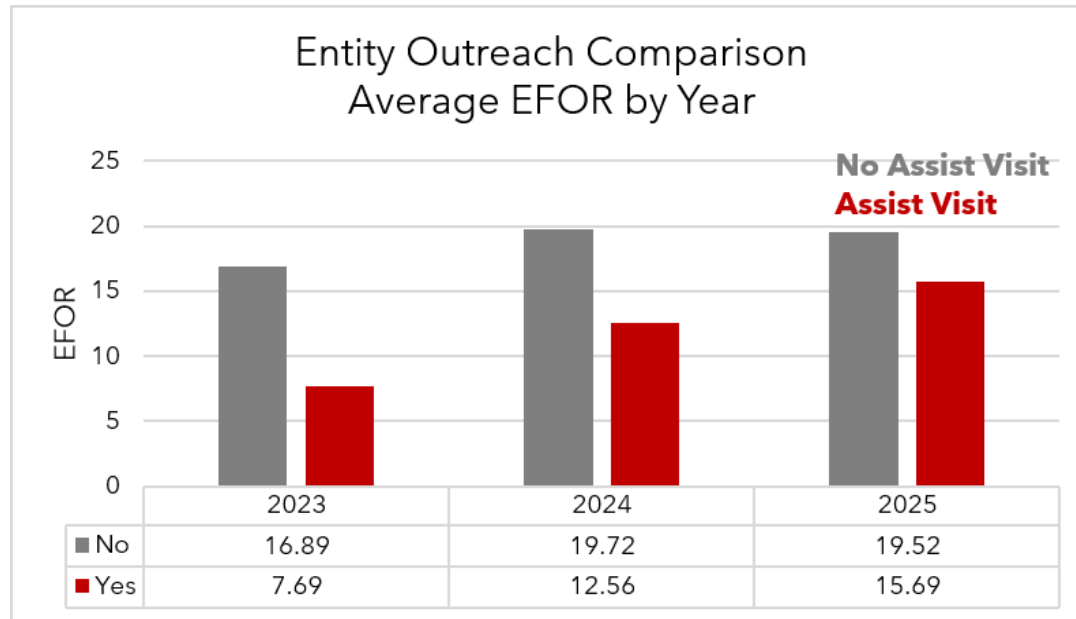
2014-2015: 3 visits
2015-2016: 7 visits
2016-2017: 6 visits
2017-2018: 4 visits
2018-2019: 7 visits
2019-2020: 2 visits
2020-2021: 0 visits
2021-2022: 2 visits
2022-2023: 10 visits
2023-2024: 16 visits
2024-2025: 24 visits
2025-2026: 30 visits



MERITS OF CWW ASSIST VISITS

- Voluntary winterization outreach
- Plant specific review of winter preparedness
- Access to RF, RTO, and NERC expertise
- Exchange of winterization best practices
- Proactive step toward improving cold-weather reliability
- Reliability improvement includes lower measured outage rates

MEASURABLE BENEFITS



GADS data shows support for improved plant performance among assist visit program participants

Generator Availability Data System (GADS):

EFOR = Equivalent Forced Outage Rate

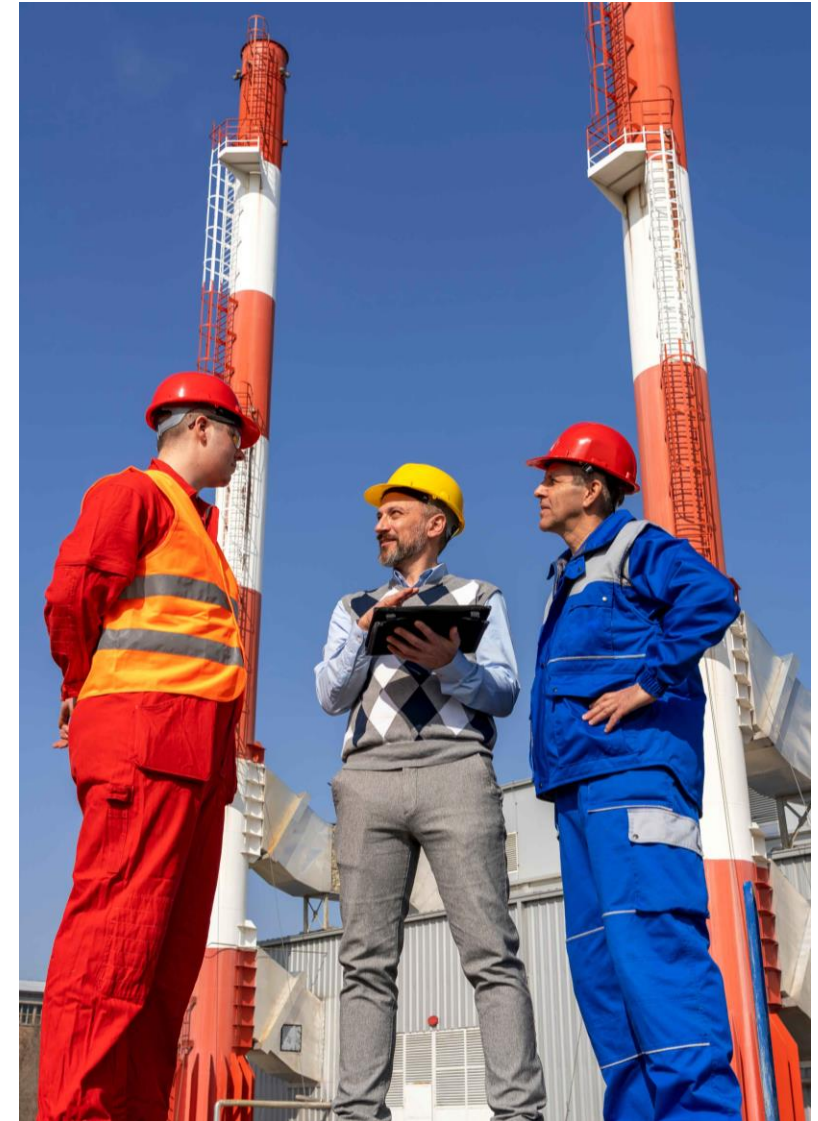
UF = Unavailability Factor

SITE VISIT PROCESS

- New generating stations
 - Stations with a capacity greater than 250 MW
- Existing generating stations
 - Based upon GADS and PJM eDART (electronic Dispatcher Application Reporting Tool) data
- Limited site visits to Wind, Solar, Battery Storage and Blackstart to fill out plant groups
- Process
 - Survey: August - September
 - Site Visit: September - January
 - Duration: ~ 4 hours onsite
 - Personnel: 2 ~ 4 RF staff members plus RTO (PJM or MISO)
 - Summary report provided

ASSIST VISIT ENVIRONMENT

- Focus on best practices:
 - Keeping plant online in winter
 - Whole program analysis
 - Not an audit activity
- Review:
 - Processes
 - Procedures
 - Methods of accomplishment
- Feedback:
 - Positive observations
 - Recommendations



RF WINTER READINESS SURVEY EXCERPT

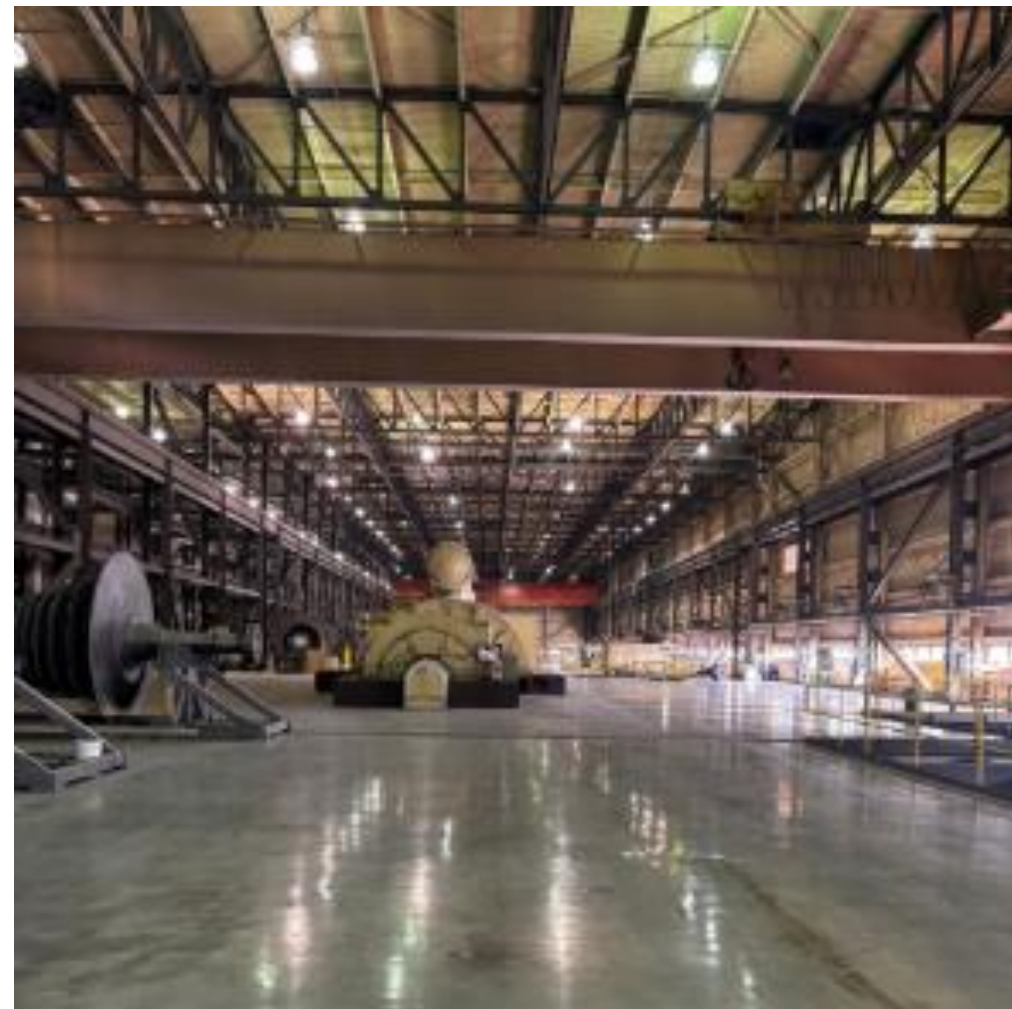
1.0	PLANT WINTERIZATION - OVERALL CONCERNS & ISSUES
1.1	How many boiler-turbine-generator enclosures are of the outdoor type, i.e., boiler room and turbine-generator room are not enclosed and directly exposed to weather conditions?
1.2	How many boiler-turbine-generator enclosures are of the semi-outdoor type, i.e., boiler room partially enclosed with portions directly exposed to weather conditions but turbine generator room fully enclosed?
1.3	How many boiler-turbine-generator enclosures are of the indoor type, i.e., boiler room and turbine-generator room are fully enclosed and not directly exposed to weather conditions?
1.4	Due to the applicable type of configuration, describe any past problems (trips, derates, fail-to-start, etc.) caused by extreme weather and list the amount of megawatts impacted.
1.5	Does your entity presently have a plant winterization plan for all generating facilities?
1.6	Briefly describe the training program or exercise which prepares plant personnel for extreme cold weather conditions.
1.7	What plant personnel are specifically assigned or responsible for the plant winterization plan related to directing key activities before, during and after severe winter weather events?
1.8	To what level of corporate management is the plant winterization plan communicated?
1.9	What is the status of the your plant winterization plan?
1.11	What is your facility(ies) minimum starting temperature(s)?
1.12	What is your facility(ies) minimum design/operating temperature(s) and how long can the facility operate at that temperature?

Excerpt from Survey.

Completion of survey, as well as participation in RF cold weather program, is voluntary.

BEST PRACTICES

- Permanent Heated Buildings
- Heat Tracing
- Transmitter/Instrument Enclosures
- Insulation
- Compressed Air
- Pre-Staging Winterization Supplies
- Air Intake Filters
- Windbreaks
- Temporary Enclosures
- Targeted Training

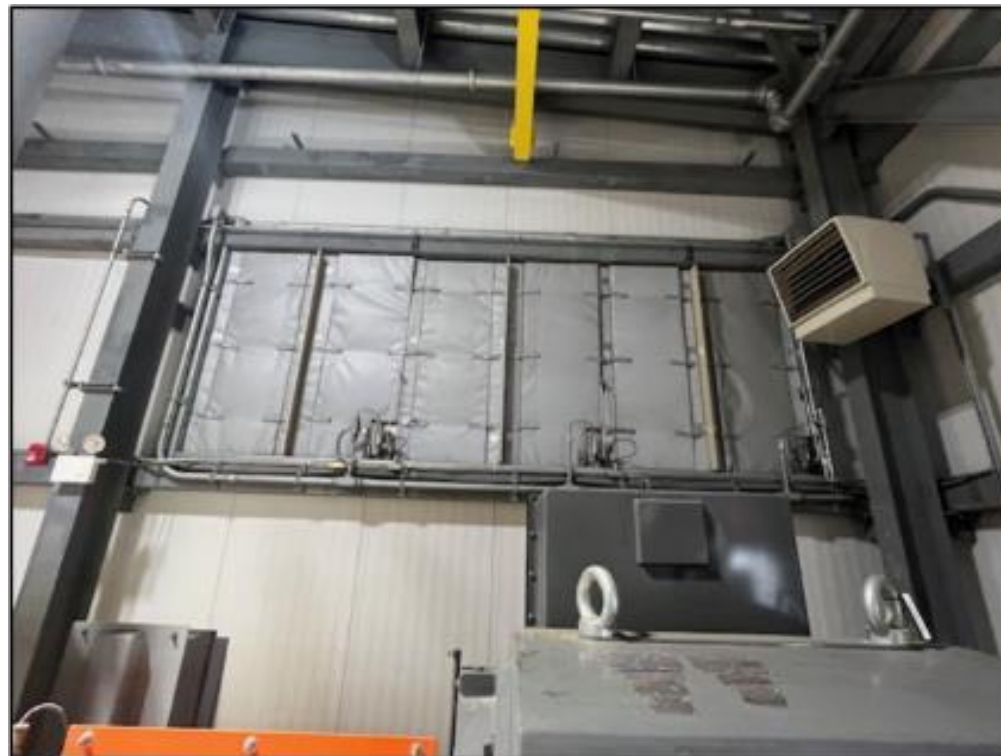


HEATED BUILDINGS

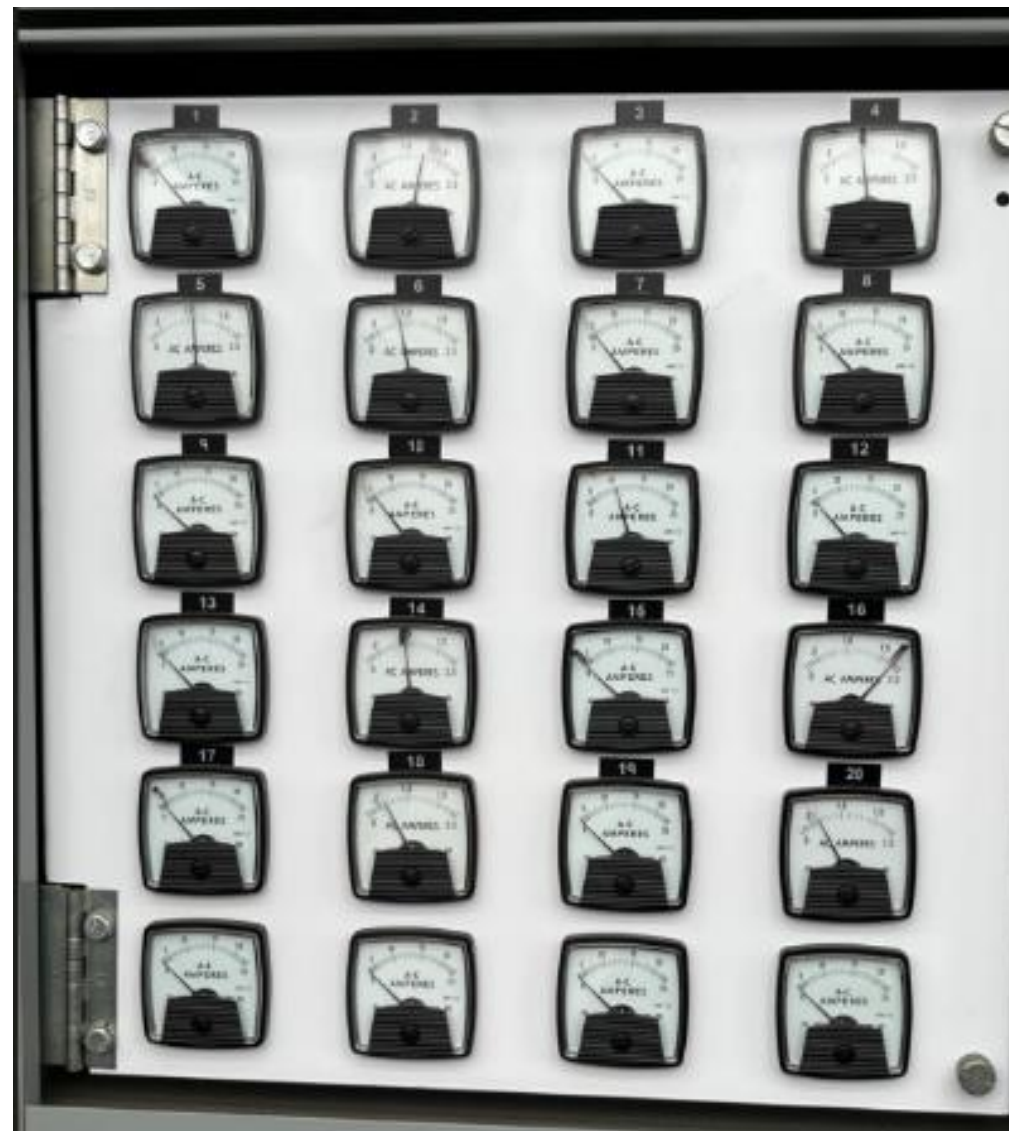
Transmitter covers near wall/door



Removable louver covers



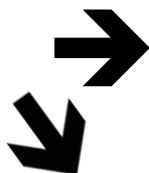
HEAT TRACING CIRCUIT LOAD DATA



PRE-WINTER HEAT TRACING CHECKS

PANEL #: U10 ACC/MCC EAST SIDE						
DATE:		10/1/2022				
CRKT #	DWG CUR OPER	ACT CUR OPER	MEGGER (M OHM)	Leakage Current	TYPE	work order#
1	10.3	6.4	550		MIQ	12941 (closed)
2	**	5.3	550		2 BOXES	
3	13	13.7	550		HTSX	
4	5.9*	12.7	550		HTSX&BOX	
5	17.2	15.1	550		HTSX	
6	*	4.1	550		BOX	
25	*	0.8	550		BOX	
26	5.1	8.4	550		HTSX	
27	3.7	4.5	550		HTSX	
28	*	15.1	0.7		BSX	new work order 15183
29	SPARE					
30	SPARE					
31	SPARE					
32	SPARE					
33	*	3.3	550		BSX	
34	SPARE				?	
35	SPARE					
36	SPARE					
*= Inst Encl on crkt with no drawing of Encl						
51%-70% of Dwg Cur Oper value						
>50% of Dwg Cur Oper value						

DIGITAL HEAT TRACING DATA TRANSMITTED TO THE CONTROL ROOM



END OF HEAT TRACING LIGHTS



TRANSMITTER/INSTRUMENT ENCLOSURES



INSULATION



COMPRESSED AIR



- Automatic removal of accumulated water inside the receiver tank
- Maintaining a low dewpoint in compressed air

PRE-STAGING WINTERIZATION SUPPLIES



AIR INTAKE FILTER AND COOLING TOWER FREEZING



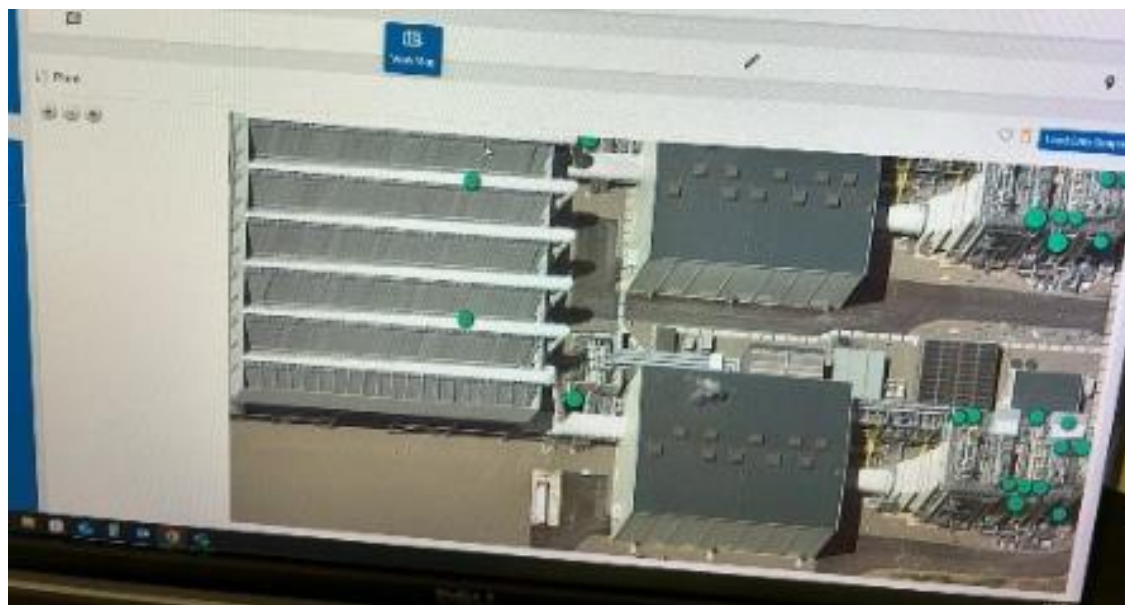
WINDBREAKS



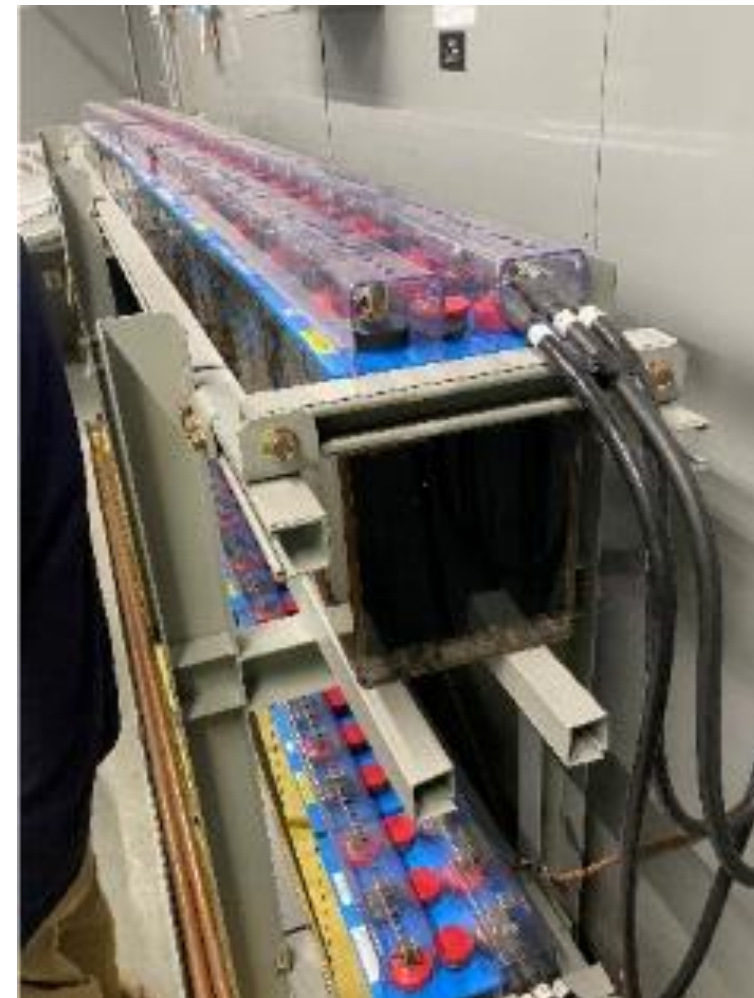
TEMPORARY, SEMI-PERMANENT OR SEASONAL ENCLOSURES



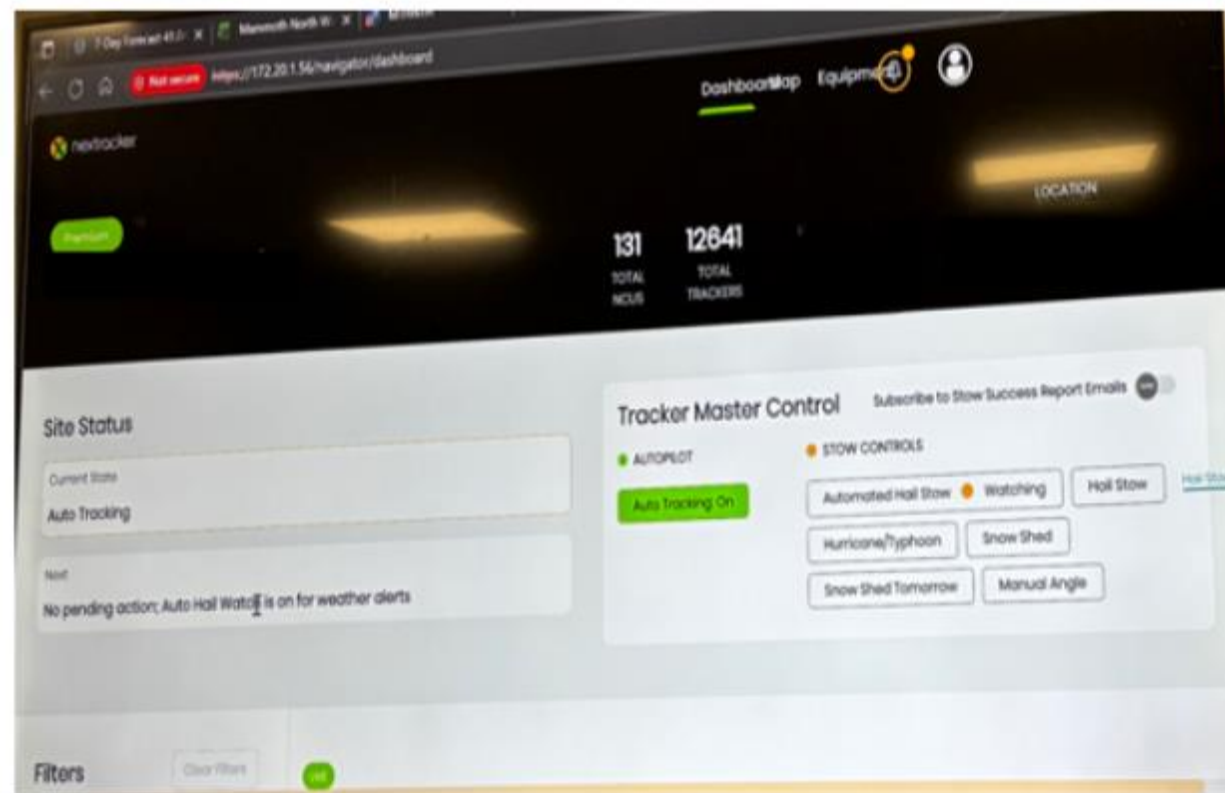
REMOTE SENSORS



SF6 BREAKERS AND STATION BATTERIES

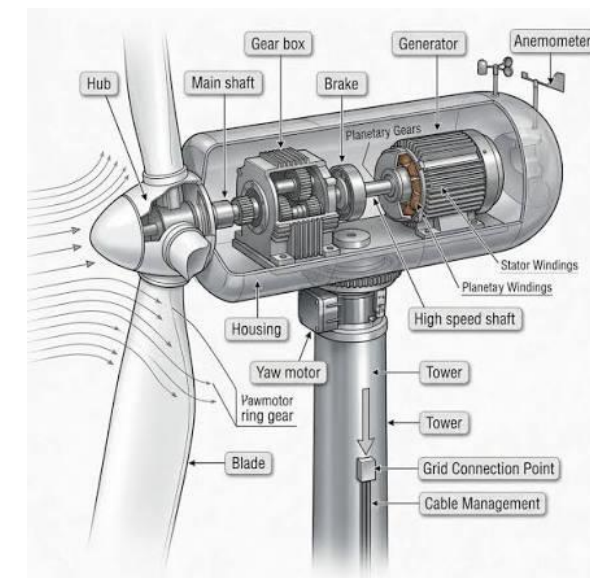


SOLAR TRACKER/CONTROLLER



Single-axis solar panel tracker/control with remote control panel

TRAINING - WIND TURBINE NACELLE



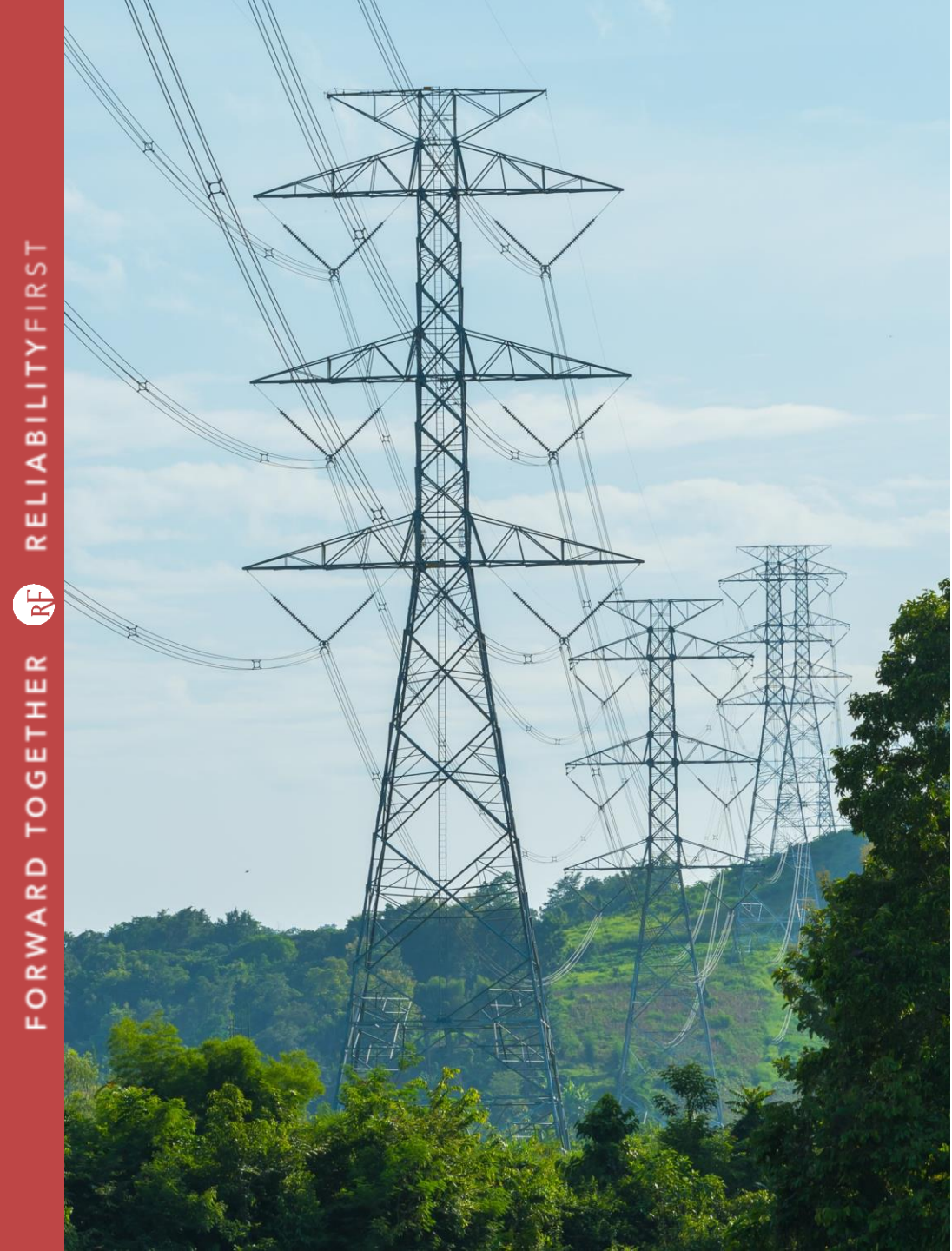
ADDITIONAL RESOURCES

- [CWW 2024-2025 After Action report](#)
- [CWW Preparedness and EOP-012-2 by Beth Rettig](#)
- [RF Weather and Environment Resources](#)
- [2025 NERC Cold Weather Small Group Advisory Session \(SGAS\) FAQ](#)
- [Assist Visit Request Form](#)

QUESTIONS & ANSWERS

Mike.Hughes@RFirst.org





THANK YOU

***Join us for our next Tech Talk -
August 17th 2-3:30 pm EST***

[Webinar Link](#)