

Documents relatifs aux normes de fiabilité

Séminaire annuel sur la fiabilité - 3e édition

Septembre 2023

Régie de l'énergie Québec



Plan de la présentation

1. Processus d’adoption et de mise en vigueur d’une norme au Québec
2. Processus de consultation préalable et mécanisme de dépôt
3. Justification technique et guide d’application d’une norme de fiabilité
4. Période de questions

Objectif : S’adapter aux nouvelles façons de faire de la NERC*, qui évoluent.
Présenter les documents pertinents pour la surveillance de la conformité aux normes.

***NERC – North American Electric Reliability Corporation**

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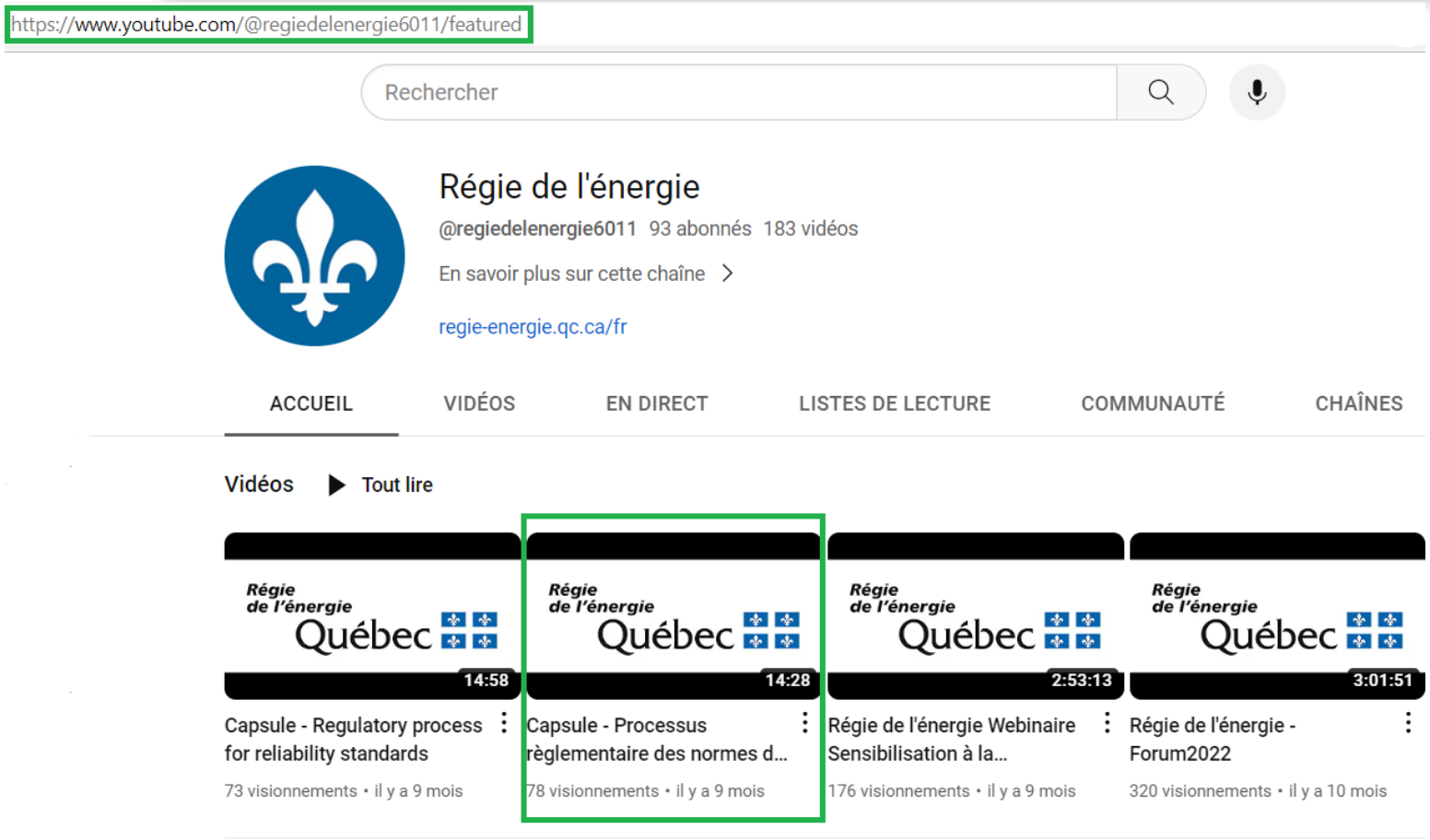
1. Processus d'adoption et de mise en vigueur d'une norme au Québec



Capsule vidéo disponible sur le site [Régie de l'énergie - YouTube]



1. Processus d'adoption et de mise en vigueur d'une norme au Québec

Regroupement des activités financées à partir du compte de sanctions à la section [Entités visées – normes de fiabilité]
(anciennement section surveillance)

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2. Processus de consultation préalable et mécanisme de dépôt

- Processus proposé dans le dossier R-3699-2009 et modifié depuis afin de tenir compte des enjeux des dossiers règlementaires d'adoption de normes (par exemple: le cas des normes de performance).

- Faits saillants du *Processus de consultation préalable au dépôt des normes de fiabilité pour adoption par la Régie de l'énergie* :
  - La consultation préalable est le premier forum où les entités visées peuvent commenter le texte des normes;
  - Liste des documents que le coordonnateur de la fiabilité* (CF) est responsable de produire en amont du dépôt à la Régie, aux fins de la consultation préalable.

***Direction Principale – Contrôle des mouvements d'énergie et exploitation du réseau d'Hydro-Québec (DPCMÉER)**



2. Processus de consultation préalable et mécanisme de dépôt

- Faits saillants du *Mécanisme de dépôt des normes de fiabilité* :
  - Liste des documents que le CF est responsable de déposer lors de l'ouverture d'un dossier règlementaire d'adoption de normes;
  - Notes explicatives sur la préséance des versions et sur les attestations de traduction.

- Ces deux documents ont été mis à jour dans la phase 2 du dossier règlementaire R-4152-2021:
  - Pièce B-0071 – Mécanisme de dépôt des normes de fiabilité ;
  - Pièce B-0073 – Processus de consultation préalable au dépôt des normes de fiabilité pour adoption par la Régie de l'énergie.



3. Justification technique et guide d'application d'une norme de fiabilité

- Conformément à une étude menée par un groupe de conseil sur la justification technique, en 2017, la NERC élabore deux documents en lien avec ses normes de fiabilité :
  - justification technique; et
  - guide d'application.

- Avec cette approche, il y a une meilleure séparation entre les notions techniques décrites dans la norme et les méthodes de mise en œuvre de la norme.



3. Justification technique et guide d'application d'une norme de fiabilité

Justification technique

- Fournir à l'équipe de rédaction de la norme un mécanisme pour expliquer la justification de la norme de fiabilité associée et de fournir toute autre information technique pertinente;
- Faciliter la compréhension des éléments techniques de la norme;
- Déposée à titre informatif seulement, n'est pas aussi restrictive que la norme;
- Contrairement au guide, elle n'est pas approuvée/entérinée par l'Entreprise Electric Reliability Organisation (ERO).

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3. Justification technique et guide d'application d'une norme de fiabilité

Guide d'application

- Fournir aux entités visées des exemples ou des approches de mise en œuvre d'une norme;
- Développé, la plupart du temps, pour une norme/exigence spécifique mais également pour un sujet (à la section «General Guidance»);
- Développé par l'industrie (organisations pré-qualifiées et équipe de rédaction de la norme) pour l'industrie;
- Les entités visées peuvent consulter le guide en version préliminaire («*proposed*»), mais pour s'y fier, le guide doit être approuvé/entériné par l'Entreprise ERO par l'entremise du processus d'approbation, décrit dans le document Politique relative aux lignes directrices sur la conformité, ou «Compliance Guidance Policy».



3. Justification technique et guide d'application d'une norme de fiabilité

Exemple : projet 2020-04 (CIP-012-2)
Les deux documents sont déposés et des modifications y sont apportées.

Draft 2 **CIP-012** Clean | Redline to Last Posted Implementation Plan **Supporting Materials** Unofficial Comment Form (Word) **CIP-012 Technical Rationale** Clean | Redline to Last Posted **VRF/VSL Justifications** **Implementation Guidance** Clean | Redline to Last Approved	Additional Ballot and Non-binding Poll Updated Info Info Vote	01/14/22 – 01/24/22	**Ballot Results** CIP-012-2 Implementation Plan **Non-Binding Poll Results** CIP-012-2	
	Comment Period Info Submit Comments	11/30/21 – 01/24/22	Comments Received	Consideration of Comments
Draft 1 **CIP-012** Clean | Redline Implementation Plan **Supporting Materials** Unofficial Comment Form (Word) **Technical Rationale** CIP-012 **VRF/VSL Justifications**	Initial Ballot and Non-binding Poll Info Vote	05/31/21 – 06/09/21	**Ballot Results** CIP-012-2 Implementation Plan **Non-Binding Poll Results** CIP-012-2	
	Comment Period Info Submit Comments	04/26/21 – 06/09/21	Comments Received	Consideration of Comments

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3. Justification technique et guide d'application d'une norme de fiabilité

- Premier dossier règlementaire où les deux documents ont été déposés séparément : R-4152-2021. Le dépôt de la justification technique et du guide d'application de la norme CIP-012-1 a eu lieu en:

    1. juin 2021, pour la version anglaise (B-0016)

    2. octobre 2021, pour la version française (B-0020)

Des délais sont à prévoir lors du dépôt de la justification technique et du guide d'application !



3. Justification technique et guide d'application d'une norme de fiabilité

En cas d'indisponibilité au moment du dépôt à la Régie, comment le guide peut être retrouvé une fois entériné par l'ERO?

1. Courriel transmis aux entités visées par le CF annonçant de la disponibilité du document sur le site du CF

Disponibilité d'un nouveau guide d'application pour la norme de fiabilité PRC-019-2

(information caviardée) de la part de >Coordonnateur de la fiabilité <fiabilite@hydro.qc.ca>

À >Coordonnateur de la fiabilité

Répondre | Répondre à tous | Transférer

lun. 2023-07-17 13:39

Avertissement: Ce message provient de l'extérieur de la Régie et pourrait être malicieux. Attention aux hyperliens et aux pièces jointes.

Bonjour,

Le Coordonnateur souhaite vous informer que le Comité technique sur la fiabilité et la sécurité RSTC) de la NERC a publié un Guide d'application pour les exigences E1 et E2 de la norme de fiabilité PRC-019 – Coordination des caractéristiques, des dispositifs de régulation de tension et des protections des groupes ou des centrales de production. Ce Guide d'application, entériné par l'ERO, est disponible sur le site du Coordonnateur au lien suivant : https://www.hydroquebec.com/data/transenergie/pdf/prc-019-2-e1-e2-guide-dapplication.pdf.

Cordialement,

Coordonnateur de la fiabilité
Direction Principale, Contrôle des mouvements d'énergie et Exploitation des réseaux
Courriel : fiabilite@hydro.qc.ca
Site internet : http://www.hydroquebec.com/coordonnateur-fiabilite/

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3. Justification technique et guide d'application d'une norme de fiabilité

2. Document disponible sous l'hyperlien de la norme, dans ce cas PRC-019-2, à la page des normes sur le site du CF: [Normes de fiabilité en vigueur - Coordonnateur de la fiabilité | Hydro-Québec (hydroquebec.com)]

PRC-019-2 - Coordination des caractéristiques, des dispositifs de régulation de tension et des protections des groupes ou des centrales de production

- Norme applicable au Québec [PDF]
- Norme applicable aux États-Unis [PDF – en anglais seulement]
- Fonctions visées : GO, TO
- Statut au Québec : En vigueur depuis le 1 janvier 2021
- Statut aux États-Unis : En vigueur depuis le 1 juillet 2016
- Décision de la Régie de l'énergie : D-2020-131 [PDF]
- Numéro de dossier à la Régie de l'énergie : R-4070-2018
- Consultation publique des entités au Québec : QC-2017-02
- Guide d'application [PDF]

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3. Justification technique et guide d'application d'une norme de fiabilité

3. Annonce de la NERC dans son Bulletin des normes, de la conformité et de l'application pour la semaine du 6 février 2023: https://www.nerc.com/pa/comp/news/Documents/2023_02_06_StandardsCompliance_Bulletin.pdf

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STANDARDS NEWS

NEW **Webinar Resources Posted**
NERC posted the slide presentation and recording from the January 31 2023 Standard Processes Manual Revisions Industry Webinar.

Quick Links
Register in the SBS
Projected Standards Posting Schedule
Project Tracking Spreadsheet
2021–2023 Reliability Standards Development Plan
Quality Review Application
One-Stop Shop (Status, Purpose, Implementation Plans, FERC Orders, RSAWs)
CIP Standards Efficiency Review
Submit Questions or Feedback

GENERAL COMPLIANCE AND ENFORCEMENT NEWS

NEW **Compliance Guidance Update**
There is one new ERO Enterprise-endorsed Implementation Guidance document posted on the Compliance Guidance web page: PRC-019-2 R1_R2 Generator Voltage Control Coordination (RSTC).

Quick Links
Compliance Monitoring & Enforcement Program One-Stop Shop
ERO Enterprise Program Alignment Process
Consistency Reporting Tool (EthicsPoint)
Risk-Based Registration Initiative
Reliability Standard Audit Worksheets
Enforcement & Mitigation: Enforcement Actions
Align Project

OTHER NEWS

NEW **NERC News Posted**
NERC's monthly newsletter is now available for January.

Standards, Compliance, and Enforcement Bulletin | February 6–12, 2023

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3. Justification technique et guide d'application d'une norme de fiabilité

Exemples : guides d'application des normes CIP-004 et CIP-011

Sur la page Compliance Guidance du site de la NERC pour le guide d'application des normes CIP-004 et CIP-011.

Proposed Implementation Guidance (1)

CIP (1)

	CIP-004-7 R6 and CIP-011-3 R1 - Cloud Solutions for BCSI (RSTC)	8/15/2023	CIP

General Guidance

Type	Title	Date	Standards Family
	MOD-033-1 Methodology Reference Manual (NATF)	8/7/2017	MOD
	System Operating Limit Definition and Exceedance White Paper	3/24/2017	TOP
	CIP Version 5 FAQ	10/28/2016	CIP
	CIP-002-5.1 BES Cyber Assets Lessons Learned	10/28/2016	CIP
	CIP-002-5.1 Far-end Relay Lessons Learned	10/28/2016	CIP
	CIP-002-5.1 Generation Interconnection Lessons Learned	10/28/2016	CIP
	CIP-002-5.1 Generation Segmentation Lessons Learned	10/28/2016	CIP
	CIP-002-5.1 Grouping of BES Cyber Systems Lessons Learned	10/28/2016	CIP
	Mixed Trust EACMS Authentication Lessons Learned	10/28/2016	CIP
	TPL-007-1 Transformer Thermal Impact Assessment White Paper	10/28/2016	TPL



3. Justification technique et guide d'application d'une norme de fiabilité

Annonce de la NERC dans son Bulletin des normes, de la conformité et de l'application pour la semaine du 21 août 2023: https://www.nerc.com/pa/comp/news/Documents/2023_08_21_StandardsCompliance_Bulletin.pdf

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GENERAL COMPLIANCE AND ENFORCEMENT NEWS

NEW **Compliance Guidance Update**
NERC has posted one new proposed Implementation Guidance document—CIP-004-7 R6 and CIP-011-3 R1 - Cloud Solutions for BCSI (RSTC)—to the Compliance Guidance web page.

Quick Links
Compliance Monitoring & Enforcement Program One-Stop Shop
ERO Enterprise Program Alignment Process
Consistency Reporting Tool (EthicsPoint)
Risk-Based Registration Initiative
Reliability Standard Audit Worksheets
Enforcement & Mitigation: Enforcement Actions
Align and ERO SEL

NEW **Align Planned Maintenance**
The ERO Enterprise has scheduled the Align system to be down for planned maintenance. The Align system will be down for scheduled maintenance starting from August 23, 2023, at 6:00 p.m. Eastern (3:00 p.m. Pacific) through August 23, 2023, at 10:00 p.m. Eastern (7:00 p.m. Pacific). This planned outage only affects Align. Information regarding this outage will also be displayed on the My Align News & Update section of Align, and the Align and SEL webpage.

The ERO Enterprise has scheduled the Align system to be down for planned maintenance. The Align system will be down for scheduled maintenance starting from August 26, 2023, at 10:00 p.m. Eastern (7:00 p.m. Pacific) through August 27, 2023, at 10:00 a.m. Eastern (7:00 a.m. Pacific). This planned outage only affects Align. Information regarding this outage will also be displayed on the My Align News & Update section of Align, and the Align and SEL webpage.

Align Release Notes Posted
During the August 17, 2023 maintenance outage, the Align system will be deploying modifications to correct existing functionality or to improve user experience. The modifications include but limited to the following: ability for Registered Entities to print from all the forms in the Enforcement and Mitigation modules (draft finding record, finding records, mitigation records, notification records, request for information, etc.); ability to delete risk factor questions; ability to create Periodic Data Submittal for TPL-001-5.1; update due dates for Inherent Risk Assessment Questionnaires. The Release Notes provide details on the specific changes and indicate the users affected, as well as if any training materials need to be modified. The detailed release notes can be found on the Align and SEL web page under the Release Materials section.

Standards, Compliance, and Enforcement Bulletin | August 21–27, 2023

Régie de l'énergie Québec



3. Justification technique et guide d'application d'une norme de fiabilité

Utilité de la justification technique dans la surveillance

La justification technique fournit de l'information supplémentaire quant aux changements apportés au texte de la norme :

- Explique/justifie pourquoi une ou des exigences ont été retirées, ajoutées ou transférées des autres normes, le cas échéant;
- Explique/justifie pourquoi le texte de l'exigence a été modifié;
- Explique/justifie pourquoi une nouvelle norme doit être développée.



3. Justification technique et guide d'application d'une norme de fiabilité

Utilité du guide d'application dans la surveillance

Le guide fournit des exemples pouvant être adaptés afin de répondre aux besoins de l'entité visée en ce qui a trait à la mise en œuvre d'une norme :

- Les exemples sont à titre informatif et ne sont pas les seuls à prendre en considération ou à être utilisés pour démontrer la conformité.
- Ne pas tomber dans le piège : j'ai suivi le guide à la lettre, alors je suis conforme !
  - ✓ La conformité est déterminée en fonction de faits, de circonstances et de configurations de réseau spécifiques à l'entité.
  - ✓ Cependant, le fait qu'une entité met en œuvre ces exemples pour se conformer à la norme, pourrait être un facteur atténuant lors du traitement de la non-conformité qui en résulterait.



3. Justification technique et guide d'application d'une norme de fiabilité

Bonus: guide de pratique relatif à la surveillance et à l'application («*CMEP Practice Guide*»)

Les guides de pratique sont disponibles à la section «*CMEP Practice Guidance*» de la page Compliance Guidance du site de la NERC.

CMEP Practice Guides are developed solely by the ERO Enterprise to reflect the independent, objective professional judgment of ERO Enterprise CMEP staff, and, at times, may be initiated following policy discussions with industry stakeholders. Following development, they are posted for transparency on the NERC website.

For additional information, please contact complianceguidance@nerc.net.

Implementation Guidance

Type	Title	Date	Standards Family

ERO Enterprise-Endorsed Implementation Guidance (23)

ERO Enterprise-Endorsed Implementation Guidance for Inactive Reliability Standards (1)

Proposed Implementation Guidance (1)

General Guidance

Type	Title	Date	Standards Family
	MOD-033-1 Methodology Reference Manual (NATF)	8/7/2017	MOD

CMEP Practice Guides

Type	Title	Date	Standards Family
	CMEP Practice Guide Phased Implementation Completion Percentages	3/24/2017	
	CMEP Practice Guide: Deference for Implementation Guidance	5/20/2016	
	CMEP Practice Guide TOP-001-4 and IRO-002-5 Redundant and Diversely Routed	7/11/2018	TOP
	CMEP Practice Guide Calendar Month Annual	4/19/2019	
	CMEP Practice Guide BES Cyber System Information	4/26/2019	CIP
	CMEP Practice Guide Evaluation of Facility Ratings and System Operating Limits	6/17/2020	FAC

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3. Justification technique et guide d'application d'une norme de fiabilité

Utilité du guide de pratique dans la surveillance

- Peut comprendre des questions que les auditeurs posent durant un audit de conformité.
- Fournit le type d'information que les auditeurs vérifieront et sur laquelle ils concentreront leurs efforts durant un audit de conformité.
- Fournit de l'information sur comment vérifier la conformité d'une entité visée aux plans de mise en œuvre échelonnées avec pourcentages d'achèvement.



3. Justification technique et guide d'application d'une norme de fiabilité

En conclusion,
les informations additionnelles fournies par les documents présentés peuvent aider les entités visées à bâtir une bonne et solide culture de conformité.



4. Période de questions

Merci de votre attention !

Régie de l'énergie Québec

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ERO Event Analysis Program

An Overview

Matt Lewis and Brad Gordon

Regie de l'energie Annual Reliability Seminar

September 14, 2023

RELIABILITY | RESILIENCE | SECURITY



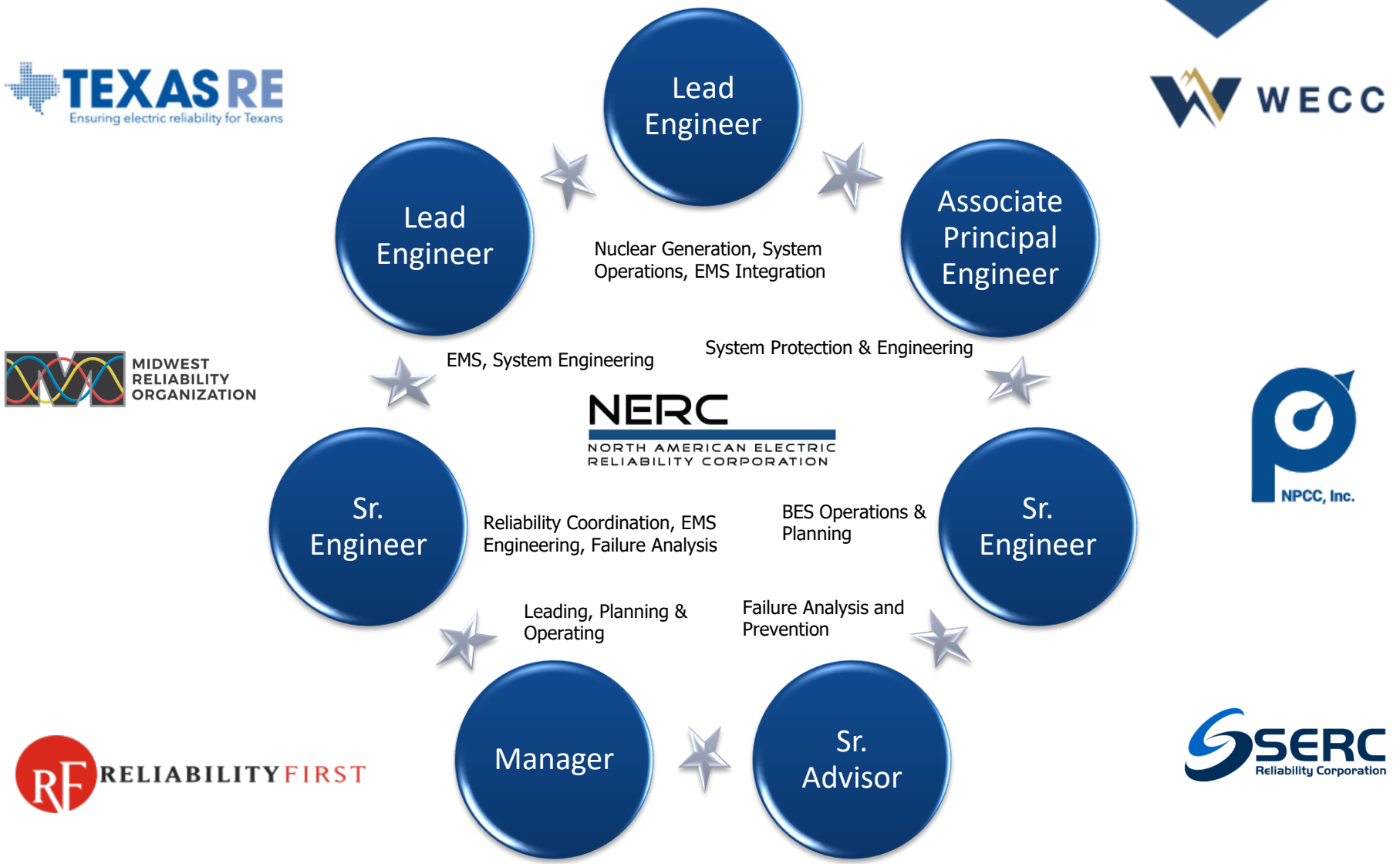

ERO EA Program Take-Aways

- Team effort: ERO Enterprise with industry
- Intrinsic and essential: to ERO statutory requirements
- Focused: analyzing system interactions to determine performance impact
- Results: inform across the reliability spectrum
- Lessons learned: facilitates mutual industry sharing and learning
- Industry participation: necessary for BES performance improvement

Shared Reliability Value

- Differing perspectives and expertise enhance event reviews, resulting in a more complete understanding of system risk.
- The regulator is able to inform and address risk(s) in a more precise manner when working cross-functionally.
- A focused effort ultimately rewards good system performers through reduced compliance touchpoints and allows concentrated effort in areas where industry needs it.
- A team understanding of the true risk leads to reliability partnerships with industry ultimately reducing the compliance spot check and/or audit burden.

Event Analysis Team



A Statutory Activity

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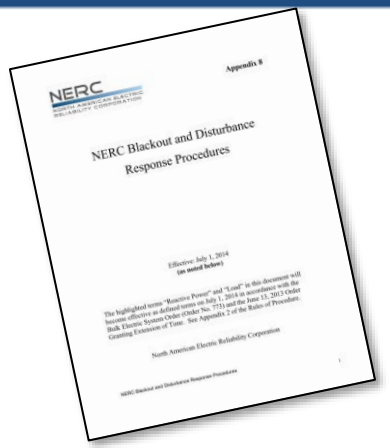
Rules of Procedure

Effective: May 19, 2022


NERC

Appendix 8

NERC Blackout and Disturbance Response Procedures

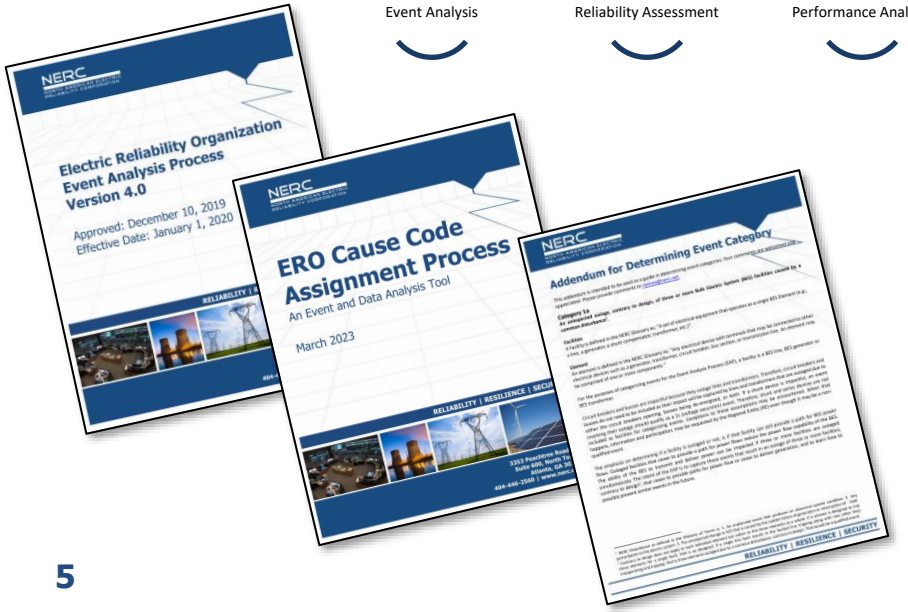
Effective: July 1, 2014
(as noted below)

The highlighted terms "Reactive Power" and "Load" in this document will become effective as defined terms on July 1, 2014 in accordance with the Bulk Electric System Order (Order No. 773) and the June 13, 2013 Order Granting Extension of Time. See Appendix 5 of the Rules of Procedure.

North American Electric Reliability Corporation

Reliability Assessment & Performance Analysis (RAPA)

- Event Analysis
- Reliability Assessment
- Performance Analysis



Rules of Procedure of the North American Electric Reliability Corporation

SECTION 800 — RELIABILITY ASSESSMENT AND PERFORMANCE ANALYSIS

801. Objectives of the Reliability Assessment and Performance Analysis Program

The objectives of the NERC Reliability Assessment and Performance Analysis Program are to: (1) conduct, and report the results of, an independent assessment of the overall reliability and adequacy of the interconnected North American Bulk Power Systems, both as existing and as planned; (2) analyze off-normal events on the Bulk Power System; (3) identify the root causes of events that may be precursors of potentially more serious

Rules of Procedure of the North American Electric Reliability Corporation

806. Scope of the Reliability Performance and Analysis Program

The components of the program will include analysis of large-scale outages, disturbances, and near misses to determine root causes and lessons learned; identification and continuous monitoring of performance indices to detect emerging trends and signs of a decline in reliability performance; and communications of performance results, trends, recommendations, and initiatives to those responsible to take actions; followed with confirmation of actions to correct any deficiencies identified. Within NERC, the reliability performance program will provide performance results to the Reliability Standards Development and Compliance Monitoring and Enforcement Programs to make the necessary adjustments to preserve reliability based on a risk-based approach.

807. Analysis of Major Events

Responding to major events affecting the Bulk Power System such as significant losses of Load or generation, significant Bulk Power System disturbances, or other emergencies on the Bulk Power System, can be divided into four phases: situational assessment and communications; situation tracking and communications; data collection, investigation,

808. Analysis of Off-Normal Occurrences, Bulk Power System Performance, and Bulk Power System Vulnerabilities

1. NERC and Regional Entities will analyze Bulk Power System and equipment performance occurrences that do not rise to the level of a major event, as described in Section 807. NERC and Regional Entities will also analyze potential vulnerabilities in the Bulk Power System that they discover or that are brought to their attention by other sources including government agencies. The purpose of these analyses is to identify the root causes of occurrences or conditions that may be precursors of major events or other potentially more serious occurrences, or that have the potential to cause major events or other more serious occurrences, to assess past reliability performance for lessons learned, and to develop reliability performance benchmarks and trends.

Statutory Performance Monitoring

NERC Rules of Procedure (Section 800 and Appendix 8)

- Flexible discretionary risk and/or impact analysis authorities
- Major event response

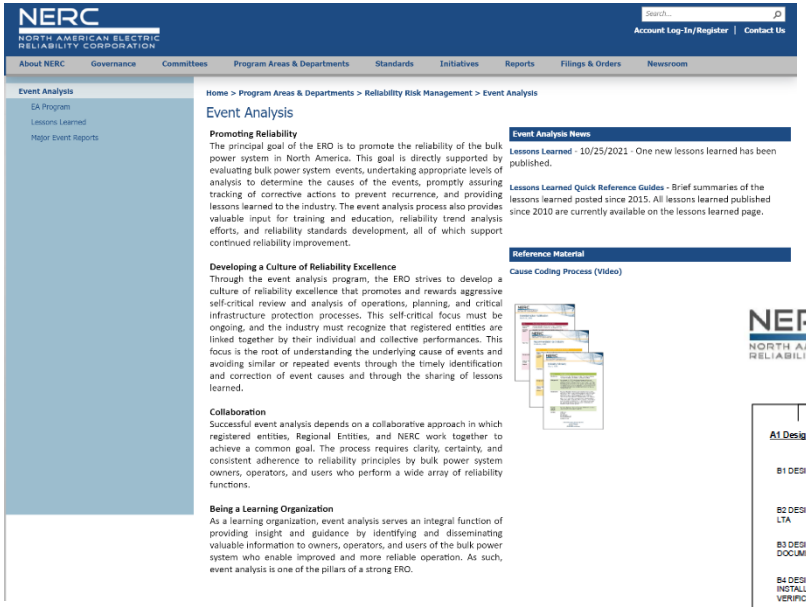
ERO Event Analysis Process (EAP)

- System operating criteria-based risk and/or impact monitoring
- Off-normal to major system event spectrum

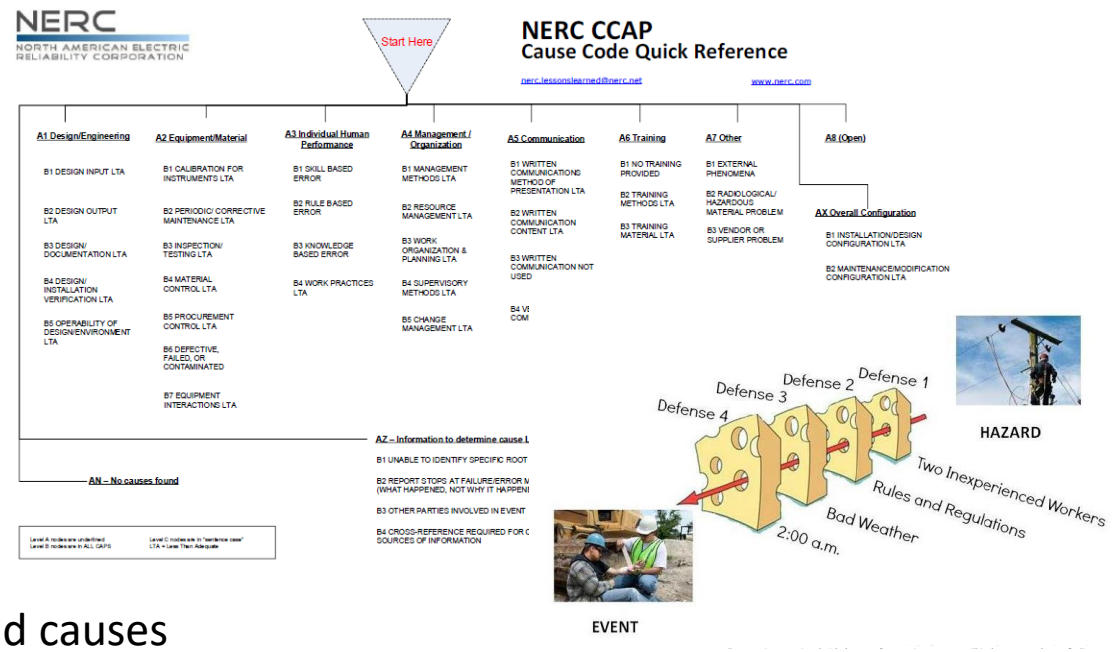
ERO Cause Code Assignment Process (CCAP)

- System risk and/or impact trending

Role



- Focus on real-time to near-term horizons
- System facility/operating interactions
  - Common initiating cause (event)
  - Common operating conditions (event set)

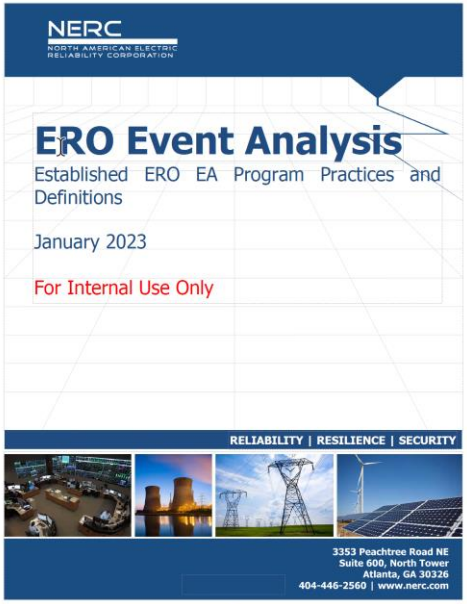


- Forensic view
- System performance impacts and causes
  - Current reliability risk monitoring
  - Forward-looking reliability risk potential
- Observations, recommendations, corrective actions, lessons, and considerations

Structured Program

Mission Statement

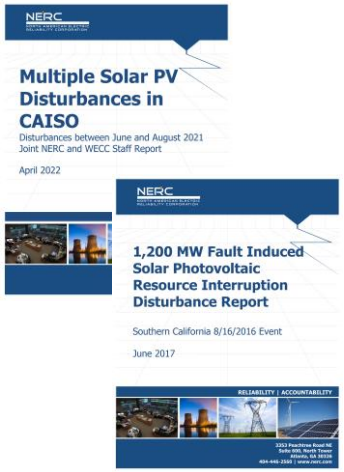
The ERO Event Analysis Program (EA Program) conducts analysis of electrical operating events that occur on the Bulk Electric System (BES) in support of the ERO mission of assuring the effective and efficient reduction of risks to the reliability and security of the grid.

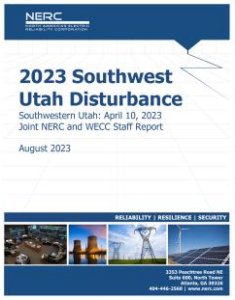


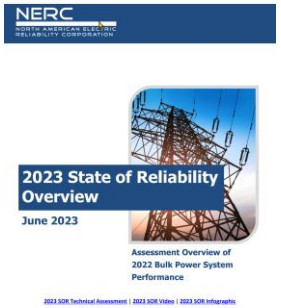
Vision

- A systematic performance analysis program
- Provide the framework to manage authorities as provided in the NERC Rules of Procedure, Section 800 (large and off-normal incidents/occurrences/events)
- Evaluate current and near-term operating incidents
- Identify potential or actual impacts to the performance of the BES
- Predict the likelihood of currently known and/or future reliability risks
- Support performance improvement initiatives, continuous improvement objectives, and corrective action recommendations

Results





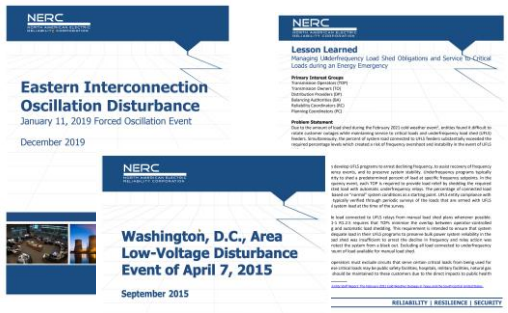


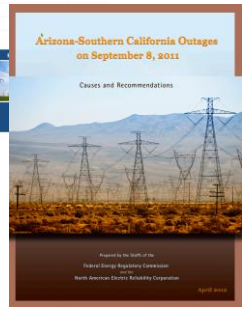
Steward

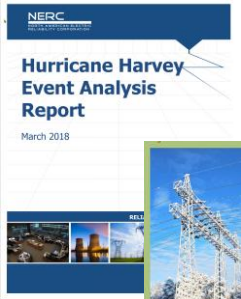
Aggregate Support

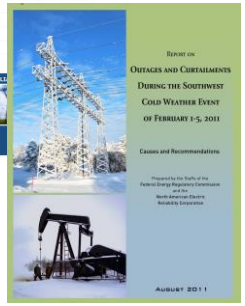
Informing Reliability

Steward









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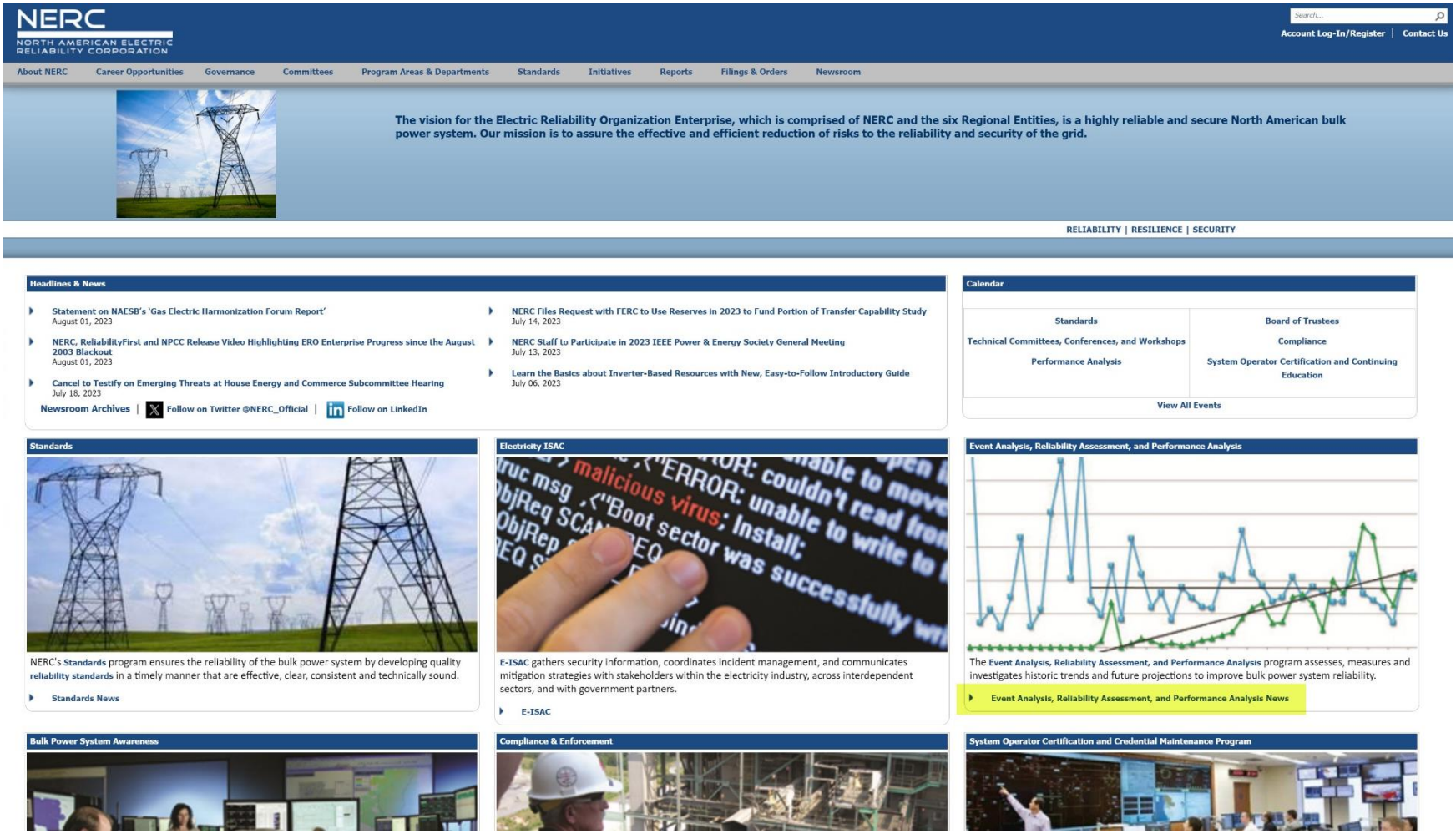
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The vision for the Electric Reliability Organization Enterprise, which is comprised of NERC and the six Regional Entities, is a highly reliable and secure North American bulk power system. Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.
RELIABILITY | RESILIENCE | SECURITY
Headlines & News
Statement on NAESB's 'Gas Electric Harmonization Forum Report'
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NERC, ReliabilityFirst and NPCC Release Video Highlighting ERO Enterprise Progress since the August 2003 Blackout
August 01, 2023
Cancel to Testify on Emerging Threats at House Energy and Commerce Subcommittee Hearing
July 18, 2023
NERC Files Request with FERC to Use Reserves in 2023 to Fund Portion of Transfer Capability Study
July 14, 2023
NERC Staff to Participate in 2023 IEEE Power & Energy Society General Meeting
July 13, 2023
Learn the Basics about Inverter-Based Resources with New, Easy-to-Follow Introductory Guide
July 06, 2023
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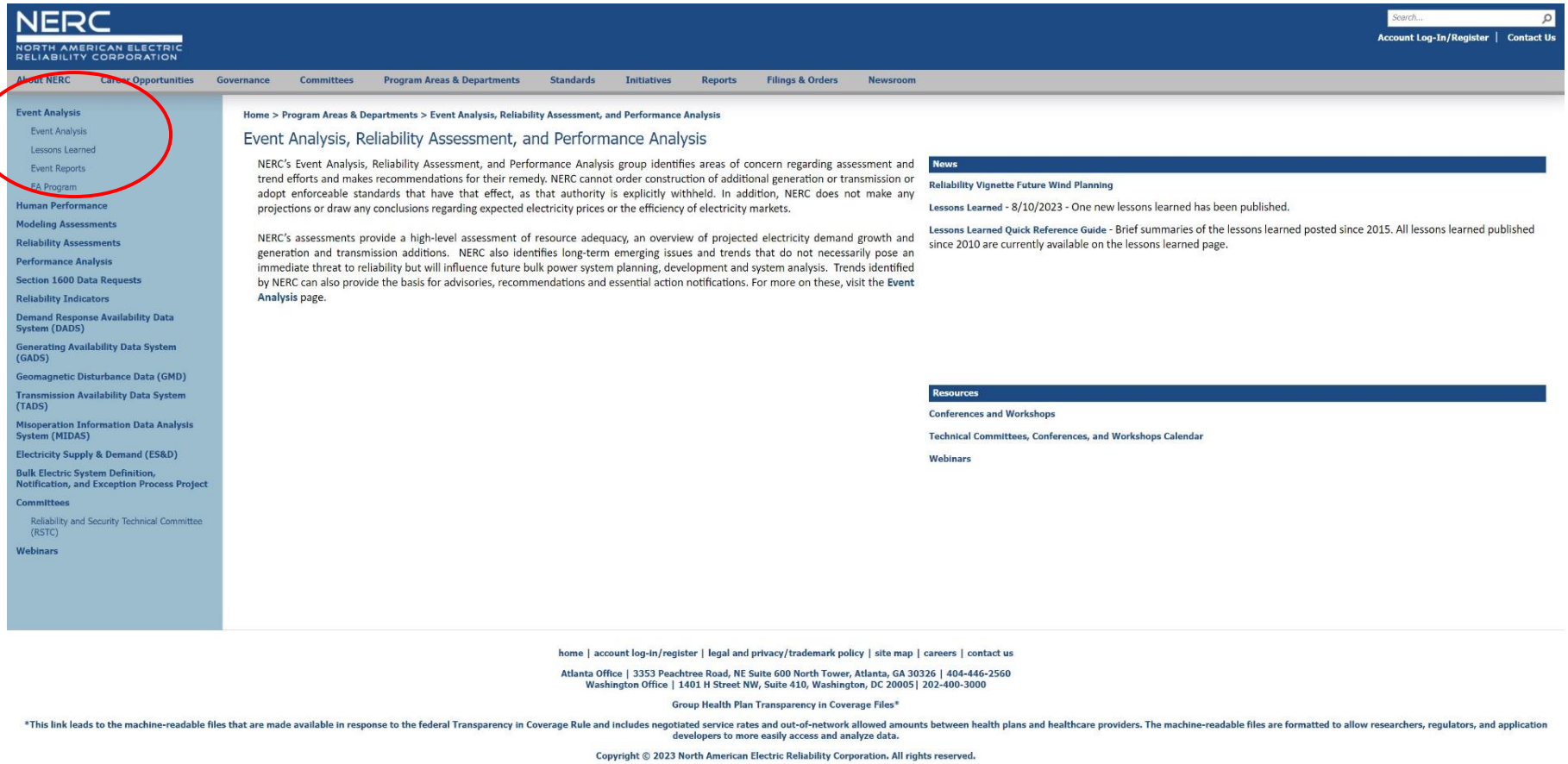
Standards
NERC's Standards program ensures the reliability of the bulk power system by developing quality reliability standards in a timely manner that are effective, clear, consistent and technically sound.
Standards News
Electricity ISAC
malicious virus; Install;
Boot sector was successfully
E-ISAC gathers security information, coordinates incident management, and communicates mitigation strategies with stakeholders within the electricity industry, across interdependent sectors, and with government partners.
E-ISAC
Event Analysis, Reliability Assessment, and Performance Analysis
The Event Analysis, Reliability Assessment, and Performance Analysis program assesses, measures and investigates historic trends and future projections to improve bulk power system reliability.
Event Analysis, Reliability Assessment, and Performance Analysis News
Bulk Power System Awareness
Compliance & Enforcement
System Operator Certification and Credential Maintenance Program

Reliability Assessment and Performance



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  - Reliability and Security Technical Committee (RSTC)
- Webinars

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Event Analysis, Reliability Assessment, and Performance Analysis

NERC's Event Analysis, Reliability Assessment, and Performance Analysis group identifies areas of concern regarding assessment and trend efforts and makes recommendations for their remedy. NERC cannot order construction of additional generation or transmission or adopt enforceable standards that have that effect, as that authority is explicitly withheld. In addition, NERC does not make any projections or draw any conclusions regarding expected electricity prices or the efficiency of electricity markets.

NERC's assessments provide a high-level assessment of resource adequacy, an overview of projected electricity demand growth and generation and transmission additions. NERC also identifies long-term emerging issues and trends that do not necessarily pose an immediate threat to reliability but will influence future bulk power system planning, development and system analysis. Trends identified by NERC can also provide the basis for advisories, recommendations and essential action notifications. For more on these, visit the **Event Analysis** page.

News

Reliability Vignette Future Wind Planning

Lessons Learned - 8/10/2023 - One new lessons learned has been published.

Lessons Learned Quick Reference Guide - Brief summaries of the lessons learned posted since 2015. All lessons learned published since 2010 are currently available on the lessons learned page.

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Technical Committees, Conferences, and Workshops Calendar

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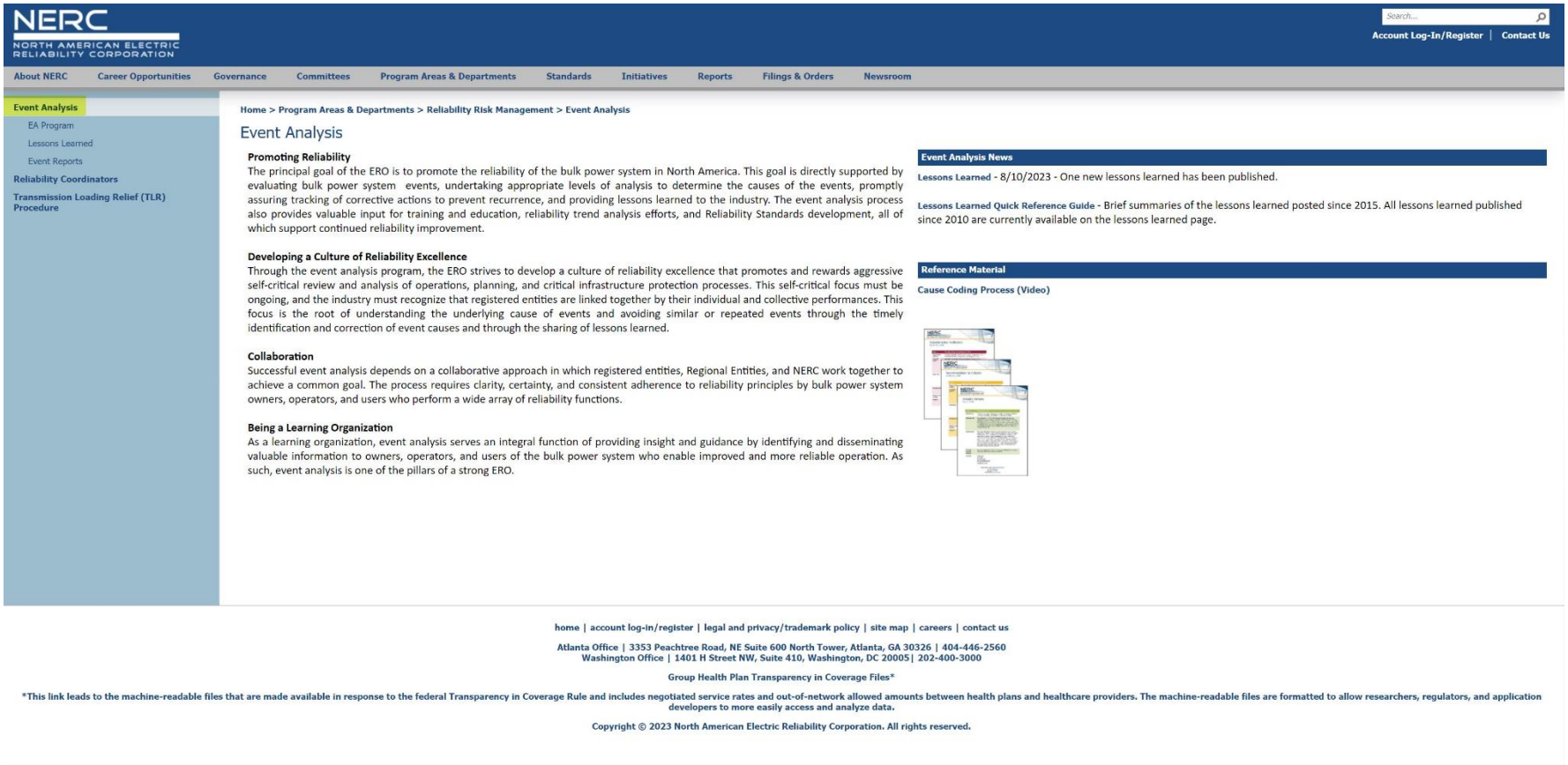
Group Health Plan Transparency in Coverage Files*

*This link leads to the machine-readable files that are made available in response to the federal Transparency in Coverage Rule and includes negotiated service rates and out-of-network allowed amounts between health plans and healthcare providers. The machine-readable files are formatted to allow researchers, regulators, and application developers to more easily access and analyze data.

Event Analysis Program Summary



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Event Analysis

Promoting Reliability
The principal goal of the ERO is to promote the reliability of the bulk power system in North America. This goal is directly supported by evaluating bulk power system events, undertaking appropriate levels of analysis to determine the causes of the events, promptly assuring tracking of corrective actions to prevent recurrence, and providing lessons learned to the industry. The event analysis process also provides valuable input for training and education, reliability trend analysis efforts, and Reliability Standards development, all of which support continued reliability improvement.

Developing a Culture of Reliability Excellence
Through the event analysis program, the ERO strives to develop a culture of reliability excellence that promotes and rewards aggressive self-critical review and analysis of operations, planning, and critical infrastructure protection processes. This self-critical focus must be ongoing, and the industry must recognize that registered entities are linked together by their individual and collective performances. This focus is the root of understanding the underlying cause of events and avoiding similar or repeated events through the timely identification and correction of event causes and through the sharing of lessons learned.

Collaboration
Successful event analysis depends on a collaborative approach in which registered entities, Regional Entities, and NERC work together to achieve a common goal. The process requires clarity, certainty, and consistent adherence to reliability principles by bulk power system owners, operators, and users who perform a wide array of reliability functions.

Being a Learning Organization
As a learning organization, event analysis serves an integral function of providing insight and guidance by identifying and disseminating valuable information to owners, operators, and users of the bulk power system who enable improved and more reliable operation. As such, event analysis is one of the pillars of a strong ERO.

Event Analysis News

Lessons Learned - 8/10/2023 - One new lessons learned has been published.

Lessons Learned Quick Reference Guide - Brief summaries of the lessons learned posted since 2015. All lessons learned published since 2010 are currently available on the lessons learned page.

Reference Material

Cause Coding Process (Video)

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Group Health Plan Transparency in Coverage Files*

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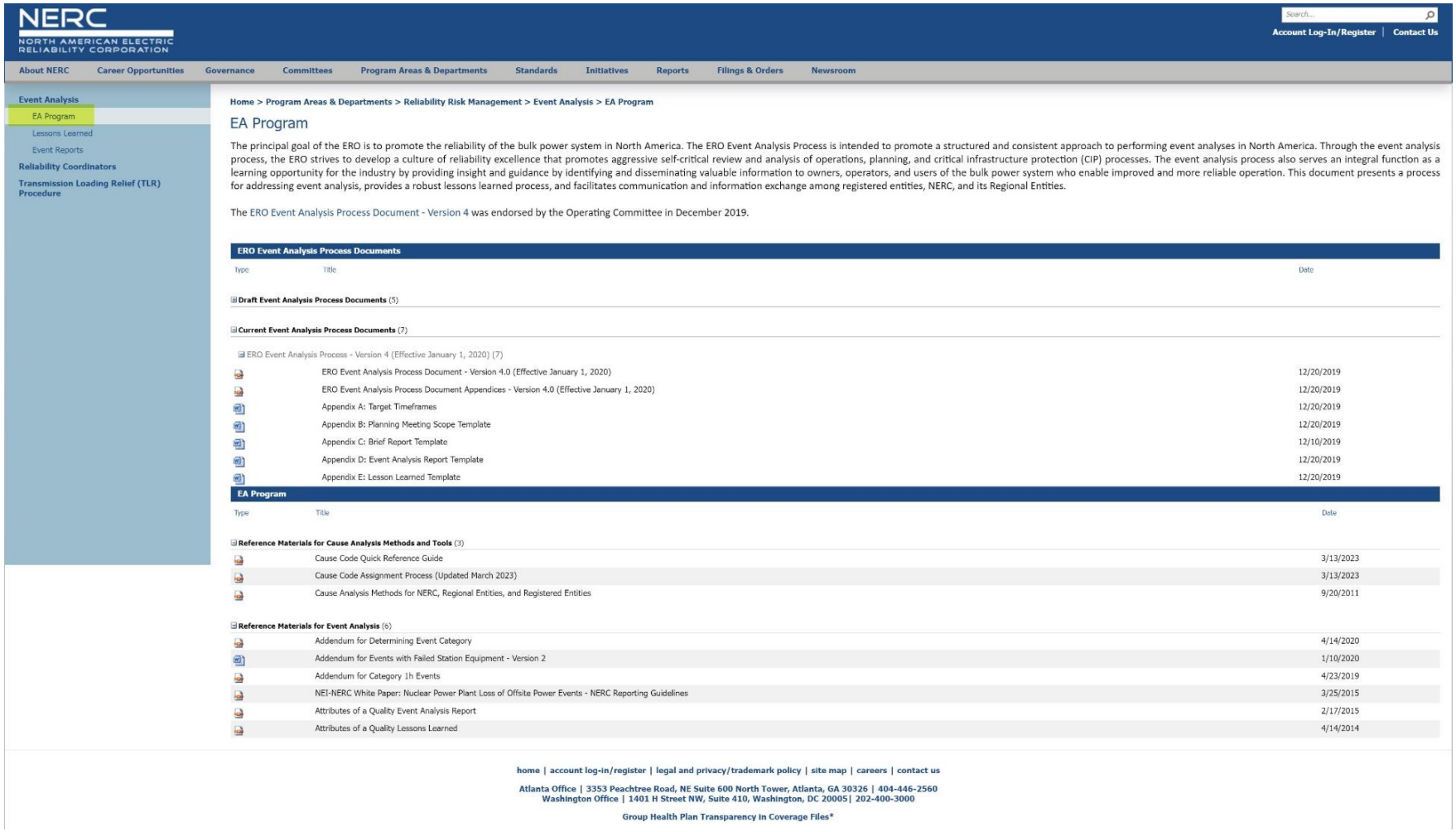
Event Analysis Program Documents



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EA Program

The principal goal of the ERO is to promote the reliability of the bulk power system in North America. The ERO Event Analysis Process is intended to promote a structured and consistent approach to performing event analyses in North America. Through the event analysis process, the ERO strives to develop a culture of reliability excellence that promotes aggressive self-critical review and analysis of operations, planning, and critical infrastructure protection (CIP) processes. The event analysis process also serves an integral function as a learning opportunity for the industry by providing insight and guidance by identifying and disseminating valuable information to owners, operators, and users of the bulk power system who enable improved and more reliable operation. This document presents a process for addressing event analysis, provides a robust lessons learned process, and facilitates communication and information exchange among registered entities, NERC, and its Regional Entities.

The ERO Event Analysis Process Document - Version 4 was endorsed by the Operating Committee in December 2019.

ERO Event Analysis Process Documents

Type	Title	Date
Draft Event Analysis Process Documents (5)		
Current Event Analysis Process Documents (7)		
ERO Event Analysis Process - Version 4 (Effective January 1, 2020) (7)		
	ERO Event Analysis Process Document - Version 4.0 (Effective January 1, 2020)	12/20/2019
	ERO Event Analysis Process Document Appendices - Version 4.0 (Effective January 1, 2020)	12/20/2019
	Appendix A: Target Timeframes	12/20/2019
	Appendix B: Planning Meeting Scope Template	12/20/2019
	Appendix C: Brief Report Template	12/10/2019
	Appendix D: Event Analysis Report Template	12/20/2019
	Appendix E: Lesson Learned Template	12/20/2019

EA Program

Type	Title	Date
Reference Materials for Cause Analysis Methods and Tools (3)		
	Cause Code Quick Reference Guide	3/13/2023
	Cause Code Assignment Process (Updated March 2023)	3/13/2023
	Cause Analysis Methods for NERC, Regional Entities, and Registered Entities	9/20/2011
Reference Materials for Event Analysis (6)		
	Addendum for Determining Event Category	4/14/2020
	Addendum for Events with Failed Station Equipment - Version 2	1/10/2020
	Addendum for Category 1h Events	4/23/2019
	NEI-NERC White Paper: Nuclear Power Plant Loss of Offsite Power Events - NERC Reporting Guidelines	3/25/2015
	Attributes of a Quality Event Analysis Report	2/17/2015
	Attributes of a Quality Lessons Learned	4/14/2014

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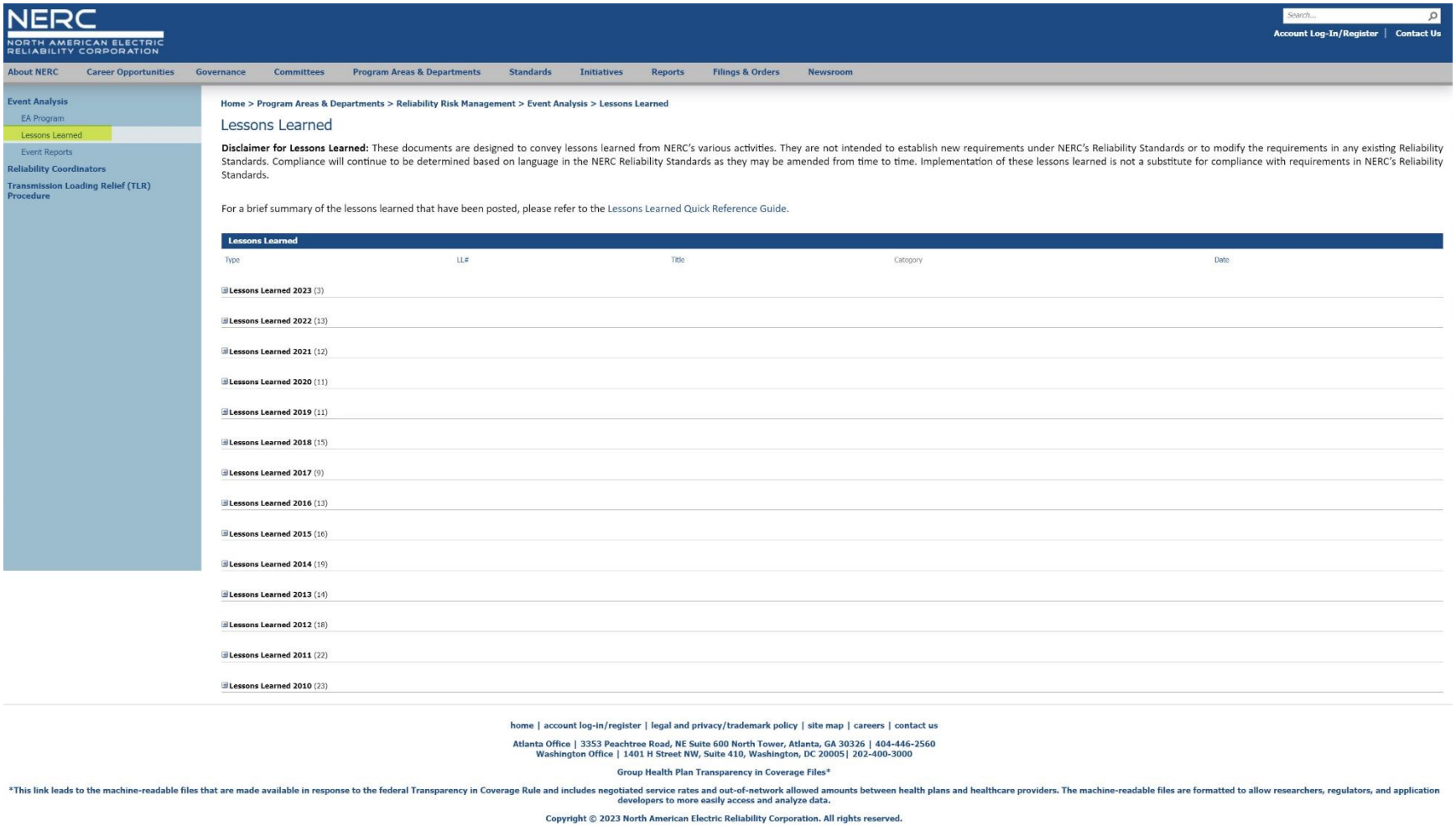
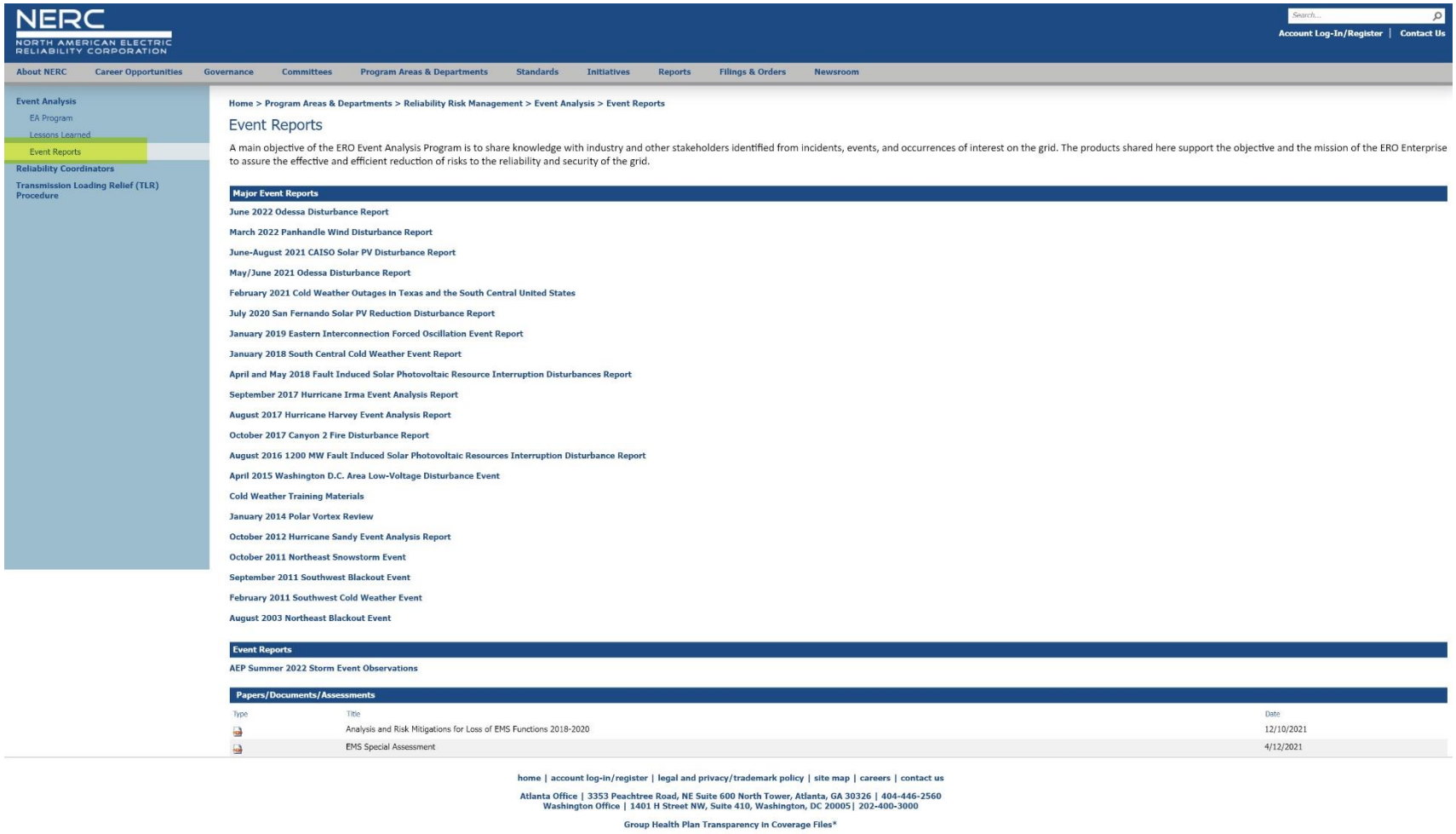
Group Health Plan Transparency in Coverage Files*

Lessons Learned



Event Analysis Reports and Papers



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Transmission Loading Relief (TLR) Procedure

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Event Reports

A main objective of the ERO Event Analysis Program is to share knowledge with industry and other stakeholders identified from incidents, events, and occurrences of interest on the grid. The products shared here support the objective and the mission of the ERO Enterprise to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Major Event Reports

- June 2022 Odessa Disturbance Report
- March 2022 Panhandle Wind Disturbance Report
- June-August 2021 CAISO Solar PV Disturbance Report
- May/June 2021 Odessa Disturbance Report
- February 2021 Cold Weather Outages in Texas and the South Central United States
- July 2020 San Fernando Solar PV Reduction Disturbance Report
- January 2019 Eastern Interconnection Forced Oscillation Event Report
- January 2018 South Central Cold Weather Event Report
- April and May 2018 Fault Induced Solar Photovoltaic Resource Interruption Disturbances Report
- September 2017 Hurricane Irma Event Analysis Report
- August 2017 Hurricane Harvey Event Analysis Report
- October 2017 Canyon 2 Fire Disturbance Report
- August 2016 1200 MW Fault Induced Solar Photovoltaic Resources Interruption Disturbance Report
- April 2015 Washington D.C. Area Low-Voltage Disturbance Event
- Cold Weather Training Materials
- January 2014 Polar Vortex Review
- October 2012 Hurricane Sandy Event Analysis Report
- October 2011 Northeast Snowstorm Event
- September 2011 Southwest Blackout Event
- February 2011 Southwest Cold Weather Event
- August 2003 Northeast Blackout Event

Event Reports

- AEP Summer 2022 Storm Event Observations

Papers/Documents/Assessments

Type	Title	Date
	Analysis and Risk Mitigations for Loss of EMS Functions 2018-2020	12/10/2021
	EMS Special Assessment	4/12/2021

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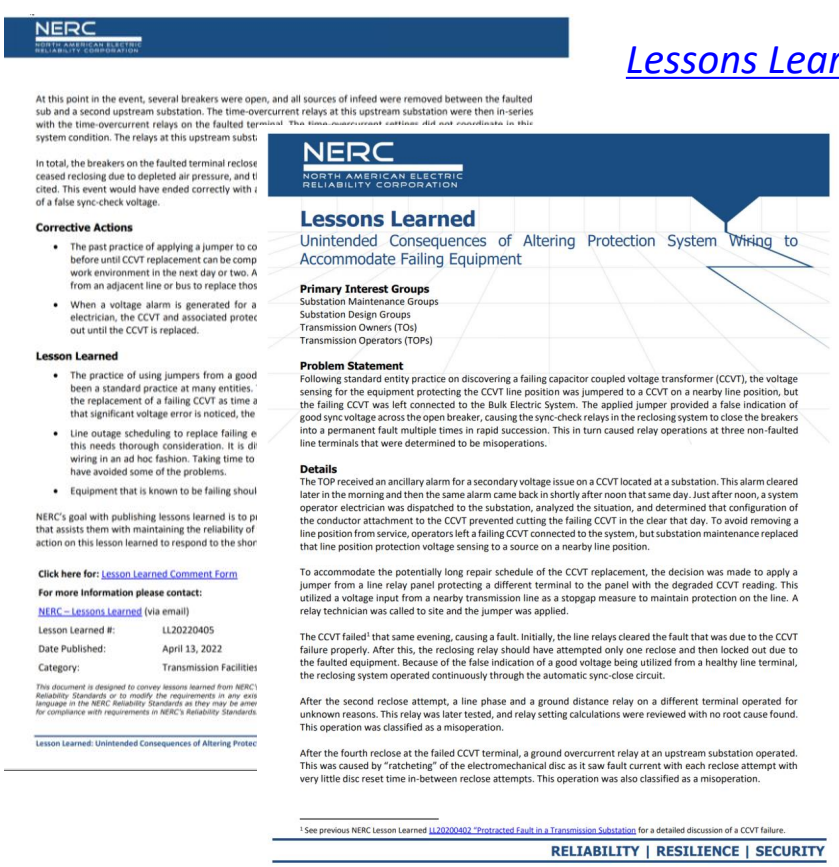
Group Health Plan Transparency in Coverage Files*

Lessons Learned Process

- Industry involved – ERO-facilitated process
- Highlights lessons and associated corrective actions for consideration
- Input from NERC technical groups and other industries
- An opportunity for industry to share in improving system reliability

[Lessons Learned (nerc.com)](#)



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At this point in the event, several breakers were open, and all sources of infeed were removed between the faulted sub and a second upstream substation. The time-overcurrent relays at this upstream substation were then in-series with the time-overcurrent relays on the faulted terminal. The time-overcurrent settings did not coordinate in this system condition. The relays at this upstream substation

In total, the breakers on the faulted terminal reclose ceased reclosing due to depleted air pressure, and t cited. This event would have ended correctly with a of a false sync-check voltage.

Corrective Actions

- The past practice of applying a jumper to co before until CCVT replacement can be comp work environment in the next day or two. A from an adjacent line or bus to replace thos
- When a voltage alarm is generated for a electrician, the CCVT and associated protec out until the CCVT is replaced.

Lesson Learned

- The practice of using jumpers from a good been a standard practice at many entities. the replacement of a failing CCVT as time a that significant voltage error is noticed, the
- Line outage scheduling to replace failing e this needs thorough consideration. It is di wiring in an ad hoc fashion. Taking time to have avoided some of the problems.
- Equipment that is known to be failing shoul

NERC's goal with publishing lessons learned is to pr that assists them with maintaining the reliability of action on this lesson learned to respond to the shor

Click here for: Lesson Learned Comment Form

For more information please contact:

NERC – Lessons Learned (via email)

Lesson Learned #:	LL20220405
Date Published:	April 13, 2022
Category:	Transmission Facilities

This document is designed to convey lessons learned from NERC's Reliability Standards or to modify the requirements in any existing language in the NERC Reliability Standards as they may be amended for compliance with requirements in NERC's Reliability Standards.

Lesson Learned: Unintended Consequences of Altering Protec

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Lessons Learned

Unintended Consequences of Altering Protection System Wiring to Accommodate Failing Equipment

Primary Interest Groups
Substation Maintenance Groups
Substation Design Groups
Transmission Owners (TOs)
Transmission Operators (TOPs)

Problem Statement
Following standard entity practice on discovering a failing capacitor coupled voltage transformer (CCVT), the voltage sensing for the equipment protecting the CCVT line position was jumpered to a CCVT on a nearby line position, but the failing CCVT was left connected to the Bulk Electric System. The applied jumper provided a false indication of good sync voltage across the open breaker, causing the sync-check relays in the reclosing system to close the breakers into a permanent fault multiple times in rapid succession. This in turn caused relay operations at three non-faulted line terminals that were determined to be misoperations.

Details
The TOP received an ancillary alarm for a secondary voltage issue on a CCVT located at a substation. This alarm cleared later in the morning and then the same alarm came back in shortly after noon that same day. Just after noon, a system operator electrician was dispatched to the substation, analyzed the situation, and determined that configuration of the conductor attachment to the CCVT prevented cutting the failing CCVT in the clear that day. To avoid removing a line position from service, operators left a failing CCVT connected to the system, but substation maintenance replaced that line position protection voltage sensing to a source on a nearby line position.

To accommodate the potentially long repair schedule of the CCVT replacement, the decision was made to apply a jumper from a line relay panel protecting a different terminal to the panel with the degraded CCVT reading. This utilized a voltage input from a nearby transmission line as a stopgap measure to maintain protection on the line. A relay technician was called to site and the jumper was applied.

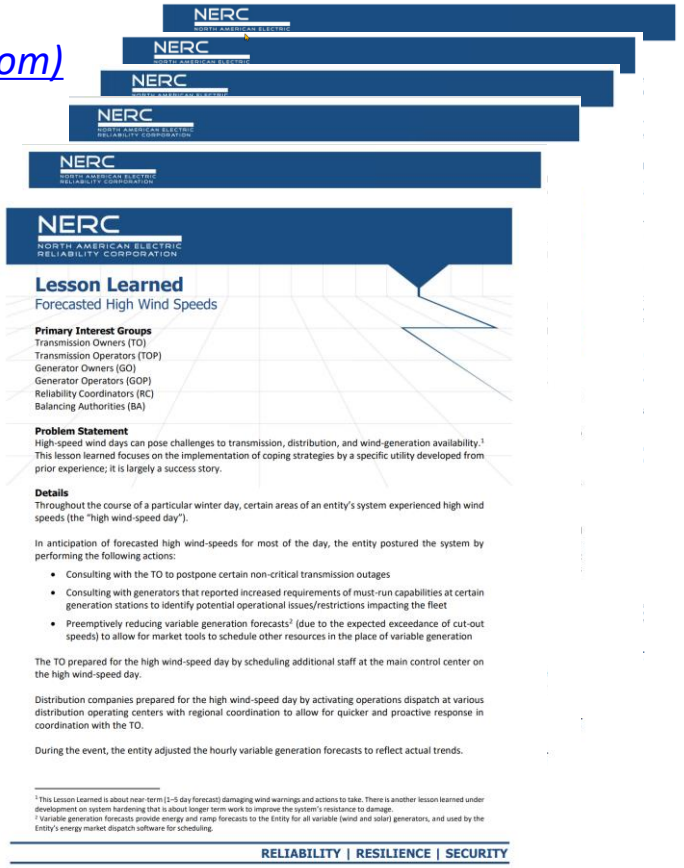
The CCVT failed[1] that same evening, causing a fault. Initially, the line relays cleared the fault that was due to the CCVT failure properly. After this, the reclosing relay should have attempted only one reclose and then locked out due to the faulted equipment. Because of the false indication of a good voltage being utilized from a healthy line terminal, the reclosing system operated continuously through the automatic sync-close circuit.

After the second reclose attempt, a line phase and a ground distance relay on a different terminal operated for unknown reasons. This relay was later tested, and relay setting calculations were reviewed with no root cause found. This operation was classified as a misoperation.

After the fourth reclose at the failed CCVT terminal, a ground overcurrent relay at an upstream substation operated. This was caused by "ratcheting" of the electromechanical disc as it saw fault current with each reclose attempt with very little disc reset time in-between reclose attempts. This operation was also classified as a misoperation.

[1] See previous NERC Lesson Learned LL20200402 "Protracted Fault in a Transmission Substation for a detailed discussion of a CCVT failure.

RELIABILITY | RESILIENCE | SECURITY



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Lesson Learned

Forecasted High Wind Speeds

Primary Interest Groups
Transmission Owners (TO)
Transmission Operators (TOP)
Generator Owners (GO)
Generator Operators (GOP)
Reliability Coordinators (RC)
Balancing Authorities (BA)

Problem Statement
High-speed wind days can pose challenges to transmission, distribution, and wind-generation availability.[1] This lesson learned focuses on the implementation of coping strategies by a specific utility developed from prior experience; it is largely a success story.

Details
Throughout the course of a particular winter day, certain areas of an entity's system experienced high wind speeds (the "high wind-speed day").

In anticipation of forecasted high wind-speeds for most of the day, the entity postured the system by performing the following actions:

- Consulting with the TO to postpone certain non-critical transmission outages
- Consulting with generators that reported increased requirements of must-run capabilities at certain generation stations to identify potential operational issues/restrictions impacting the fleet
- Preemptively reducing variable generation forecasts[2] (due to the expected exceedance of cut-out speeds) to allow for market tools to schedule other resources in the place of variable generation

The TO prepared for the high wind-speed day by scheduling additional staff at the main control center on the high wind-speed day.

Distribution companies prepared for the high wind-speed day by activating operations dispatch at various distribution operating centers with regional coordination to allow for quicker and proactive response in coordination with the TO.

During the event, the entity adjusted the hourly variable generation forecasts to reflect actual trends.

[1] This Lesson Learned is about near-term (1–5 day forecast) damaging wind warnings and actions to take. There is another lesson learned under development on system hardening that is about longer term work to improve the system's resistance to damage.
[2] Variable generation forecasts provide energy and ramp forecasts to the Entity for all variable (wind and solar) generators, and used by the Entity's energy market dispatch software for scheduling.

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Lessons Learned Highlight

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Lessons Learned

Unintended Consequences of Altering Protection System Wiring to Accommodate Failing Equipment

Primary Interest Groups
Substation Maintenance Groups
Substation Design Groups
Transmission Owners (TOs)
Transmission Operators (TOPs)

Problem Statement

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Details

The TOP received an ancillary alarm for a secondary voltage issue on a CCVT located at a substation. This alarm cleared later in the morning and then the same alarm came back in shortly after noon that same day. Just after noon, a system operator electrician was dispatched to the substation, analyzed the situation, and determined that configuration of the conductor attachment to the CCVT prevented cutting the failing CCVT in the clear that day. To avoid removing a line position from service, operators left a failing CCVT connected to the system, but substation maintenance replaced that line position protection voltage sensing to a source on a nearby line position.

To accommodate the potentially long repair schedule of the CCVT replacement, the decision was made to apply a jumper from a line relay panel protecting a different terminal to the panel with the degraded CCVT reading. This utilized a voltage input from a nearby transmission line as a stopgap measure to maintain protection on the line. A relay technician was called to site and the jumper was applied.

The CCVT failed[1] that same evening, causing a fault. Initially, the line relays cleared the fault that was due to the CCVT failure properly. After this, the reclosing relay should have attempted only one reclose and then locked out due to the faulted equipment. Because of the false indication of a good voltage being utilized from a healthy line terminal, the reclosing system operated continuously through the automatic sync-close circuit.

After the second reclose attempt, a line phase and a ground distance relay on a different terminal operated for unknown reasons. This relay was later tested, and relay setting calculations were reviewed with no root cause found. This operation was classified as a misoperation.

After the fourth reclose at the failed CCVT terminal, a ground overcurrent relay at an upstream substation operated. This was caused by "ratcheting" of the electromechanical disc as it saw fault current with each reclose attempt with very little disc reset time in-between reclose attempts. This operation was also classified as a misoperation.

[1] See previous NERC Lesson Learned LL20200402 "Protracted Fault in a Transmission Substation for a detailed discussion of a CCVT failure.

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At this point in the event, several breakers were open, and all sources of infeed were removed between the faulted sub and a second upstream substation. The time-overcurrent relays at this upstream substation were then in-series with the time-overcurrent relays on the faulted terminal. The time-overcurrent settings did not coordinate in this system condition. The relays at this upstream substation tripped and were classified as a misoperation.

In total, the breakers on the faulted terminal reclosed seven times during the event. One of the two ring bus breakers ceased reclosing due to depleted air pressure, and the other became isolated by two of the misoperations previously cited. This event would have ended correctly with a trip-reclose-trip on the faulted terminal if not for the presence of a false sync-check voltage.

Corrective Actions

- The past practice of applying a jumper to compensate for a failing CCVT (to keep a line/bus section in service before until CCVT replacement can be completed) was used to plan for a repair in a safer and more controlled work environment in the next day or two. As a corrective action for this event, the practice of using voltages from an adjacent line or bus to replace those of a faulty CCVT will no longer be used.
- When a voltage alarm is generated for a CCVT and has been confirmed on-site by a system operator electrician, the CCVT and associated protected facility will immediately be taken out of service and remain out until the CCVT is replaced.

Lesson Learned

- The practice of using jumpers from a good CCVT to temporarily replace the voltages of a failing CCVT has been a standard practice at many entities. This practice has allowed for system integrity while planning for the replacement of a failing CCVT as time and resources permitted; however, when CCVTs get to the point that significant voltage error is noticed, the time to failure may be very short.
- Line outage scheduling to replace failing equipment may require a long-term temporary accommodation; this needs thorough consideration. It is difficult to predict the implications of altering protection system wiring in an ad hoc fashion. Taking time to review the design and properly engineer the modification could have avoided some of the problems.
- Equipment that is known to be failing should be removed from service as soon as practicable.

NERC's goal with publishing lessons learned is to provide industry with technical and understandable information that assists them with maintaining the reliability of the bulk power system. NERC is asking entities who have taken action on this lesson learned to respond to the short survey provided in the link below.

Click here for: Lesson Learned Comment Form

For more Information please contact:

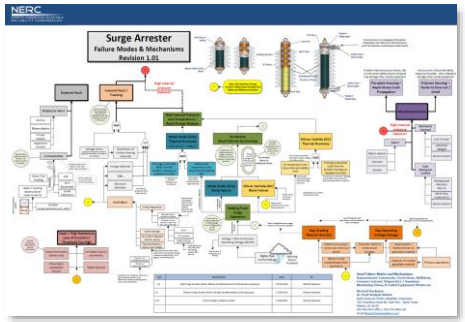
NERC – Lessons Learned (via email)

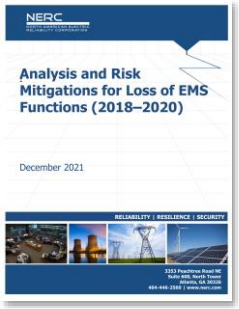
Lesson Learned #:	LL20220405
Date Published:	April 13, 2022
Category:	Transmission Facilities

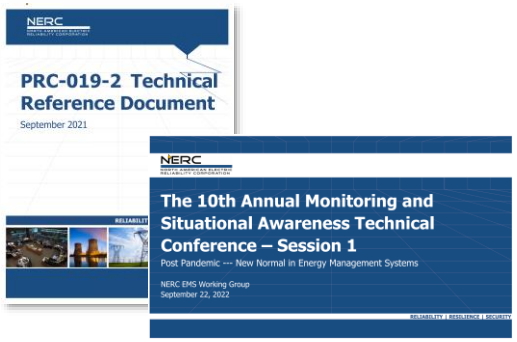
This document is designed to convey lessons learned from NERC's various activities. It is not intended to establish new requirements under NERC's Reliability Standards or to modify the requirements in any existing Reliability Standards. Compliance will continue to be determined based on language in the NERC Reliability Standards as they may be amended from time to time. Implementation of this lesson learned is not a substitute for compliance with requirements in NERC's Reliability Standards.

Facilitating Industry Input

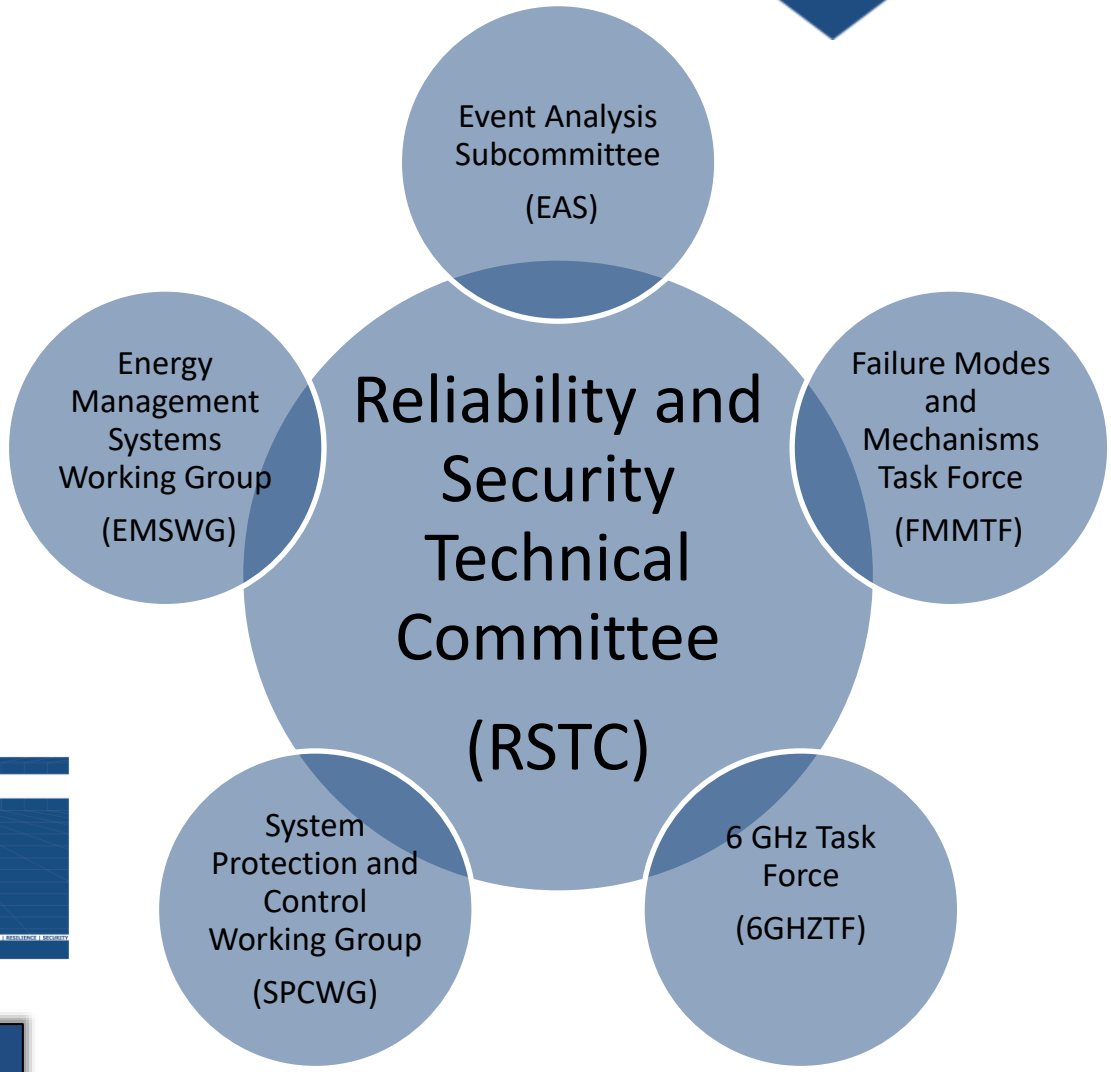
Performance Monitoring
(Focus: Monitoring and Analysis)







Risk Mitigation
(Focus: Mitigate Existing and Emerging Risks)



Event Analysis Subcommittee (EAS)

Home > Committees > Reliability and Security Technical Committee (RSTC)

Reliability and Security Technical Committee (RSTC)

Performance Monitoring
Focus: Monitoring and Analysis

Event Analysis Subcommittee (EAS)

Energy Management Systems Working Group (EMSWG)

Failure Modes and Mechanisms Task Force (FMMTF)

Event Analysis Subcommittee (EAS)

Lessons Learned | EA Program

The Event Analysis Subcommittee (EAS) assists the NERC Reliability and Security Technical Committee (RSTC) in enhancing Bulk Electric System (BES) reliability by implementing the goals and objectives of the RSTC Strategic Plan.

Subcommittee Resources

Name
EAS Meeting Schedule
EAS Roster
EAS Scope

Agendas, Minutes, and Highlights

Type	Title	Location
6/13/2023 (2)		
	EAS Meeting Agenda - June 13, 2023	Audubon, PA
	EAS Meeting Minutes and Presentations - June 13, 2023	Audubon, PA

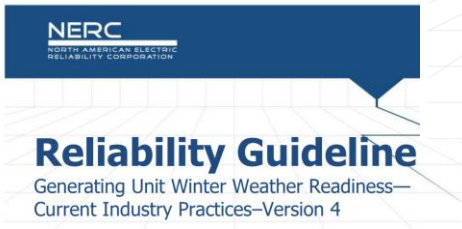
https://www.nerc.com/comm/RSTC/Pages/EAS.aspx

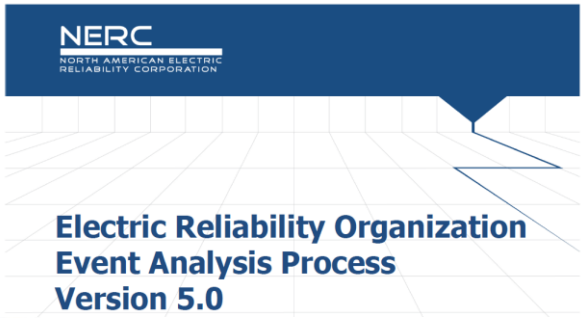
Event Analysis Subcommittee (EAS)

https://www.nerc.com/comm/RSTC/Pages/EAS.aspx

EAS

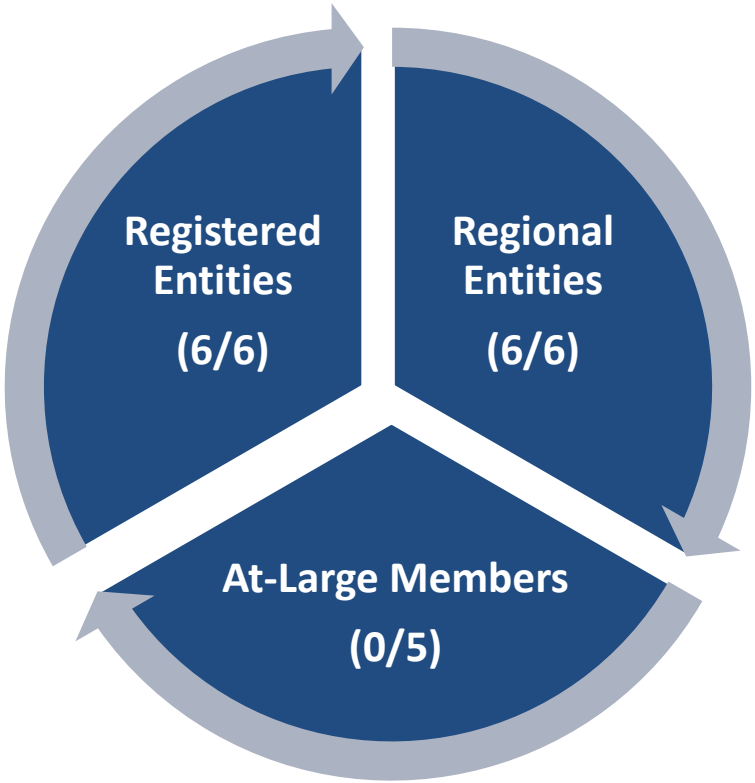
- Event Analysis Process
- Lessons Learned
- Reliability Guidelines
- State of Reliability Report
- EMSWG & FMMTF





EAS Governance

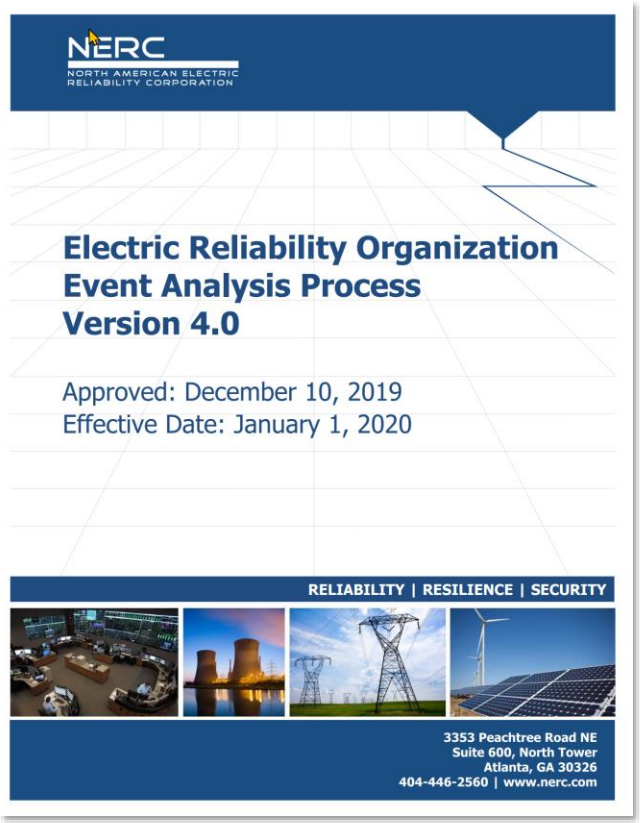
NPCC	• Andrey Oks (NPCC) • Bill Temple (Avangrid)
WECC	
TRE	
RF	
MRO	
SERC	
At-Large	

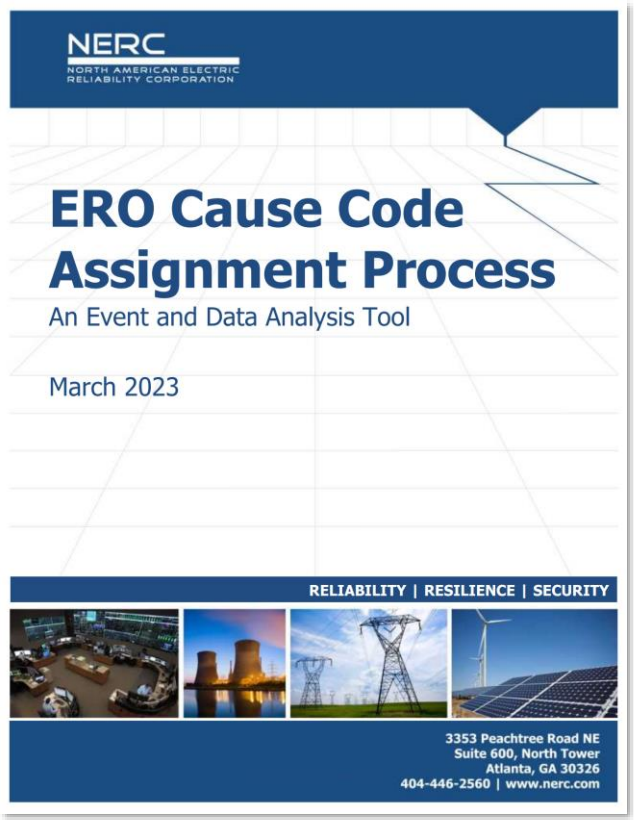


- Chair – Chris Moran (PJM)
- Vice Chair – James Hanson (WECC)
- Secretary – Brad Gordon (NERC)

Off-Normal Event Processing

An event is defined as *a single incident or linked incidents due to a common initiating cause resulting in an undesirable impact to the bulk electric system (BES).*





Event Analysis Process Value

- *ERO and industry to learn from off-normal events and to develop corrective actions to prevent recurrence.*
- *Lessons to be learned and potential recommendations shared with industry to mitigate the risk of recurrence.*
- *Effectiveness requires industry participation and support.*
- *Continuous improvement is the mindset desired to instill in industry design and operating practices.*

Stepping through the EAP

Step 1: The registered entity assesses an event, determines the event category, and notifies the RE.

Step 2: A planning meeting or coordination call is held between the registered entity and the RE when possible.

Step 3: The registered entity submits a Brief Report to the RE.

Step 4: The registered entity submits an Event Analysis Report to the RE if needed.

Step 5: Lessons learned are developed and shared with Industry as appropriate.

Step 6: The EAP is closed.

Categories and Subcategories for EAP Qualifying Events

Category 1: An Event that Results in One or More of the Following:

a. An unexpected outage, that is contrary to design, of three or more BES Facilities caused by a common disturbance, listed here:
   i. The outage of a combination of three or more BES Facilities (excluding successful automatic reclosing)
   ii. The outage of an entire generation station of three or more generators (aggregate generation of 500 MW to 1,999 MW); each combined-cycle unit is counted as one generator

b. Intended and controlled system separation by the proper operation of a remedial action scheme (RAS) in New Brunswick or Florida from the EI

c. Failure or misoperation of a BES RAS

d. System-wide voltage reduction of 3% or more that lasts more than 15 continuous minutes due to a BES Emergency

e. Unintended BES system separation that results in an island of 100 MW to 999 MW. This excludes BES radial connections and non-BES (distribution) level islanding

g. In ERCOT, unintended loss of generation of 1,400 MW to 1,999 MW

h. Loss of monitoring or control at a control center such that it significantly affects the entity's ability to make operating decisions for 30 continuous minutes or more. Some examples that should be considered for Event Analysis reporting include, but are not limited to, the following:
   i. Loss of operator ability to remotely monitor or control BES elements
   ii. Loss of communications from supervisory control and data acquisition (SCADA) remote terminal units (RTUs)
   iii. Unavailability of inter-control center protocol (ICCP) links, which reduces BES visibility
   iv. Loss of the ability to remotely monitor and control generating units via automatic generator control (AGC)
   v. Unacceptable state estimator (SE) or real-time contingency analysis solutions

i. A non-consequential interruption of inverter type resources aggregated to 500 MW or more not caused by a fault on its inverters, or its ac terminal equipment

j. A non-consequential interruption of a dc tie, between two separate asynchronous systems, loaded at 500 MW or more, when the outage is not caused by a fault on the dc tie, its inverters, or its ac terminal equipment

Category 2: An Event that Results in One or More of the Following:

a. Complete loss of interpersonal communication and alternative interpersonal communication capability affecting its staffed BES control center for 30 continuous minutes or more

c. Voltage excursions within a TOP's footprint equal to or greater than 10%, lasting more than 15 continuous minutes

d. Complete loss of off-site power (LOOP) to a nuclear generating station per the Nuclear Plant Interface Requirement

e. Unintended system separation that results in an island of 1,000 MW to 4,999 MW

f. Unintended loss of 300 MW or more of firm load for more than 15 minutes

g. Interconnection reliability operating limit (IROL) exceedance for time greater than T_v

Category 3: An Event that Results in One or More of the Following:

a. Unintended loss of load, generation (including inverter type resources), or dc tie to asynchronous resources of 2,000 MW or more

b. Unintended system separation that results in an island of 5,000 MW to 10,000 MW

c. Unintended system separation (without load loss) that islands Florida from the Eastern Interconnection

Category 4: An Event that Results in One or More of the Following:

a. Unintended loss of load or generation from 5,001 MW to 9,999 MW

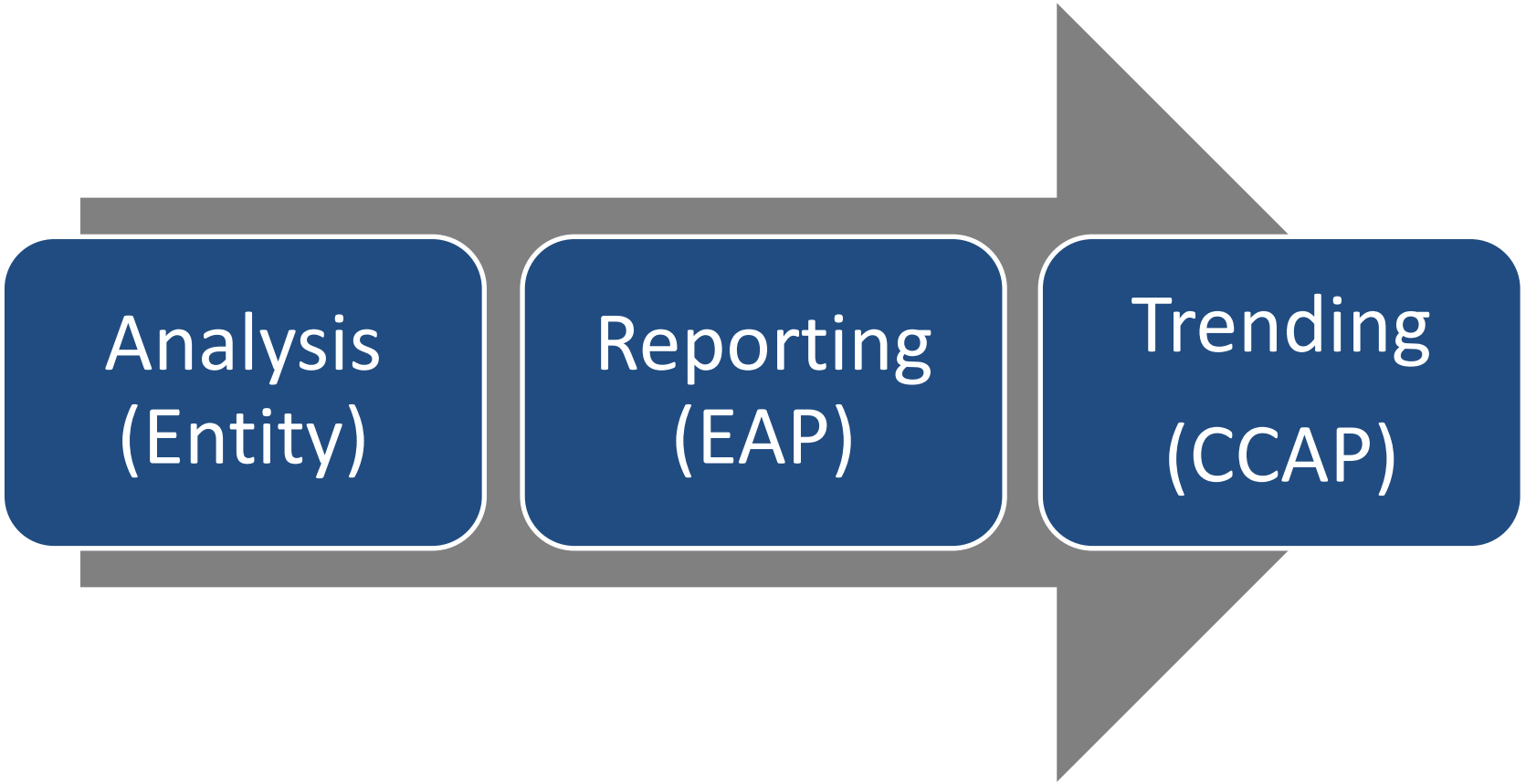
b. Unintended system separation that results in an island of more than 10,000 MW (with the exception of Florida as described in Category 3c)

Category 5: An Event that Results in One or more of the Following

a. Unintended loss of load of 10,000 MW or more

b. Unintended loss of generation of 10,000 MW or more

Off-Normal Event Trending Sequence



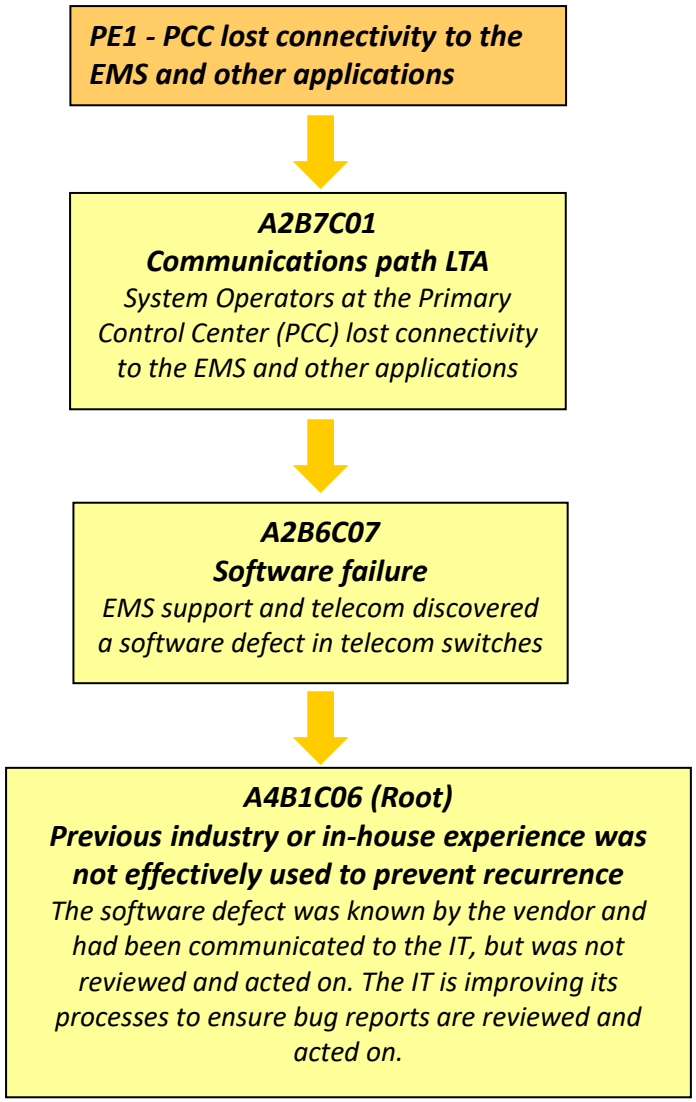
Each step is supported by and reflects the quality of the previous step.

Developing a Cause Coding Sequence (1)

Entity Event Narrative

- *Around 9:26, IT/Telecom personnel were performing troubleshooting on communication equipment and issued a 'packet capture' command to acquire performance information for the communication paths being reviewed.*
- *This command caused errors in telecom switches in both communication paths from the PCC to a grid network thus interrupting the connectivity to the EMS and other applications for System Operator consoles at the PCC.*
- *System Operations personnel at the PCC logged into the Disaster Recovery EMS (DREMS) at ~09:40, utilized recently saved State Estimator data and manually performed a Real-time Assessment to monitor pre and post contingency states and validated those results with the neighboring entities.*
- *EMS support and telecom discovered a software defect in telecom switches.*
- *Vendor support was contacted, switch errors were corrected and rebooted. System Operations was notified that connectivity to the PCC was restored at ~10:20.*

Developing a Cause Coding Sequence (2)



- *Review entity reporting*
- *Identify and capture impactful activities*
- *Develop "story" describing how the event unfolded*

- *Choose potential cause codes aligning with the impactful activities (story)*
- *Ask entity clarifying questions*
- *Finalize cause code sequence*

- *Inform corrective actions*
- *Inform reliability (projects, papers, reports, standards development, etc.)*

Cause Code Assignment

https://vimeopro.com/nerclearning/ccap/video/113298548

ERO EA Program Take-Aways

- Team effort: ERO Enterprise with industry
- Intrinsic and essential: to ERO statutory requirements
- Focused: analyzing system interactions to determine performance impact
- Results: inform across the reliability spectrum
- Lessons learned: facilitates mutual industry sharing and learning
- Industry participation: necessary for BES performance improvement

Shared Reliability Value

- Differing perspectives and expertise enhance event reviews, resulting in a more complete understanding of system risk.
- The regulator is able to inform and address risk(s) in a more precise manner when working cross-functionally.
- A focused effort ultimately rewards good system performers through reduced compliance touchpoints and allows concentrated effort in areas where industry needs it.
- A team understanding of the true risk leads to reliability partnerships with industry ultimately reducing the compliance spot check and/or audit burden.

Questions and Answers

Publicly Available References

- Event Analysis Program Site
- ERO Event Analysis Process Document - Version 4.0
- Cause Code Quick Reference Guide
- Cause Code Assignment Process
- Event Reports
- Lessons Learned

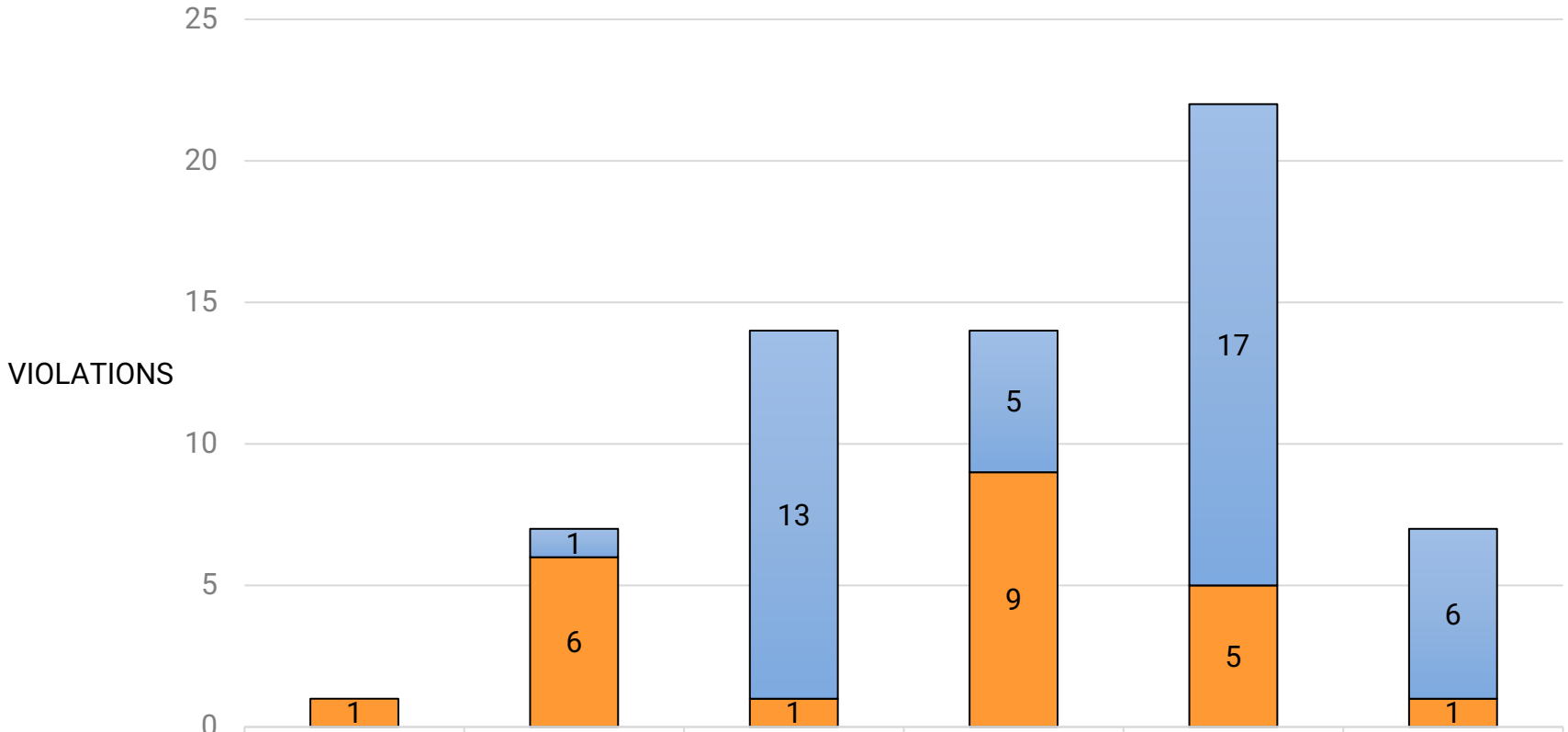
Facility Ratings
Themes and Best Practices

Patrick Palompo, PE

Senior Compliance Engineer

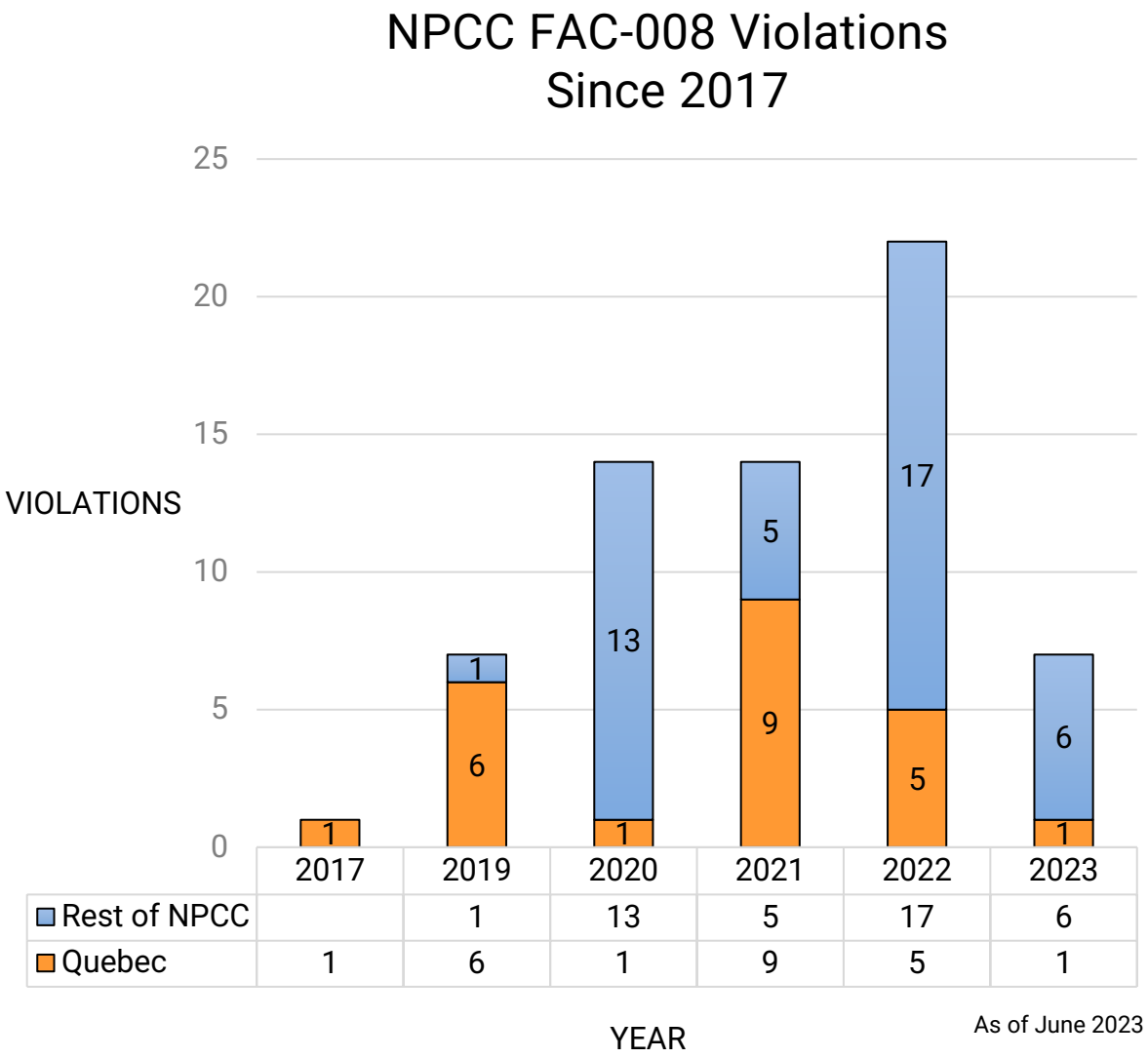
NPCC, Inc.

NPCC FAC-008 Violations Since 2017



	2017	2019	2020	2021	2022	2023
Rest of NPCC		1	13	5	17	6
Quebec	1	6	1	9	5	1

As of June 2023



Violations

35% Quebec

65% Rest of NPCC

Method

46% Audits/Self-Certifications

54% Self-Reports

Themes

Theme 1: Lack of Awareness

Theme 2: Inadequate Asset and Data Management

Theme 3: Inadequate Change Management

Theme 4: Inconsistent Development and Application of Facility Ratings Methodologies

Facility Ratings Theme 1

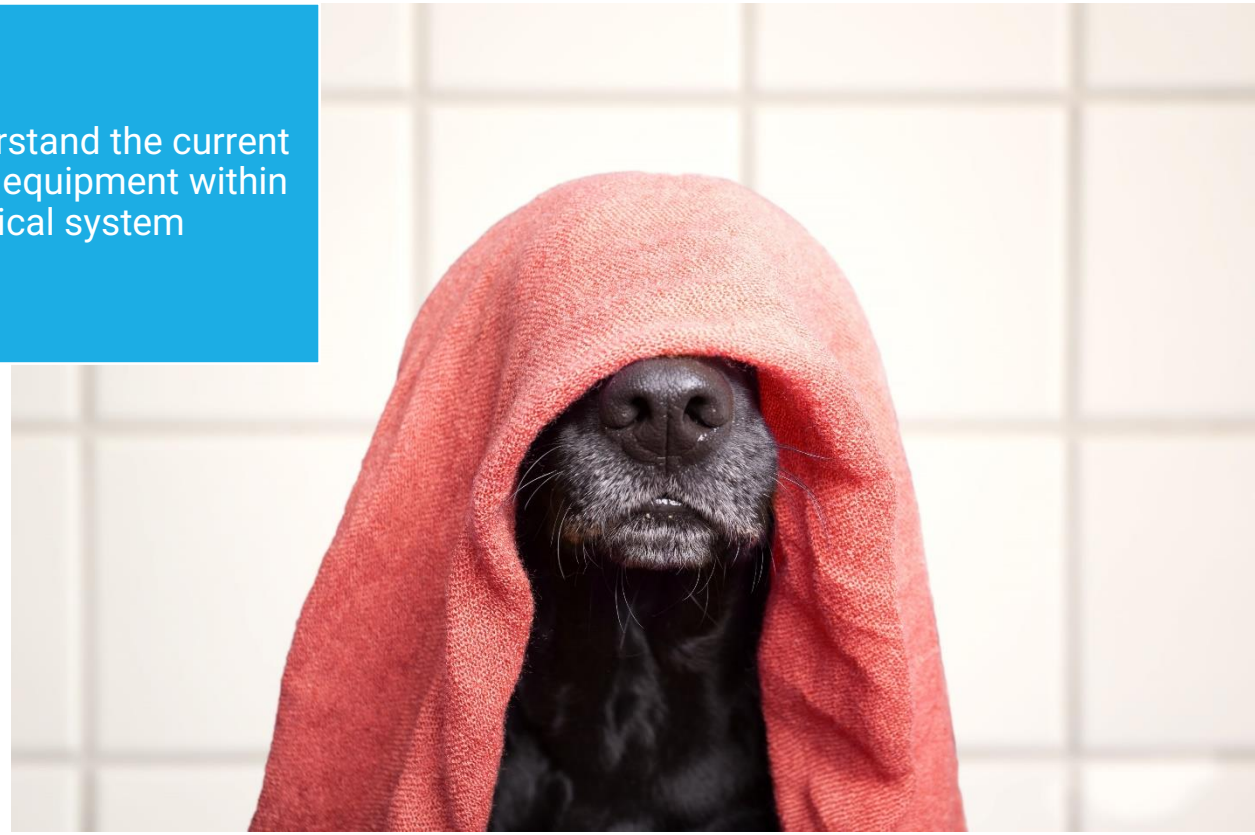
ERO Enterprise Themes and Best Practices

- Theme 1: Lack of Awareness

Failure to adequately document or maintain an accurate equipment inventory

Failure to understand the current carrying series equipment within its electrical system

An ineffective facility ratings validation program, including but not limited to identifying and assessing potential program deficiencies, inadequate methodology, and/or inadequate processes/procedures



Facility Ratings Theme 1

ERO Enterprise Themes and Best Practices

- Theme 1: Lack of Awareness

Observations

- Lack of awareness tends to concern the failure to verify and validate that Facility Ratings accurately reflect the equipment actually installed in the field upon commissioning and/or consider any subsequent equipment changes in the field because of the addition, removal, or replacement of equipment over time or due to an event (e.g., hurricane).

Suggestions

- Establish an accurate baseline with an in-field verification
- Perform periodic in-field verifications post maintenance and/or maintenance activities

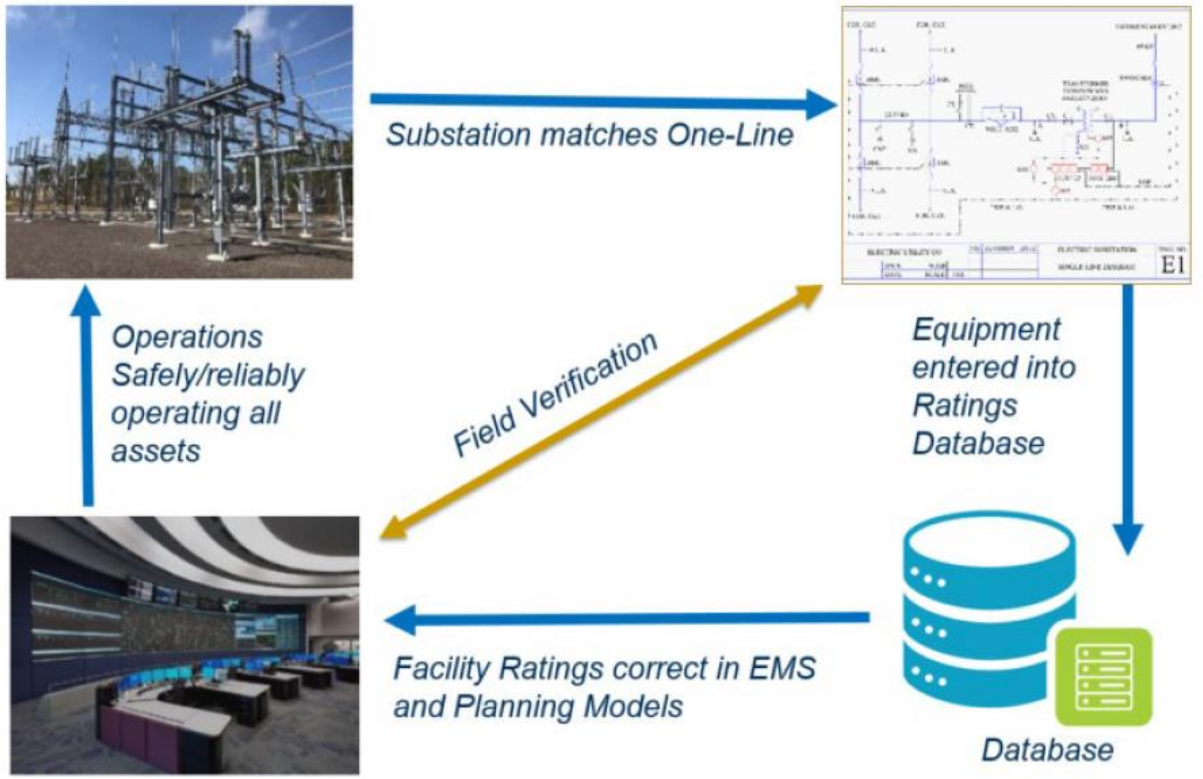
Facility Ratings Theme 2

ERO Enterprise Themes and Best Practices

- Theme 2: Inadequate Asset and Data Management

Asset management (as it relates to facility ratings) is the identification, management, and tracking of physical facility ratings assets. Data management (as it relates to facility ratings) is the collection, validation, and storage of all data associated with facility ratings.

Effective and efficient asset and data management plays an integral role in the success of an entity's facility ratings program and reduces the risk of inaccurate facility ratings.



Facility Ratings Theme 2

ERO Enterprise Themes and Best Practices

- Theme 2: Inadequate Asset and Data Management

Observations

- Common data management failures involve programs that do not identify and account for all necessary pieces of equipment or the equipment's ownership in the field when determining a Facility Rating.
- Programs frequently miss accounting for equipment such as **wave traps, jumpers, connectors, and bus work**.

Suggestions

- Identify each individual piece of equipment even those that typically do not impact Facility Ratings
- List each piece of equipment individually; do not consolidate equipment
- Recognize differences in equipment ratings that allow for emergency Facility Ratings

Facility Ratings Theme 3

ERO Enterprise Themes and Best Practices

- Theme 3: Inadequate Change Management

Change management processes and controls enable facility and equipment rating changes to be captured, coordinated, and implemented throughout the entity in a timely manner.

Without a strong and sustainable change management process, there is a significant risk that inaccuracies in facility ratings will occur.

Photo Credit: BC Hydro, EEP

Facility Ratings Theme 3

ERO Enterprise Themes and Best Practices

- Theme 3: Inadequate Change Management

Observations

- Common Change Management Failures:
  - Lack of, or delay in, communicating changes to all necessary personnel
  - Lack of data entry verification
  - Lack of oversight over contractors performing facility ratings work

Suggestions

- Change Management Controls:
  - Change checklist
  - Quality assurance reviews after any change
  - Validation through periodic reviews
  - Data entry verification
  - Periodic in-field verifications

Facility Ratings Theme 4

ERO Enterprise Themes and Best Practices

- Theme 4: Inconsistent Development and Application of Facility Ratings Methodologies

Each applicable registered entity is required to have a documented methodology for determining facility ratings of its solely and jointly owned facilities.

Facility Ratings Theme 4

ERO Enterprise Themes and Best Practices

- Theme 4: Inconsistent Development and Application of Facility Ratings Methodologies

Observations

- Common Failures:
  - Identifying the most limiting element
  - Entities may have multiple methodology criteria for rating different transmission and generating facilities. This can create confusion on which criteria to apply or make it difficult to apply the criteria consistently

Suggestions

- Develop and maintain a detailed and comprehensive facility ratings methodology
- Provide the specific rating method for each class and type of element comprising a BES facility
- Train appropriate personnel on how to apply the methodology

Facility Ratings Best Practices

ERO Enterprise Themes and Best Practices • Best Practices

- Robust documented change management process
- Inventory management tools, with required training
- Checklists for new inventory to be added
- Effective data capture processes
- Single database for master record keeping
- Access controls established for facility management tools
- Built in quality assurance reviews, in concert with internal controls
- Periodic in-field validation/field walk-downs
- Facility ratings program owner
- Management oversight

Questions

Patrick Palompo
ppalompo@npcc.org

Enforcement Essentials

Melissa Persaud

NPCC, Inc.

Topics

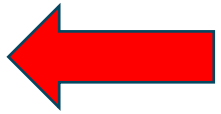
- Enforcement Philosophy
- Contents of a Self-Report
- Enforcement Process

- Humans fail.

Enforcement

- Violations happen
- Minimizing scope and impact
  - How long did it take the Entity to discover the issue?
  - To remediate?
  - What did it do to prevent future occurrences?
- Self-Reporting is key

Self-Report

- Description of the Non-Compliance 
- Risk Assessment
- Mitigation

Delivering a Clear Picture

- Completing the Description:
  - Who - Describe Parties involved in the Non-Compliance.
  - What - Describe the Non-Compliance.
  - When - Accurate and Significant Dates.
  - Where - Scope of Impact.
  - Why - Why did this Happen?
  - How - Identify How it was Discovered.

Root Causes

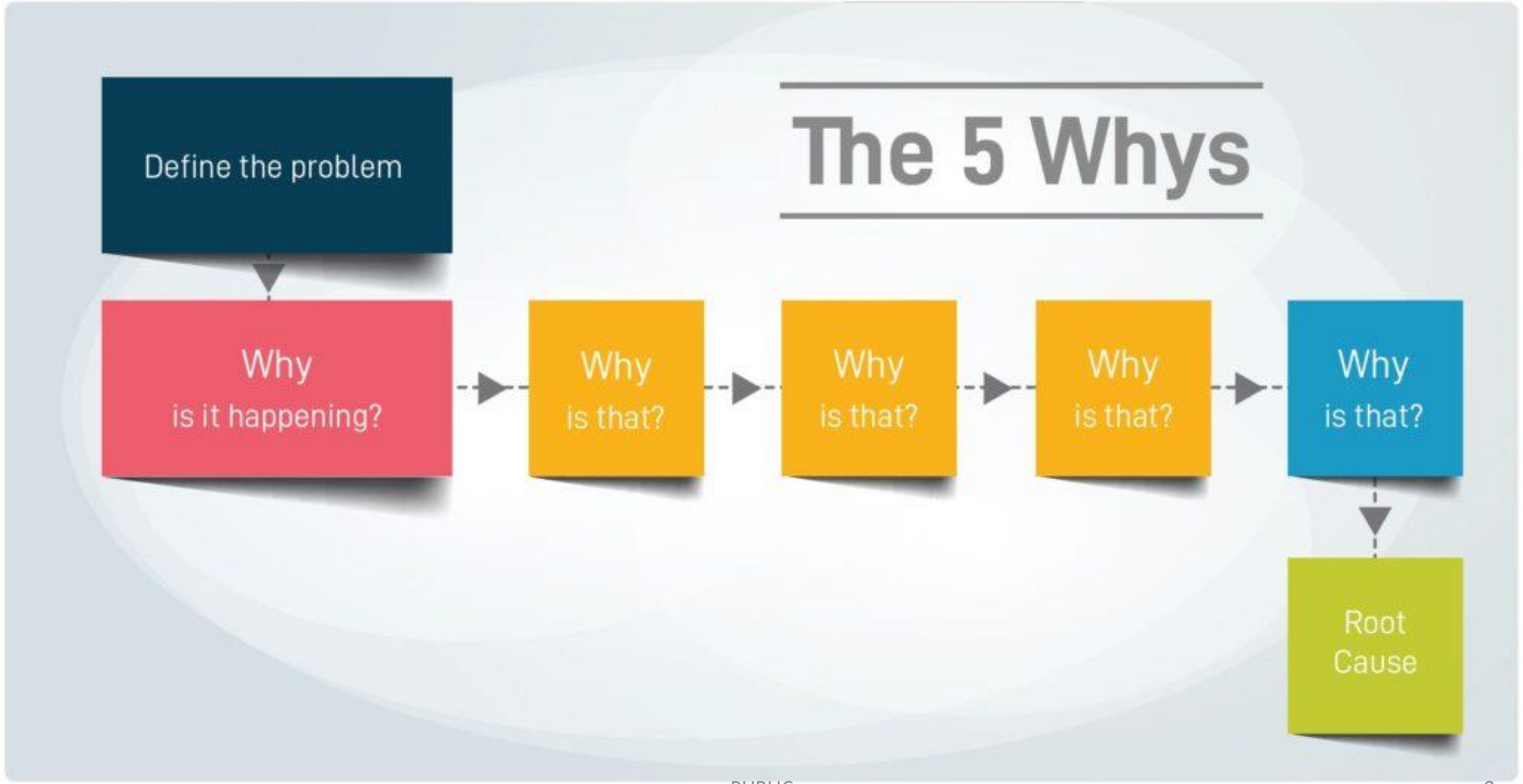
What happened?

Why did it happen?

Root Cause Analysis

Root cause analysis is all about perspective

- Understand the context
- Organizational weaknesses and procedural failures lead to most issues
- Focus on processes and procedures
- Focus on proper controls
- Assume staff pursued the best possible solution given constraints


The 5 Whys
Define the problem
Why is it happening?
Why is that?
Why is that?
Why is that?
Why is that?
Root Cause

Problem: Failed to test batteries

Why?

- Maintenance team failed to complete PRC-005-6 18-month battery testing

Problem: Failed to test batteries

Why?
- Maintenance team failed to complete PRC-005-6 18-month battery testing

Why?
- Team forgot to complete tests because of other responsibilities

Problem: Failed to test batteries

Why?
- Maintenance team failed to complete PRC-005-6 18-month battery testing

Why?
- Team forgot to complete tests because of other responsibilities

Why?
- Because testing schedules were documented in an excel sheet and easily overlooked

Problem: Failed to test batteries

Why?
- Maintenance team failed to complete PRC-005-6 18-month battery testing

Why?
- Team forgot to complete tests because of other responsibilities

Why?
- Because testing schedules were documented in an excel sheet and easily overlooked

Why?
- Maintenance teams did not have access to work management software

Problem: Failed to test batteries

Why?
- Maintenance team failed to complete PRC-005-6 18-month battery testing

Why?
- Team forgot to complete tests because of other responsibilities

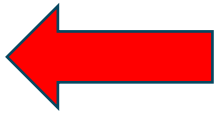
Why?
- Because testing schedules were documented in an excel sheet and easily overlooked

Why?
- Maintenance teams did not have access to work management software

Why?
- XYZ entity failed to provide work management software

- It would be easy to take the earlier reasons as the root cause
- The maintenance team used the tools that were available to them
- Dig deep and look for the context

Self-Report

- Description of the Non-Compliance
- Risk Assessment 
- Mitigation

Risk Assessment

What happened

vs.

What **could** have happened

.

Standard / Requirement

- Identify general risk associated with Standard and Requirement
  - Each has unique risk associated
  - Consider the rationale provided in the Standard
  - Consider the Violation Risk Factor (VRF) and Violation Severity Level (VSL)

Facts and Circumstances

- What is the narrative? What happened?
  - Was the non-compliance intentional or a result of negligence?
  - Was the failure part of a wider systemic issue?
  - What was the method of discovery?
- Consider the number of assets affected
  - What was the location of the assets?
  - What were the assets responsible for?
- Duration
  - How long was the non-compliance?
  - Was it continuous?
  - What was the violation time horizon?

How Serious?

Harm

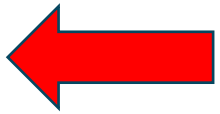
- Did any actual harm occur?
- Impact/Damage?

- Compliance History
  - Prior non-compliances?

Mitigating Factors

- What other protections were in place that could offset the risk?
- What systems or controls could reduce the likelihood of impact?

Self-Report

- Description of the Non-Compliance
- Risk Assessment
- Mitigation 

Mitigation

- Ending Non-compliance
- Am I fixing the root cause?

Enforcement Process

Assess the Non-Compliance

- Sufficient Details
- Mitigation
- Request for Information (RFI)

Disposition Track

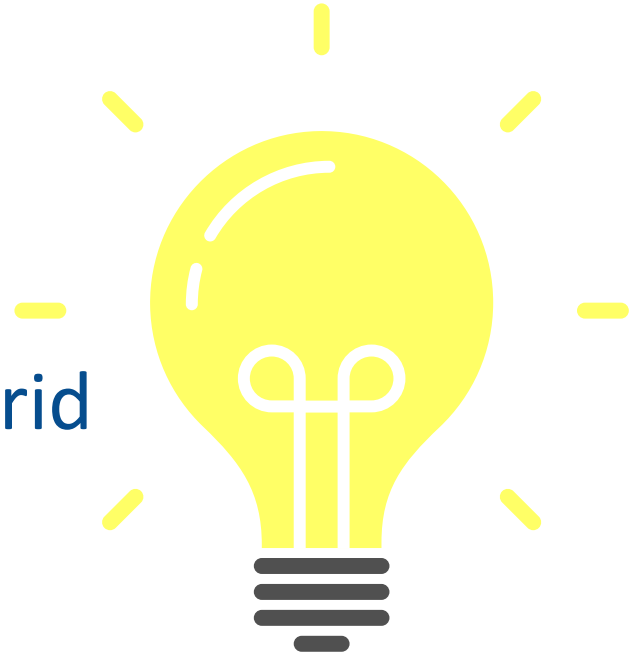
- Dismissal
- Simplified Identification, Correction, and Monitoring (SICM)
- Notice of Non-Compliance

Calculating Penalty

- Account for Aggravating and Mitigating Factors
  - Repetitive violations and the entity's compliance history
  - Intentional violations
  - Any attempt by the entity to conceal
  - Degree and quality of cooperation by the entity in the violation investigation and in any Mitigating Activities directed for the violation
  - Disclosure of the violation by the entity through self-reporting and voluntary Mitigating Activities by the entity
- Settlement

Importance of Enforcement

- Improve processes and systems
- Reduce the likelihood of system failures
- Reduce the severity of issues when they occur
- Do our part to help maintain a reliable power grid



A DIVISION OF NERC

E-ISAC

ELECTRICITY INFORMATION SHARING AND ANALYSIS CENTER

Electricity Information Sharing and Analysis Center

Regie de l'energie

Bluma Sussman, Director, Membership

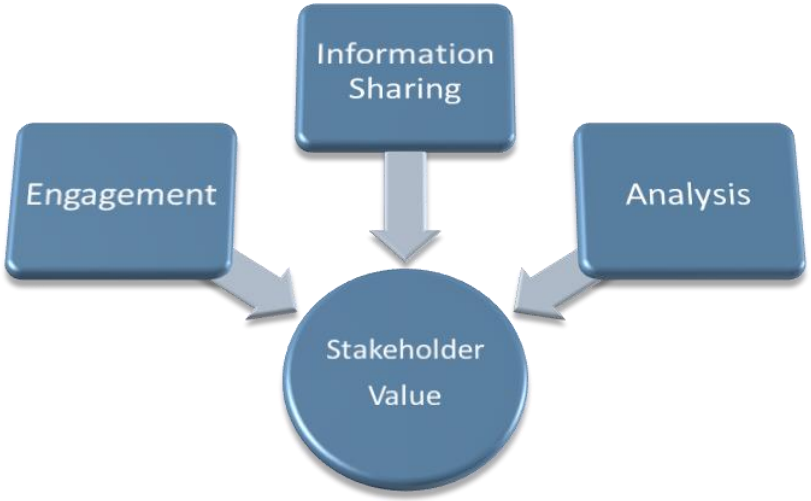
September 14, 2023

TLP:CLEAR

RELIABILITY | RESILIENCE | SECURITY

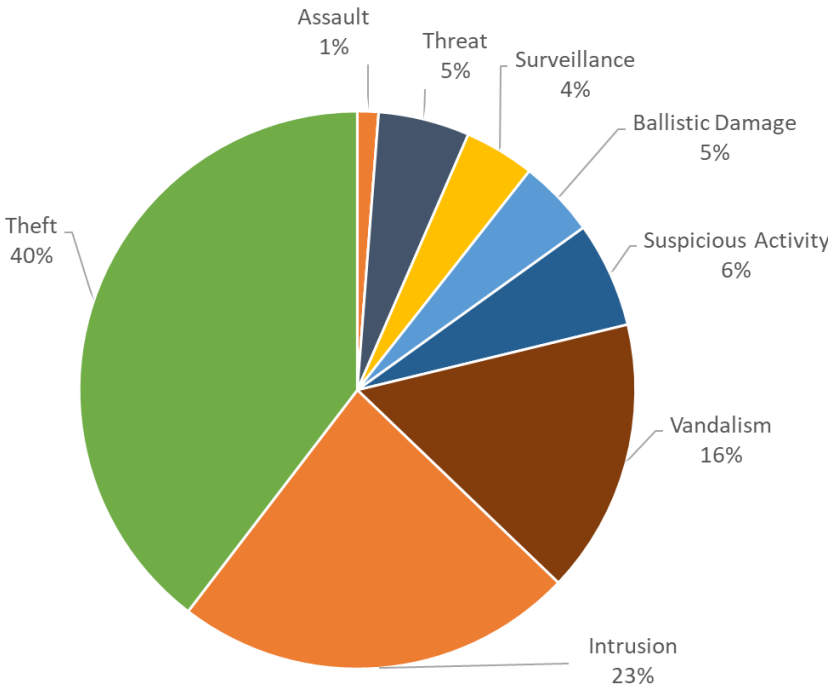
The E-ISAC: Securing the North American Power Grid

- **Share and exchange** timely and actionable information
- **Analyze** security threats and mitigation strategies
- **Collaborate** with industry, U.S. and Canadian government partners, and other stakeholders
- **Facilitate** webinars, conferences, exercises, engagement programs

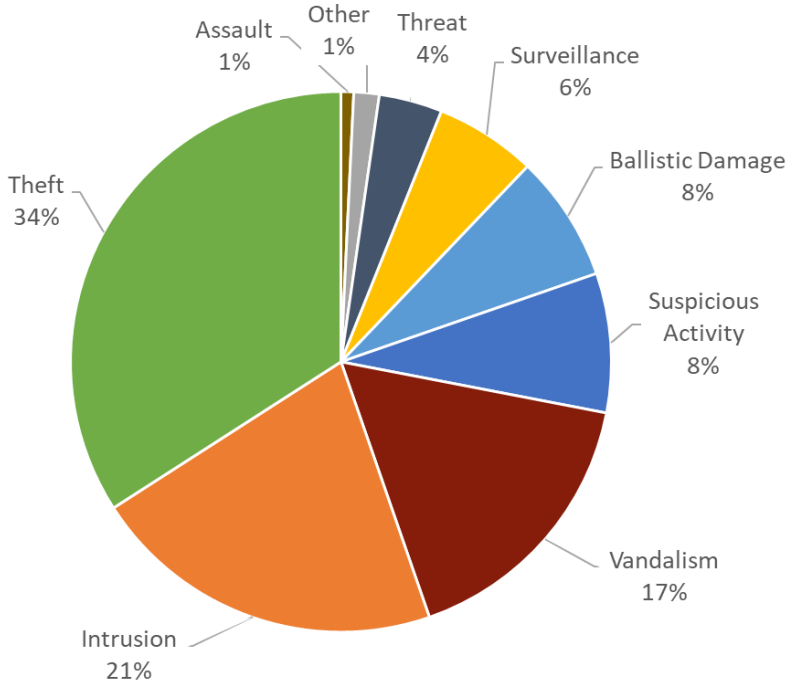


Threat Landscape

Incident Analysis: August 2023



Breakdown of Incident-Type (Projected)
August Outlook 2023



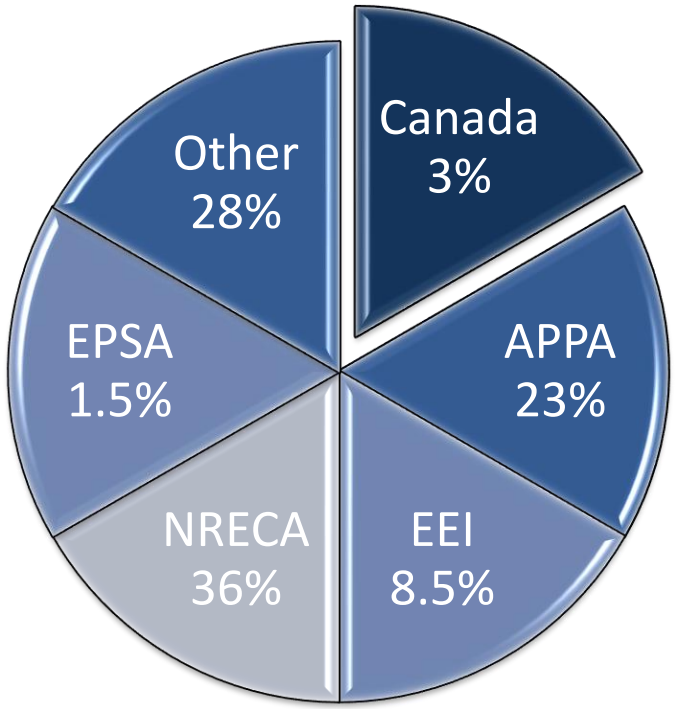
Breakdown of Incident-Type (Realized)
August 2023 *(Working Draft)*

E-ISAC Membership

- Who Can Be a Member?
  - **Organizations**: All electricity industry asset owners and operators and select government partners across North America
  - **Individuals**: Cyber and Physical Security professionals at all levels – from analysts, managers, directors to senior executives
    - Membership is open to Canadian/U.S. Regulatory Organization staff with roles that do not include compliance monitoring and enforcement responsibility
  - No cost to being an E-ISAC member

E-ISAC Membership

- Membership
  - More than 1,700 organizations across North America
  - Nearly 7,000 individual Portal users
- Canadian Membership
  - 80+ organizations (member/partner)
  - 500 Canadian Portal users
  - 35 out of 42 Electricity Canada members



E-ISAC Member Organizations by Trade Association as of 8/22/23

E-ISAC Partners

NRECA America's Electric Cooperatives
Electricity Canada | Électricité Canada
national council of ISACs
Public Safety Canada | Sécurité publique Canada
Natural Resources Canada | Ressources naturelles Canada
Canada
ESCC Electricity Subsector Coordinating Council
JE-ISAC Japan Electricity Information Sharing and Analysis Center
AMERICAN PUBLIC POWER ASSOCIATION
EEI Edison Electric INSTITUTE
EE-ISAC Information sharing in network of trust
CANADIAN CENTRE FOR CYBER SECURITY | CENTRE CANADIEN POUR LA CYBERSÉCURITÉ
WATER ISAC
MS-ISAC Multi-State Information Sharing & Analysis Center
SEIA Solar Energy Industries Association®
EPSA
DNG-ISAC
INGAA Interstate Natural Gas Association of America
AGA American Gas Association
NATIONAL GOVERNORS ASSOCIATION
ONG-ISAC Information Sharing & Analysis Center
Fueling the Exchange of Cyber Intelligence
Homeland Security
NARUC National Association of Regulatory Utility Commissioners
FS-ISAC
U.S. DEPARTMENT OF ENERGY
NERC NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION
NCC
Analysis & Resilience Center FOR SYSTEMIC RISK
INL
Pacific Northwest NATIONAL LABORATORY

What to Share

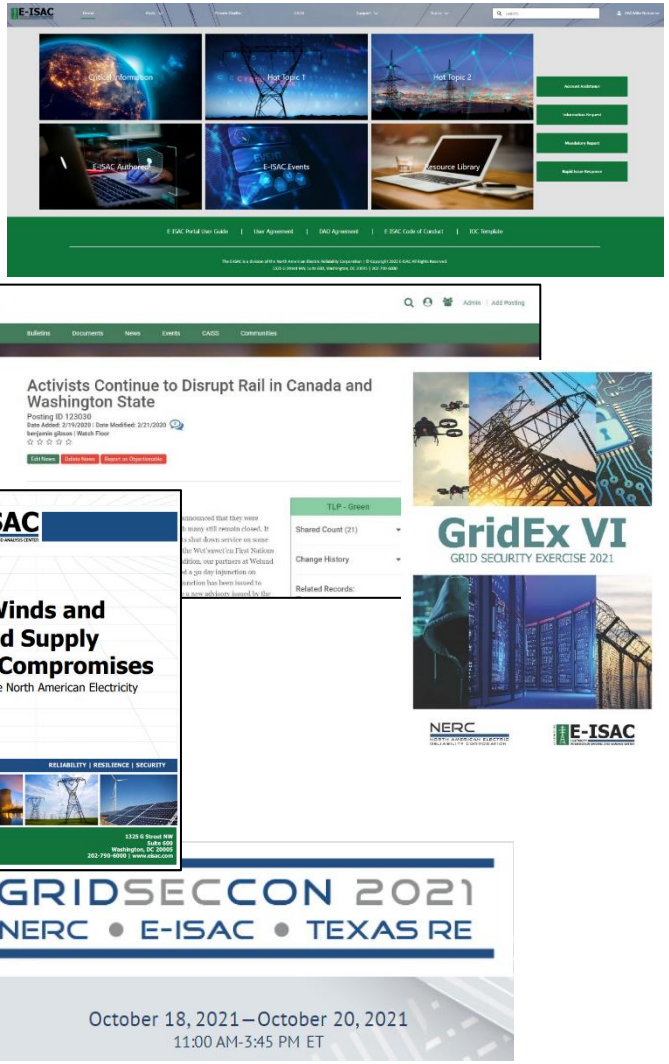
- **Cyber Security**
  - Suspicious Traffic
  - Vulnerability probing and exploitation activity
  - Malware
  - Analysis, insights, forensic artifacts from incident response and threat hunting
- **Physical Security**
  - Unusual observation, suspicious activity, or surveillance of facilities
  - Expressed or implied threats
  - Breach or attempted intrusion
- **24/7 Analyst Support**
  - Individual incidents or bulk data submissions

How to Share

- Members can share directly with the E-ISAC:
  - Post to the Portal www.eisac.com;
  - Email the E-ISAC at operations@eisac.com or physicalsecurity@eisac.com; or
  - Call the Watch Floor 202-790-6000

Access to Information, Products, and Programs

- 24/7 Watch Operations
- Secure Portal Access
- Customized situational awareness on:
  - Security Threats
  - Cyber and Physical Bulletins
  - Critical Broadcast Program Alerts
- Security Briefings
  - Monthly Security Webinars
  - Special Topic Briefings
- Programs and Events
  - GridSecCon and GridEx VII
  - Industry Engagement Program
  - VISA Workshops



GRIDSECCON 2023

NERC • E-ISAC • NPCC

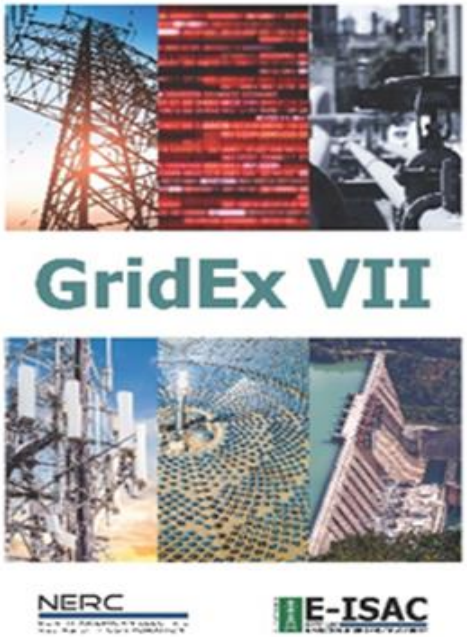
- Registration is open
- Two hotel options: Hilton Québec City Hotel and Delta Québec
- General Sessions, Keynotes, and Panels
- 10 training sessions and 24 breakout sessions

- For more information or sponsorship inquiries, please contact events@eisac.com

GridEx VII

- Distributed Play, November 14–15, 2023
  - **Audience**: E-ISAC members and partners, to include electricity industry, government agencies, other relevant organizations
  - **Goal**: exercise emergency response and recovery plans in response to simulated cyber and physical security attacks and other contingencies affecting North America's electricity system

- Executive Tabletop (invitation only), November 16, 2023
  - **Audience**: industry and government executives from the ESCC, EGCC, and impacted entities



Vendor Affiliate Program

- VAP addresses increasing interdependencies in the supply chain and risk to electricity industry members
- Fee-based membership program open to security solutions providers and OEM suppliers
- Focus on facilitating thought leadership and timely information sharing; no business development
- Opportunities to collaborate and participate

Get Involved

- Collective defense actions
  - Share with the E-ISAC and government/law enforcement; access E-ISAC intelligence products
  - Protect IT and OT systems
  - Participate in GridSecCon and GridEx
- Request Membership: www.eisac.com
- Share Info: Operations@eisac.com
- Contact Us: MemberServices@eisac.com

CIP-012-1 Communications Between Control Centers (Quebec Focused)

Michael Bilheimer

Senior CIP Analyst

NPCC, Inc.

CIP-012-1 Effective Dates

US	Ontario	New Brunswick	Nova Scotia	Quebec
• July 1, 2022	• July 1, 2022	• October 1, 2022	• October 1, 2022	• **July 1, 2024**

Currently Effective

Future

CIP-012 Objective

Purpose: To protect the confidentiality and integrity of Real-time Assessment (RTA) and Real-time monitoring (RTM) data transmitted between Control Centers

NERC Definition: One or more facilities hosting operating personnel that monitor and control the Bulk Electric System (BES) in real-time to perform the reliability tasks, including their associated data centers, of: One or more facilities hosting operating personnel that monitor and control the Bulk Electric System (BES) in real-time to perform the reliability tasks, including their associated data centers, of:

- **1) a Reliability Coordinator,**
- **2) a Balancing Authority,**
- **3) a Transmission Operator for transmission Facilities at two or more locations, or**
- **4) a Generator Operator for generation Facilities at two or more location**

Applicability: BA, **GO**, GOP, RC, TOP, **TO**

Quebec Entities

- The Register of Entities subject to Reliability Standards (filed on January 19, 2023)

Regie Entities: 29

RC, BA, TOP: 1

TO: 6

GOP, GO: 25

Not Applicable: 2

Exceptions

A Control Center that transmits to another Control Center Real-time Assessment (RTA) or Real-time monitoring (RTm) data pertaining only to **the generation resource or Transmission station or substation co-located with the transmitting Control Center.**

CIP-012-1 Requirement 1

The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

- **1.1.** Identification of security protection used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers;
- **1.2.** Identification of where the Responsible Entity applied security protection for transmitting Real-time Assessment and Real-time monitoring data between Control Centers; and
- **1.3.** If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for applying security protection to the transmission of Real-time Assessment and Real-time monitoring data between those Control Centers.

Quebec Control Center Definition

Appendix CIP-12-1-QC-1 Control Center Definition:

- One or more facilities operating personnel that monitor and control the Main Transmission System (RTP) in real-time to perform the reliability tasks, including their associated data centers, of: 1) a Reliability Coordinator, 2) a Balancing Authority, 3) a Transmission Operator for transmission Facilities at two or more locations, or 4) a Generator Operator for generation Facilities at two or more locations.

NERC Control Center Definition:

- One or more facilities hosting operating personnel that monitor and control the Bulk Electric System (BES) in real-time to perform the reliability tasks, including their associated data centers, of: 1) a Reliability Coordinator, 2) a Balancing Authority, 3) a Transmission Operator for transmission Facilities at two or more locations, or 4) a Generator Operator for generation Facilities at two or more location

High Level Required Actions

Documented Plan(s)

Identification of Security Protection

Identification of Applied Security Protection

Corporation between Entities Exchanging RTA and RTM information between Control Centers

Questions

Control Center Definition:

- **NERC Glossary of Terms**
  - **Facility - Defined**
  - **Data Center – Not Defined**
  - **RTA/RTM – RTA –Defined/ RTM- Not Defined**
  - **Reliability Task –Not Defined.**

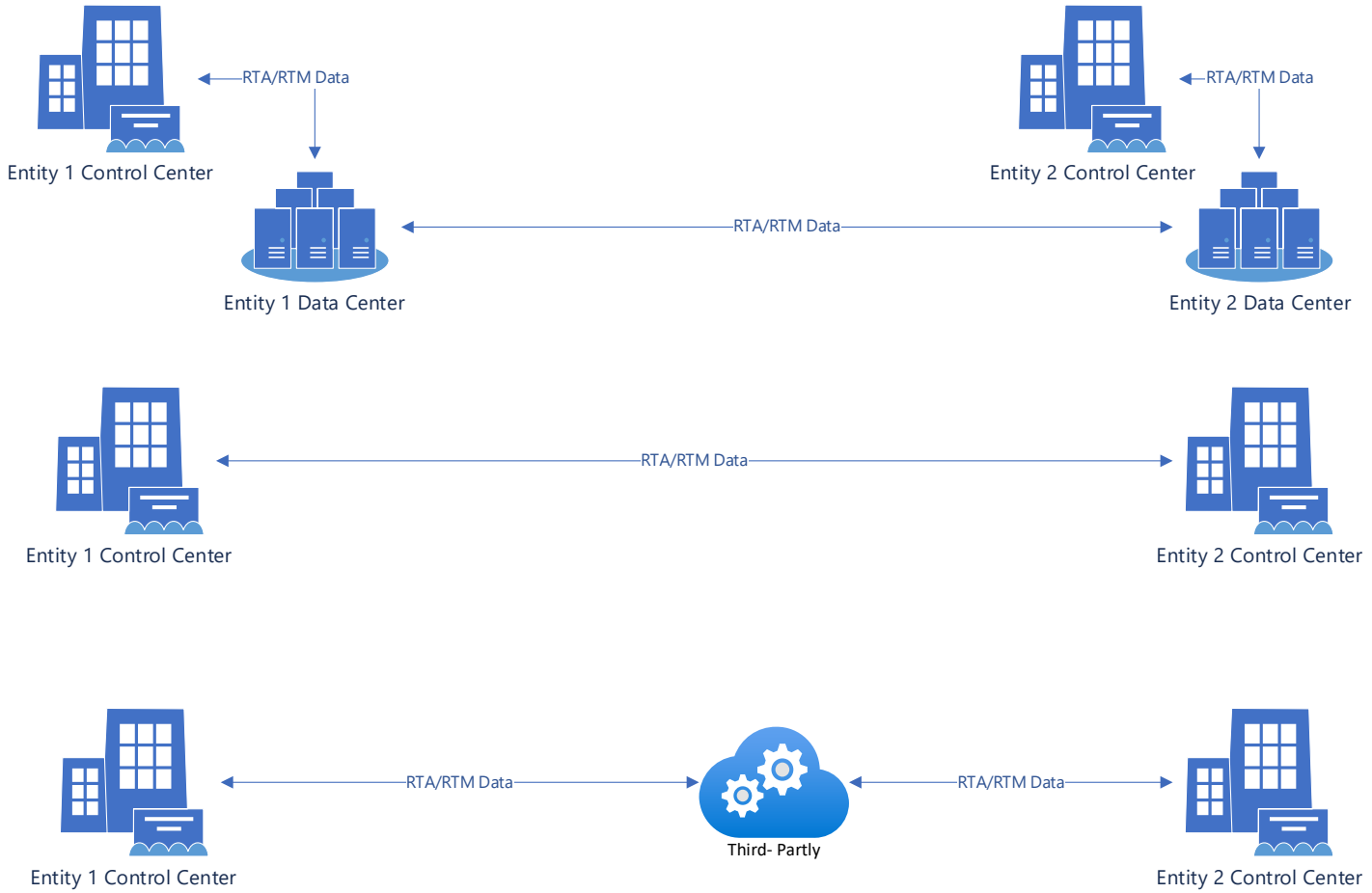
Defining a Generation Facility as One or Two Facilities

- Interconnection
- Geographic Separation
- Unique Situations

NPCC Specific Diagrams for CIP-012

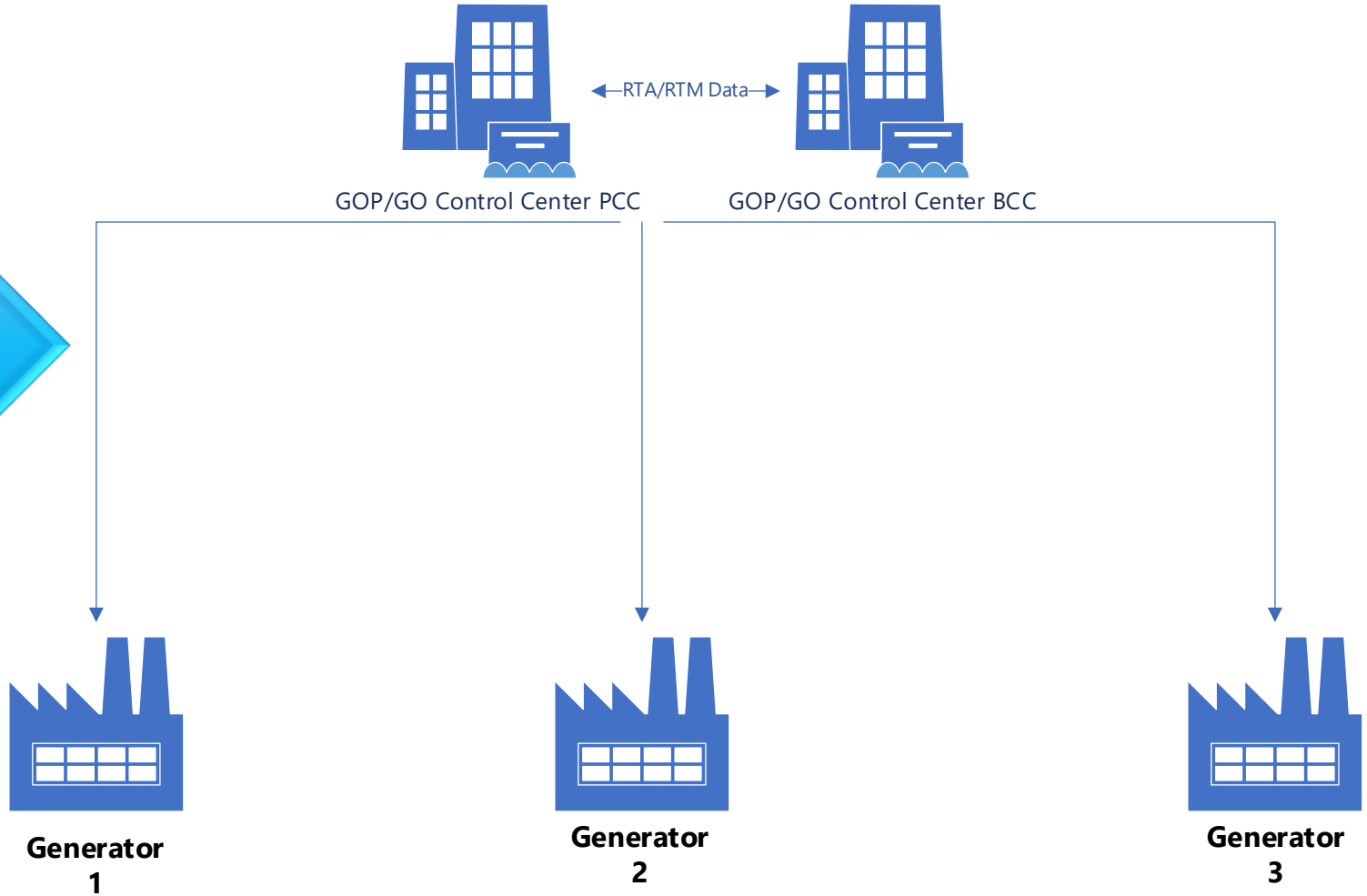
- NPCC has not developed specific diagrams for CIP-012 beyond ERO endorsed diagrams

Generic Diagrams: Two Entities

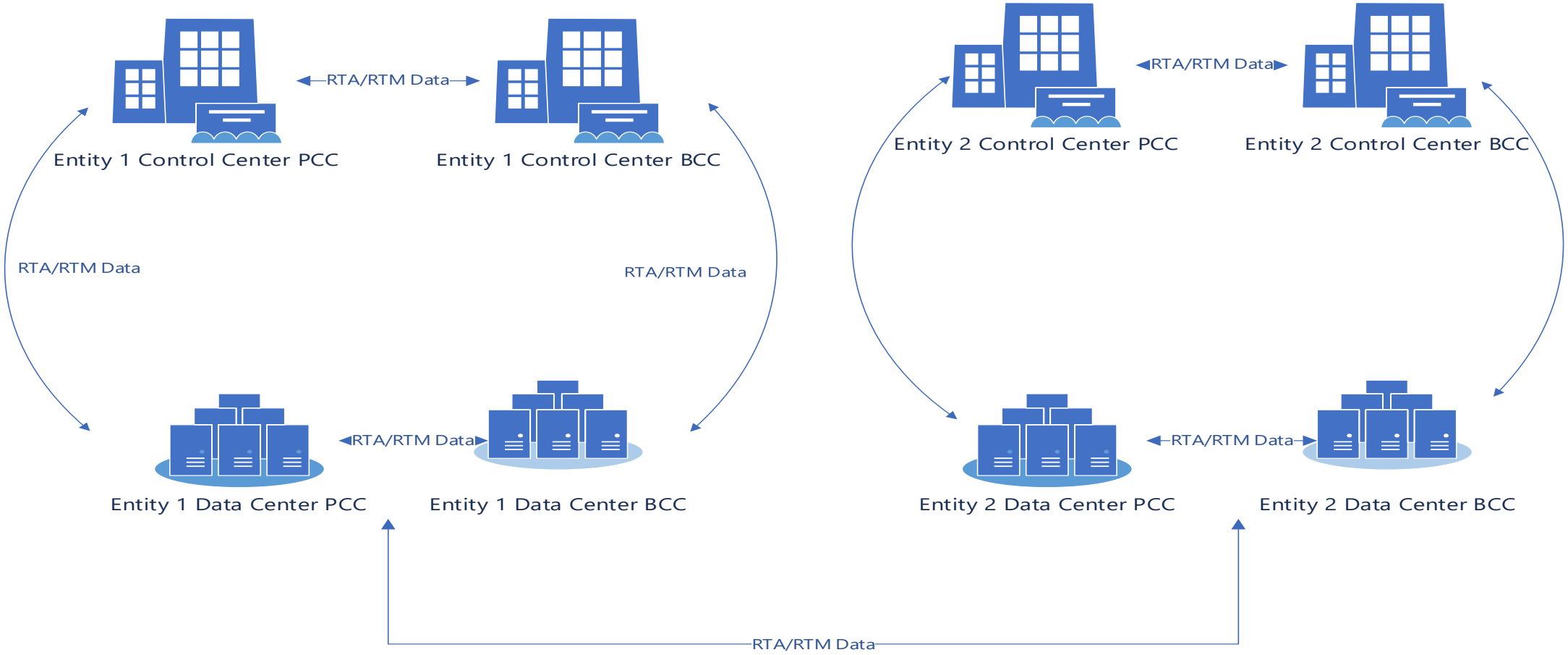


Generic Diagrams 4: GOP/GO Communication

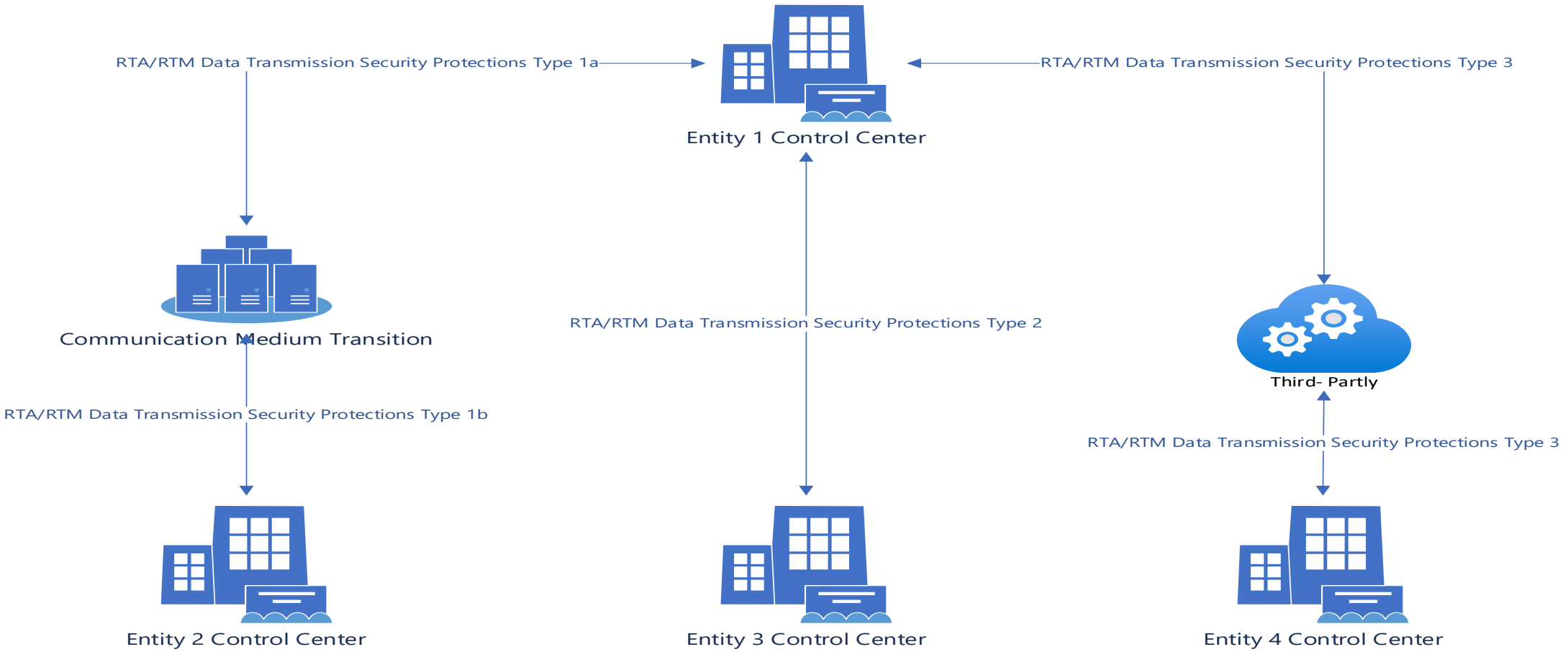
Single Site Vs Geographic Separation of Generators



Generic Diagrams 2: Internal and External Transmission



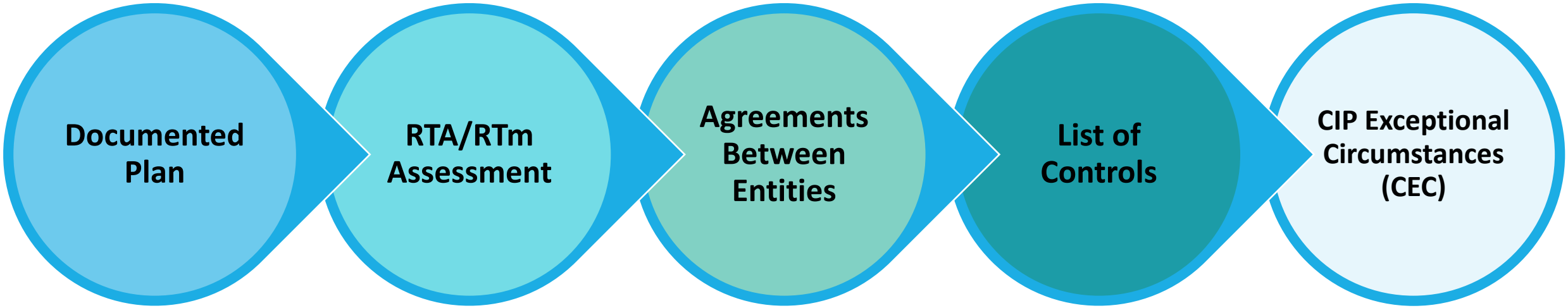
Generic Diagrams 3: Multi - Transmission



Auditors Compliance Assessment Approach Specifics

R1	• Verify the Responsible Entity has identified any applicable Control Centers.
R1	• Verify the Responsible Entity has identified the transmission of RTA and RTM data between any applicable Control Centers.
R1.1	• Verify the documented plan(s) includes identification of security protection.
R1.2	• Verify the documented plan(s) includes identification of where the Responsible Entity applied security protection.
R1.3	• If RTA or RTM data is transmitted between any applicable Control Centers owned or operated by different Responsible Entities, verify the documented plan(s) includes identification of the responsibilities of each Responsible Entity(ies).
R1	• Verify the entity has implemented, except under CIP Exceptional Circumstances, the documented plan(s) applying security protection to these transmissions.
R1	• Verify the documented and implemented plan(s) achieves the security objective of mitigating the risks posed by unauthorized disclosure and unauthorized modification of RTA and RTM data while being transmitted between any applicable Control Centers.
R1	• Verify entity declaration of CIP Exceptional Circumstances for CIP-012-1

Questions from the Auditors Entity: General



Questions R1 High Level

Evidence:

- Provide a description (diagram and/or narrative) of the of the entity communication paths with demarcation between CIP-012 responsibilities between entities including?
- Provide a description (diagram and/or narrative) of the Entity established mitigation measures and where are they applied.

Controls

- How does your entity determine if the security controls have been and are implemented?
- What type of monitoring do you have for the security controls that have been implemented?
- Does your entity preform review of the CIP-012 mitigation measures to determine if they are still effective?

Applied Physical Security

Evidence:

- Physical Security diagrams
- Applied physical security methods (Pictures/Alarms Reports)
  - Inaccessibility of communication transmission Path
  - Conduit
  - Secure facility
  - Camera monitoring

Encryption Evidence

When using encryption provide evidence:

- Entity demonstrates security controls active For each RTA and RTM transmission segment
  - Inter Entity
  - Entity to Entity
  - Entity ⟷ 3RD Party ⟷ Entity

Encryption Evidence

Encryption level on all communication Paths and Config files (all or applicable encryption configuration files)

Evidence that Encryption is applied

Who is responsible for monitoring encryption failure

Third Party

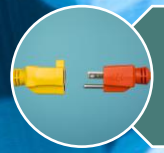
Vendor Deployed Controls (Encryption or Other)

Depiction of Applied Mitigation (Narrative/Drawing/ Pictures)

Who's Responsible for What aspects of Mitigation Controls.

Alerting and Responding

Loss of Deployed Control(s)

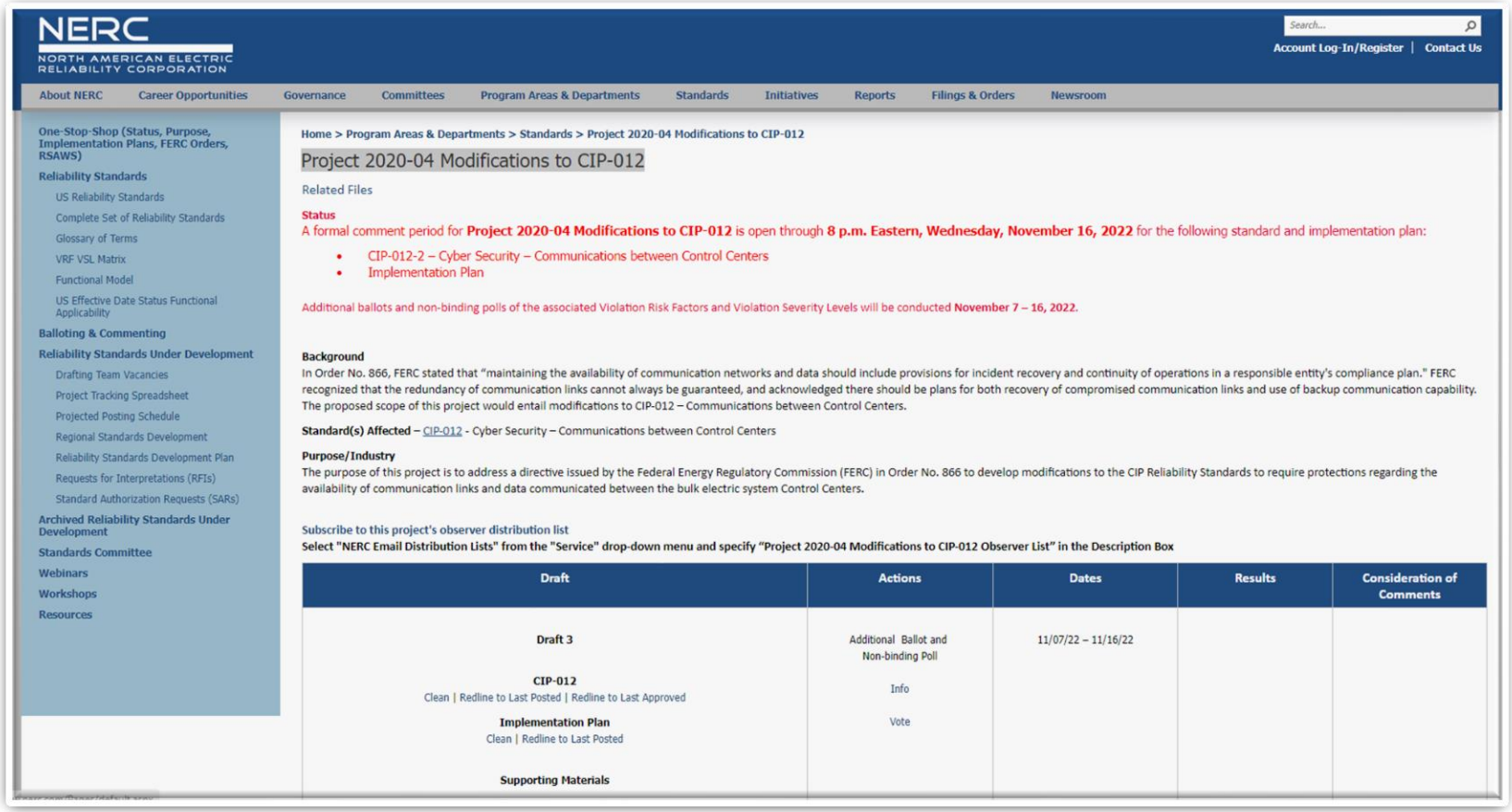


Testing of Third Party Applied Mitigation.

Third-party supply chain

CIP-012-2

- Project 2020-04 Modifications to CIP-012



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NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

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One-Stop-Shop (Status, Purpose, Implementation Plans, FERC Orders, RSAWS)
Reliability Standards
- US Reliability Standards
- Complete Set of Reliability Standards
- Glossary of Terms
- VRF VSL Matrix
- Functional Model
- US Effective Date Status Functional Applicability

Balloting & Commenting
Reliability Standards Under Development
- Drafting Team Vacancies
- Project Tracking Spreadsheet
- Projected Posting Schedule
- Regional Standards Development
- Reliability Standards Development Plan
- Requests for Interpretations (RFIs)
- Standard Authorization Requests (SARs)

Archived Reliability Standards Under Development
Standards Committee
Webinars
Workshops
Resources

Home > Program Areas & Departments > Standards > Project 2020-04 Modifications to CIP-012

Project 2020-04 Modifications to CIP-012

Related Files

Status
A formal comment period for **Project 2020-04 Modifications to CIP-012** is open through **8 p.m. Eastern, Wednesday, November 16, 2022** for the following standard and implementation plan:

- CIP-012-2 – Cyber Security – Communications between Control Centers
- Implementation Plan

Additional ballots and non-binding polls of the associated Violation Risk Factors and Violation Severity Levels will be conducted **November 7 – 16, 2022.**

Background
In Order No. 866, FERC stated that "maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity's compliance plan." FERC recognized that the redundancy of communication links cannot always be guaranteed, and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability. The proposed scope of this project would entail modifications to CIP-012 – Communications between Control Centers.

Standard(s) Affected – CIP-012 - Cyber Security – Communications between Control Centers

Purpose/Industry
The purpose of this project is to address a directive issued by the Federal Energy Regulatory Commission (FERC) in Order No. 866 to develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between the bulk electric system Control Centers.

Subscribe to this project's observer distribution list
Select "NERC Email Distribution Lists" from the "Service" drop-down menu and specify "Project 2020-04 Modifications to CIP-012 Observer List" in the Description Box

Draft	Actions	Dates	Results	Consideration of Comments
Draft 3 **CIP-012** Clean | Redline to Last Posted | Redline to Last Approved **Implementation Plan** Clean | Redline to Last Posted **Supporting Materials**	Additional Ballot and Non-binding Poll Info Vote	11/07/22 – 11/16/22		

Key CIP-012-1 Resources

Regie: CIP-012 Standard / Regie: Glossary of Terms and Acronyms used in Reliability Standards (filed on January 19, 2023)

ERO Endorsed CIP-012-1 Compliance Guidance

NERC CIP-012 Small Group Advisory Session Webinar| **March 8, 2022:** Presentation| Streaming Webinar | **June 2, 2022:** Presentation| Streaming Webinar

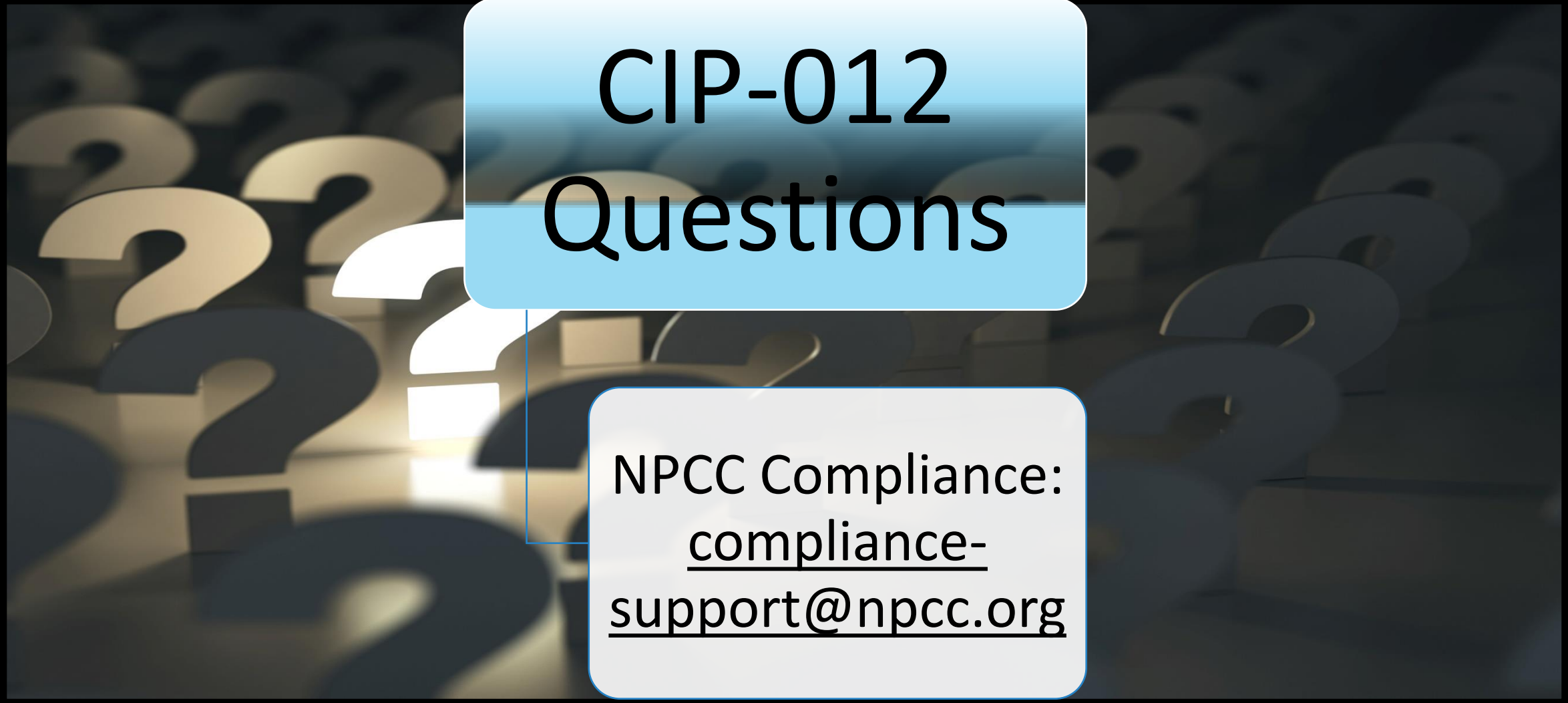
NERC CIP-012 FAQ

CIP-012 RSAW

NPCC Whitepaper on NERC Reliability Standard CIP-012(Not ERO Endorsed)

Texas RE 2022 Spring Standards Workshop Presentation| Streaming Webinar

Contact NPCC Compliance: compliance-support@npcc.org



CIP-012 Questions

NPCC Compliance: compliance-support@npcc.org



Activités du Comité utilisation des sanctions

Séminaire annuel sur la fiabilité – 3e édition

Septembre 2023

Régie de l'énergie Québec



Activités exécutées et à venir

Axe 1 - Formation continue des entités visées (Dépenses : 283 k$ prévues, 65 k$ exécutées)			
Type d'activité	**Activité**	**Places offertes par entité visée**	**Date**
Organisation des formations incluant le service d'interprétation simultanée	Webinaire d'automne 2021 et 2022 (Régie/NPCC)	Sans limite	9 novembre 2021 et 1er novembre 2022
	Séminaire d'été 2023 (Régie/NPCC/NERC/E-ISAC)	5 sur place/ 5 en ligne	14 septembre 2023
Paiement de formations privées « *in-house* » incluant le service d'interprétation simultanée	Cours *Fundamentals of Electricity Transmission* (EUCI)	1	3 mars 2023
	Cours *NERC Critical Infrastructure Protection (CIP)* (EUCI)	2	22 et 23 mars 2023
Production de capsules vidéo (FR et AN)	Capsule sur les processus règlementaire	S.O.	1er novembre 2022
	Capsules sur les dates inscrites aux normes et aux annexes Québec et sur le SSCQ	**S.O.**	**1er trimestre 2024**
Paiement de l'inscription aux formations offertes par d'autres organismes	GRIDSECCON 2022 (NERC/E-ISAC)	5	17 au 19 octobre 2022
	GTD (IEEE PES Latin America)	2	20 au 22 octobre 2022
	GridSecCon 2023 (NERC/E-ISAC/NPCC) (lien)	**3**	**17 au 20 octobre 2023**
Paiement du service d'interprétation simultanée	**GridSecCon 2023 (NERC/E-ISAC/NPCC)**	**S.O.**	**17 au 20 octobre 2023**

Sanctions perçues en date du 14 sept. 2023 : 1 630 k$

Régie de l'énergie Québec



Activités exécutées et à venir

Type d'activité	Activité	Projets / Boursiers retenus	Date
Axe 2 - Recherche fondamentale et appliquée (Dépenses : 1064 k$ prévues, 775 k$ exécutées)			
Financement de projets de recherche collaboratifs (recherche appliquée)	**Programme *FiabilitÉÉ* - Partenariat avec InnovÉÉ**		
	Premier appel à projets:	**2**	Été 2022
	Versement frais de base et subvention à InnovÉÉ (696 k$)		Été 2022 et printemps 2023
Bourses (recherche fondamentale)	**Programme *Bourses de formation en partenariat* (maîtrise) avec le FRQNT**		
	Premier appel de candidatures (Bourses 2023-2024) :	**3**	Été 2022
	Versement bourse 1er année au FRQNT (78,75 k$)		Printemps 2023
	Versement prévu bourse 2ème année au FRQNT (78,75 k$)		Printemps 2024
	Deuxième appel de candidatures (Bourses 2024-2025) :	À déterminer	Été 2023
	Versement prévu bourse 1er année au FRQNT (max. 105 k$)		Printemps 2024
	Versement prévu bourse 2ème année au FRQNT (max. 105 k$)		Printemps 2025
Axe 3 - Organisation d'événements ou forums d'échange (Dépenses : 0 k$ prévues)			

Sanctions perçues en date du 14 sept. 2023 : 1 630 k$

Dépenses activités du comité :
1 372 k$ prévues, 837 k$ exécutées (incluant 25 k$ planification)

Régie de l'énergie Québec



Période de questions

Merci de votre attention !

Régie de l'énergie Québec