

# NERC

NORTH AMERICAN ELECTRIC  
RELIABILITY CORPORATION

# Project 2021-07

Extreme Cold Weather Grid Operations, Preparedness and  
Coordination

Industry Webinar

November 16, 2023

**RELIABILITY | RESILIENCE | SECURITY**



## Administrative

- Review NERC Antitrust Compliance Guidelines and Public Announcement

## Agenda

- Project Background
- Standard Updates
- Implementation Plan
- Posting Update
- Q&A

It is NERC'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 that violates, or that 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 NERC participant and employee who may in any way affect NERC's compliance with the antitrust laws to carry out this commitment.

Participants are reminded that this meeting is public. Notice of the meeting was widely distributed. Participants should keep in mind that the audience may include members of the press and representatives of various governmental authorities, in addition to the expected participation by industry stakeholders.

Name	Entity
Kenneth Luebbert	Evergy, Inc.
Matthew Harward	Southwest Power Pool, Inc.
Venona Greaff	Oxy
Derek Kassimer	Pine Gate Renewables
Jonathan Davidson	City Utilities of Springfield
David McRee	Duke Energy
Thor Angle	Puget Sound Energy
Keith Smith	Orsted Onshore North American
Chad Wiseman	Newfoundland & Labrador Hydro
Bradley Pabian	Louisville Gas & Electric and Kentucky Utilities
Collin Martin	Oncor Electric Delivery, LLC
Jill Loewer	Utility Services
David Kezell	Electric Reliability Council of Texas, Inc. (ERCOT)
Ryan Salisbury	Oklahoma Gas & Electric
David Deerman	Southern Company Services

- Phase 2 includes the following Recommendations from the Joint Inquiry Report to be included in EOP-012:
  - 1a – GO identification of cold-weather-critical components and systems
  - 1b – GO identification and implementation of freeze protection measures on each of the elements identified per 1a
  - 1c – GO requirement to account for the effects of precipitation and wind

- Phase 2 includes the following directives from the FERC order to be included in EOP-012:
  - **Applicability:** Ensure the applicability section captures all BES generation resources needed for reliable operation and excludes only those generation resources not relied upon during freezing conditions.
  - **Generator Constraints to Implementing Winterization Requirements:** develop modifications related to generator-defined declarations of technical, commercial, or operational constraints that preclude a generator owner from implementing the appropriate freeze protection measures. Specifically, include auditable criteria on permissible constraints and to identify the appropriate entity that would receive the generator owners' constraint declarations.

- Phase 2 includes the following directives from the FERC order to be included in EOP-012:
  - Generator Capability Requirements: modifications to ensure that generators that are technically incapable of operating for 12 continuous hours (e.g., solar facilities during winter months with less than 12 hours of sunlight) are not excluded from complying with the standard. Also, directed modifications to the one-hour continuous operations requirement to better align with the stated purpose of the standard.
  - Corrective Action Plan deadlines: include a deadline or maximum period for the completion of corrective action plan measures for any requirement requiring the development of a corrective action plan to address capability or cold weather performance issues.
  - Implementation Plan: Require a shorter implementation period than five years post approval.



- FERC Order Directives
  - Modify EOP-012-1 to ensure requirements capture all BES resources needed for reliable operation during cold weather
  - Modify EOP-012-1 to exclude only those generation resources not relied upon during “freezing conditions”
  - Additional implementation time is not needed
    - NERC to ensure modified applicability section of EOP-012-1 is implemented as of effective date approved in the order

- SDT proposal to meet FERC directives
  - Functional Entities: Generator Owner and Generator Operator (no change from EOP-012-1)
  - Clarification of Facilities: “Generating Unit” refers to
    - a BES resource identified in the BES definition, Inclusion I2 and I4
      - I2            Generating resource(s) including the generator terminals through the high-side of the stepup transformer(s) connected at a voltage of 100 kV or above with: a) Gross individual nameplate rating greater than 20 MVA, or b) Gross plant/facility aggregate nameplate rating greater than 75 MVA
      - I4            Dispersed power producing resources that aggregate to a total capacity greater than 75 MVA (gross nameplate rating), and that are connected through a system designed primarily for delivering such capacity to a common point of connection at a voltage of 100 kV or above
    - Blackstart Resource identified in the BES definition, Inclusion I3
  - Exclusions not prescribed in Applicability section
    - Any exemption moved to individual standard requirements in EOP-012-2

- **1a:** To require Generator Owners to identify cold-weather-critical components and systems for each generating unit.
  - Cold-weather-critical components and systems are those which are susceptible to freezing or otherwise failing due to cold weather, and which could cause the unit to trip, derate, or fail to start.
- **1b:** To require Generator Owners to identify and implement freeze protection measures for the cold-weather-critical components and systems.
  - The Generator Owner should consider previous freeze-related issues experienced by the generating unit, and any corrective or mitigation actions taken in response.

- Generator Owners Identify Cold Weather Critical Components (Recommendation 1a)
  - NERC Glossary Term
    - To address this recommendation, the SDT created the defined term ***Generator Cold Weather Critical Component***
      - Any generating unit component **and/or system**, or associated Fixed Fuel Supply Component, that is under the Generator Owner’s control, and is susceptible to freezing issues, the occurrence of which would likely lead to a Generator Cold Weather Reliability Event. **This definition excludes any component or associated Fixed Fuel Supply Component located inside a permanent building with a heating source that regularly maintains the space at a temperature above 32 degrees Fahrenheit (0 degrees Celsius).**
  - R4 – All GO’s must have cold weather preparedness plan(s) to include:
    - R4.3 Documentation identifying Generator Cold Weather Critical Components
      - *Originally included in EOP-012-1 as R3.2*

- Generator Owners implement freeze protection measures (Recommendation 1b)
  - R4 – All GO’s must have cold weather preparedness plan(s) to include:
    - R4.4 Documentation of freeze protection measures implemented on Generator Cold Weather Critical Components which **includes** measures used to reduce the cooling effects of wind determined necessary by the Generator Owner to protect against heat loss, and where applicable, the effects of freezing precipitation (e.g., sleet, snow, ice, and freezing rain).
      - *Originally included in EOP-012-1 as R3.3*

- To revise EOP-011-2, R7.3.2, to require Generator Owners to account for the effects of precipitation and the accelerated cooling effect of wind when providing temperature data.
  - “require GOs to understand how precipitation and the accelerated cooling effect of wind limit their generating unit’s performance.”
  - “The Event demonstrated that ambient temperatures alone do not serve as a basis to predict whether a generating unit can perform during predicted cold weather.”
  - “Preparing a generating unit for all potential effects of a cold weather event, whether induced by cold ambient temperatures alone, or cold ambient temperatures plus wind, and ice, can increase the likelihood that the generator will remain operational throughout the event.”

- Generator Cold Weather Reliability Event

- Proposed Revised Definition:

- Generator Cold Weather Reliability Event – One of the following events for which the apparent cause(s) is due to freezing of equipment **or impacts of freezing precipitation (e.g., sleet, snow, ice, and freezing rain) on equipment** within the Generator Owner’s control, and the dry bulb temperature at the time of the event was at or above the Extreme Cold Weather Temperature:
  - (1) a forced derate of more than 10% of the total capacity of the unit, but not less than 20 MWs for longer than four hours in duration;
  - (2) a start-up failure where the unit fails to synchronize within a specified start-up time; or
  - (3) a Forced Outage.

- EOP-012-2
  - R1.2.2. (proposed modification)
    - Generating unit(s) minimum:
      - Design temperature, and if available, the concurrent wind speed and precipitation;
      - Historical operating temperature at least one hour in duration, and if available, the concurrent wind speed and precipitation; or
      - Current cold weather performance temperature determined by an engineering analysis, which includes the concurrent wind speed and precipitation.



- EOP-012-2
  - R4.4 (approved, moved from EOP-012-1 R3.3)
    - Documentation of freeze protection measures implemented on Generator Cold Weather Critical Components **which includes measures used to reduce the cooling effects of wind determined necessary by the Generator Owner to protect against heat loss, and where applicable, the effects of freezing precipitation (e.g., sleet, snow, ice, and freezing rain);**
  - Requirement R4 does not require GOs to install new freeze protection measures to reduce the cooling effects of wind

## FERC Directive from Paragraph 66 of Order:

- “[W]e direct NERC...to develop and submit modifications to Reliability Standard EOP-012-1 Requirements R1 and R7 to address concerns related to the ambiguity of generator-defined declarations of technical, commercial, or operational constraints that preclude a generator owner from implementing the appropriate freeze protection measures and to ensure that the constraint declarations may not be used to opt-out of compliance with the Standard or obligations set forth in a corrective action plan.
- Specifically, we direct NERC to include auditable criteria on permissible constraints and to identify the appropriate entity that would receive the generator owners’ constraint declarations under EOP-012-1 Requirements R1 and R7.”

To address industry comments and the FERC directive, the SDT created a new NERC Glossary term, Generator Cold Weather Constraint

- **Generator Cold Weather Constraint** – Any condition that would preclude a Generator Owner, using good utility practice,<sup>1</sup> from implementing freeze protection measures on one or more Generator Cold Weather Critical Components.
  - The phrase “**good utility practice**” is being used in its common understanding. More information on this can be found in the Technical Rationale.

## Good Utility Practice

The SDT relied upon “good utility practice” which has a common understanding as used in the pro forma OATT as:

*Any of the practices, methods, and acts engaged in or approved by a significant portion of the electric utility industry during the relevant time period, or any of the practices, methods, and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety, and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather to be acceptable practices, methods, or acts generally accepted in the region, including those practices required by Federal Power Act section 215(a)(4).*

## Examples from Technical Rationale Document:

- Warranties that would be voided by application of a freeze protection measure
- Accelerated retirement of an existing generating unit
- Cancellation of new generating unit(s)
- Reduction in summer capability
- Introduces an increased personnel or safety risk
- Introduces a risk of noncompliance with environmental regulations
- Compromised ability to provide ancillary services
- Technology not utilized by a significant portion of the electric utility industry

## Generator Cold Weather Constraint(s) Process

### R 7.4

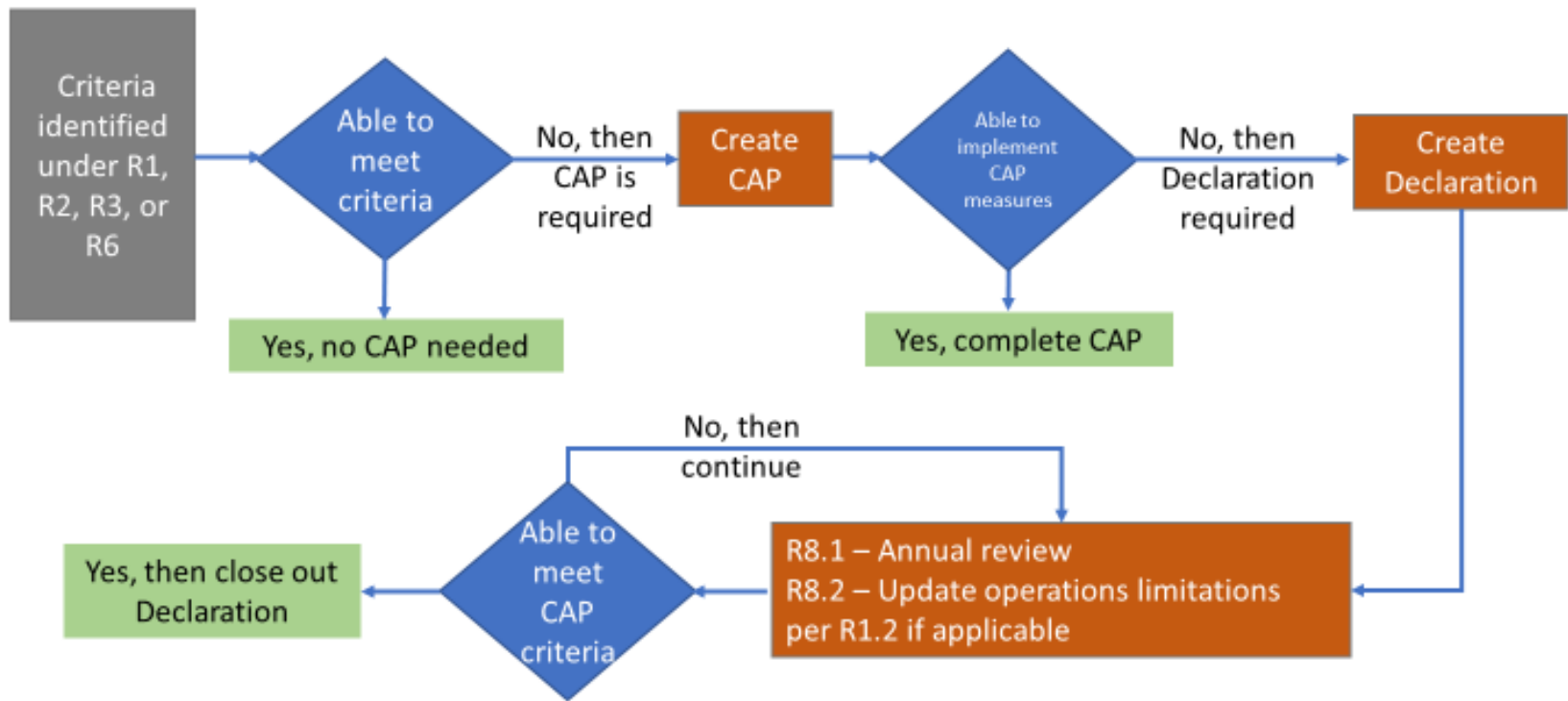
Document in a declaration, with justification, any Generator Cold Weather Constraint that precludes the Generator Owner from implementing actions contained within the Corrective Action Plan.

## Generator Cold Weather Constraint(s) Process

### R8

- 8.1 Perform an annual review and update the Generator Cold Weather Constraint declaration as needed;
- 8.2 Update the operating limitations associated with capability and availability per Part 1.2 if applicable; ~~and~~
- ~~8.3 Provide the Generator Cold Weather Constraint declaration to the Balancing Authority in the format and at the interval specified by the Balancing Authority.~~

## Generator Cold Weather Constraint - Declaration Process (EOP-012-2)





- CAPs may be required by R1, R2, R3, or R6 to provide new or corrected freeze protection measures
  - R1: Any new measures associated with 5-year review of ECWT
  - R2: New generation cold weather capability
  - R3: Existing generation cold weather capability
  - R6: Correction of any generation following Generator Cold Weather Reliability Event
- FERC directive to establish requirements for duration of CAP timelines
- Establishing requirements for implementation timelines reduces overall BES cold weather risk by ensuring improvements are made in a timely fashion

## Implementation of Corrective Action Plans

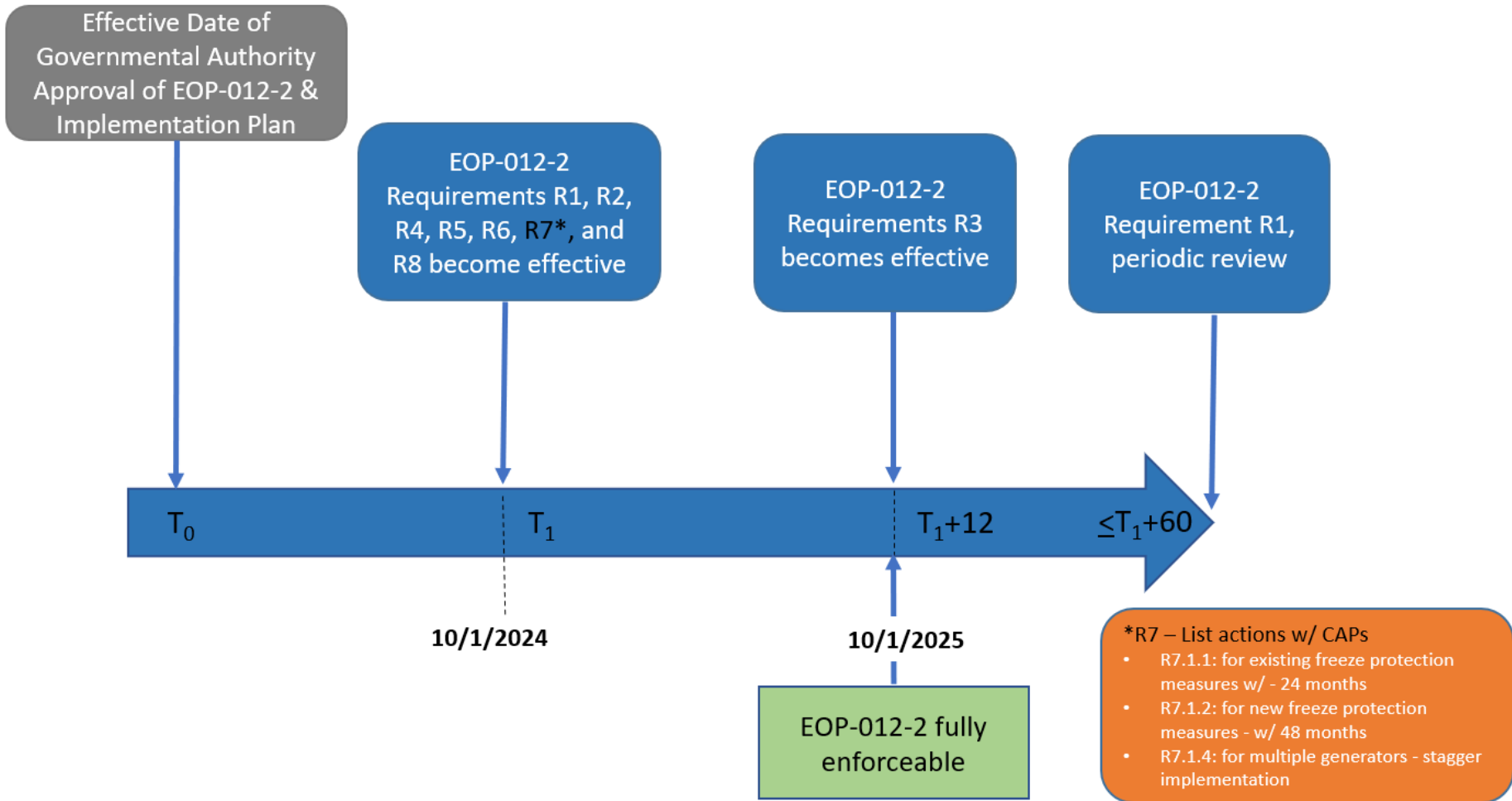
- Requires CAP to have a timetable for execution.
  - Actions that address existing equipment or freeze protection measures must be completed within 24 months of development of the CAP.
  - Actions that require new equipment or freeze protection measures must be completed within 48 months of development of the CAP.
  - List updates to the plan to identify additions to critical components and their freeze protection measures
  - CAPs need to stagger implementation
- Generator Owners may declare a Generator Cold Weather Constraint (see definition) if unable to implement actions in the CAP

- In EOP-012-1, FERC directed NERC to modify the standard to ensure that generators that are technically incapable of operating for 12 continuous hours (e.g., solar facilities during winter months with less than 12 hours of sunlight) are not excluded from complying with the standard.
- In EOP-012-2 Draft 2, the SDT did not make any significant changes from EOP-012-2 Draft 1 that would change the capability requirements as directed by FERC.
- As stated in Footnotes 2 or 3, only those generators that do not self-commit or are called upon during emergencies are exempt from R2 or R3 which is dependent on their commercial dates of operation.

- In Requirement R2 of Draft 2, the SDT better organized the capability requirements for freeze protection for units becoming commercial after 10/1/2027
  - Units will have freeze protection so they can operate at their Extreme Cold Weather Temperature at 20 mph winds for 12 hours or the maximum operational duration if they are an intermittent resource with less than 12 hours of operation
  - CAP needed if unit does not have these freeze protection measures in place on October 1, 2027

- FERC directed NERC to revise EOP-012 to require a **shorter** implementation period and **staggered** implementation for unit(s) in a generator owner's fleet
  - Such an approach will reduce reliability risks more quickly. Although we are giving NERC the discretion to determine what the effective date should be shortened to, we also emphasize that industry has been aware of and alerted to the need to prepare their generating units for cold weather since at least 2011.
  - NERC should consider the amount of time that industry has already had to implement freeze protection measures when determining the appropriate shorter implementation period.
- SDT incorporated these changes w/ the Requirement language instead of w/the Implementation Plan
  - R7 details the timeframes for CAP development and implementation

- Effective 10/1/2024
  - R1 - ECWT and unit cold weather information
  - R2 - Applicable to generating units with a commercial operation date **on or after October 1, 2027**
  - R4 - Cold Weather Preparedness Plan (CWPP)
  - R5 - Annual training on CWPP
  - R6 - If a Generator Cold Weather Reliability Event (GCWRE) occurs, develop a CAP **w/ 150 days or July 1**, whichever is earlier
  - R7 – Timelines for the completion of Corrective Action Plans
  - R8 – Generator Cold Weather Constraint declarations
- Effective 10/1/2025
  - R3 - Applicable to generating unit(s) in commercial operation **prior to October 1, 2027**



- Documents Included
  - EOP-012-2
  - Implementation Plan
  - Technical Rationale for EOP-012-2
  - Mapping Document
- Posting Date: October 27 – November 30, 2023
- [Project Page](#)



- EOP-012 Respond to Comments
  - Team Meetings in December 2023 and January 2024
  - Target Final Ballot in January 2024
  - FERC Deadline February 15, 2024
- Point of Contact
  - Alison Oswald, Manager of Standards Developer
    - [Alison.oswald@nerc.net](mailto:Alison.oswald@nerc.net) or call 404-446-9668
- Webinar Slides and Recording Posting
  - Within 48-72 hours of webinar completion
  - Will be available in the Standards, Compliance, and Enforcement Bulletin

- Informal Discussion
  - Via the Questions and Answers Objectives feature
  - Chat only goes to the host, not panelists
  - Respond to stakeholder questions
- Other
  - Some questions may require future team consideration
  - Please reference slide number, standard section, etc., if applicable
  - Team will address as many questions as possible
  - Webinar and chat comments are not a part of the official project record
  - Questions regarding compliance with existing Reliability Standards should be directed to ERO Enterprise compliance staff, not the SDT



# Questions and Answers

A stylized map of North America is centered on the slide. The map is divided into three horizontal color bands: a light purple band at the top covering Canada, a dark blue band in the middle covering the United States, and a light grey band at the bottom covering Mexico. The text 'Webinar has ended – Thank You' is overlaid on the dark blue band.

**Webinar has ended – Thank You**