

Annual Reliability and Compliance Workshop: Building Sustainable Programs

Day 1
Wednesday, September 22, 2021
1:00 – 5:00 p.m. Eastern

PUBLIC



Welcome and Logistics

- This WebEx event is not being recorded.
- Please submit all questions through Slido instead of the WebEx chat.
- For your convenience, we will provide the workshop survey live at the end of event via Slido, so please stay on the call.
- Today's presentations will be emailed to all registrants and posted to RF website.

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Agenda

Presentation	Presenter(s)	Time
Opening Remarks	Brian Thiry, RF	1:00 – 1:05
Day 1 Keynote	Joanna Burkey, HP, Inc.	1:05 – 1:35
Sustainability in the ERO	Scott Nied, NPCC	1:35 – 2:05
Building Sustainable Compliance Programs	Jim Kubrak and Zack Brinkman, RF CIP and O&P Managers	2:05 – 2:50
BREAK		2:50 – 3:00
Sustainability-minded EMS Upgrade	Jennifer Burke and Matt Guarneri, Exelon	3:00 – 3:30
CIP and O&P Perspectives on CIP-012	Lew Folkerth and Mike Hughes, RF; Tom Foster, PJM; Brian Kiefer and Brian Scalf, MISO	3:30 – 4:00
BREAK		4:00 – 4:10
CIP and O&P Perspectives on Engagement Scoping Process	Ryan Mah and Curtis Crum, RF Technical Auditors	4:10 – 4:25
Importance of Technical Controls in Building Sustainable Mitigation Plans	Kyle Down, PSEG; Jim Ruddell, PJM; Mike Hattery, RF	4:25 – 4:55
Closing Remarks	Brian Thiry, RF	4:55 – 5:00



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To Enter: Use Slido (Slido.com, Slido app or the QR code). At five different times during the workshop, we will announce that a content-based trivia question is coming. You will have one minute to enter your name into Slido before the question is asked. You must enter your first and last name; anonymous responders are not eligible to win.

To Win: A skill-based question will be visible in Slido. You must answer correctly and be the fastest respondent, as recorded in Slido, to win. We will announce the winners and who to email to provide an address to receive the \$100 Amazon gift card.

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Employee of ReliabilityFirst to win. Any resulting taxes are the responsibility of the winner.

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Keynote Speaker

Joanna Burkey
Chief Information Security Officer, HP, Inc.





Sustainability in the ERO

ReliabilityFirst Fall Workshop September 22, 2021

Scott Nied Vice President, Compliance NPCC, Inc.



Chapter 1 The ERO Golden Circle

Why, How, What





Chapter 2 Aspirations of the ERO

- 1. That the engagements that we conduct are overarching reliability engagements.
- 2. That the entity sees value in collaborating and preparing for engagements as a way to make themselves better.
- 3. That we are seen by stakeholders as credible and trusted experts and that all touchpoints are value added.

The Regions are vested in your success!



Chapter 3 ERO Actions Toward Sustainability

- 1. Objective is to determine our own destiny
- 2. More than you may know
- 3. Seasonal assessments, long term studies, RISC report, reliability metrics, analysis of known and future risks, CMEP activities, internal data review, perpetual outreach

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Chapter 4 What Can the Entity Do?

- 1. Times have changed
- 2. Become a champion of reliability, not just compliance
- 3. Enhance your Compliance Program
- 4. Where are your vulnerabilities?
- 5. Implement or adapt a Culture of Controls
- 6. People, Process, Structure



Chapter 5 Where do we go from here?

- 1. Realize how unique our industry is
- 2. Keep selling it upwards, sideways, downward
- 3. "Failing" and hearing "No" have other meanings
- 4. Remember the "Why"!



The End

Thank you for the opportunity and your time!

Scott Nied

snied@npcc.org

Trivia Giveaway Question 2

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Building Sustainable Programs

Jim Kubrak – Manager of Operations and Planning Monitoring Zack Brinkman – Manager of CIP Compliance Monitoring

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Workshop Goals

➤ Define a Sustainable Program

Provide tools and techniques you can take back your organization

➤ Define RF processes





Slido Question

What does the word "Sustainable" mean to you?

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Benefits of a Sustainable Compliance Program

➤ Safety and Wellbeing

> Trust in your Program and People

➤ Enhanced Security and Reliability

➤ Audit Preparation

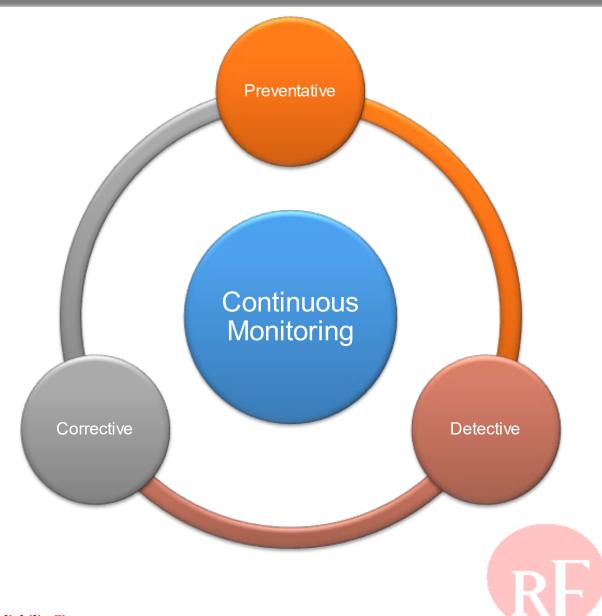




Actions Affecting Sustainability

Signs of Sustainability

- Always prepared for any type of engagement
- Not preoccupied with audit scope
- Reaching out to our Assist Visit Program
- Self Reporting when issue is found
- Controls to minimize gaps
- Reaching out to RF to see which Entities are performing well with any given standard



Continuous Improvement

"Failure happens all the time. It happens every day in practice. What makes you better is how you react to it." — *Mia Hamm*

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How to Encourage a Culture of Sustainability

Recognition is low cost and high reward, but it's rare

Your staff wants to feel aligned with the bigger picture

Engagement keeps talent happy

Source: OfficeVibe's

"The True evidence of a company culture is how people behave when no one is watching"



Building Sustainability Into Your Program

Changes to your Environment

Exelon EMS Upgrade

Continuous Improvement Efforts

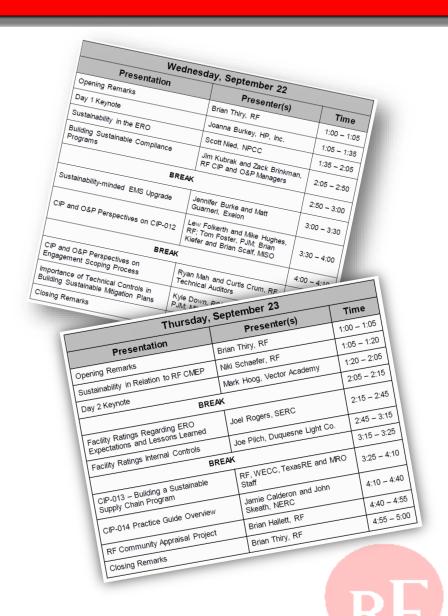
- SERC
- Duquesne Light Company

Mitigation Plan or Internal Control Creation

RF Enforcement, PJM and PSEG

New or Updated Standards

- CIP-012
- CIP-013



Risk-based Oversight



Different Monitoring Tools

Narrower Scopes

Deeper Dive

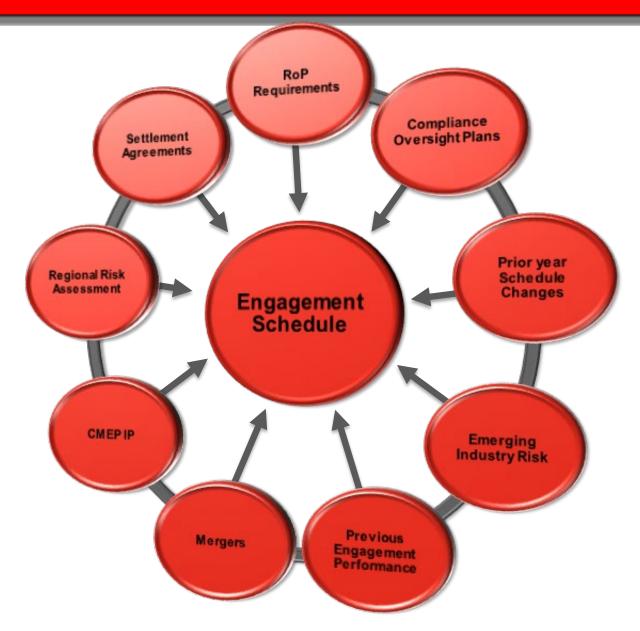
More Internal Control Discussions

More Frequent Engagements

Educational Outreach



Engagement Scheduling





Engagement Schedule Process

MRRE Planning Begins

• April 1st

Coordinate with Regions and MRRE

• April - May

MRRE Schedule

• June 1st

Non –MRRE Planning

• June - August

Entity Coordination

• July – September

Resource Allocation

• September -October Audit Schedule Posted Publicly

October 1



Continuing Down the Path of Sustainability



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Break

See you back at 3:00 for the presentation on Exelon's Sustainability-minded EMS Upgrade!

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Trivia Giveaway Question 3

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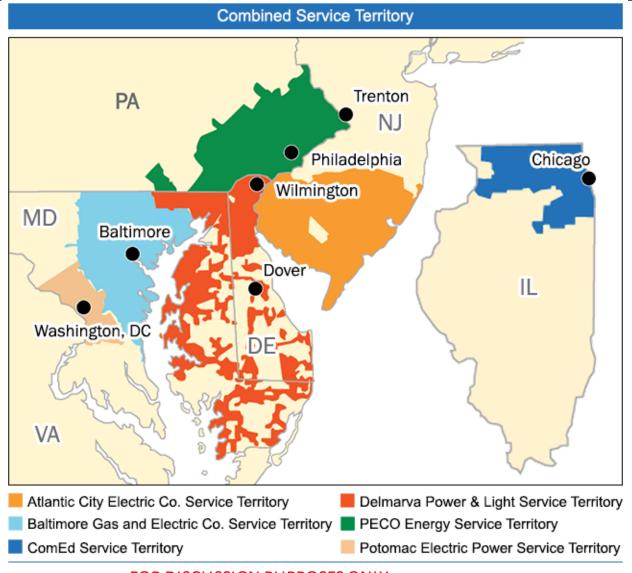




- A FORTUNE 100 company that works in every stage of the energy business:
 - power generation,
 - competitive energy sales,
 - transmission and delivery
- Exelon does business in 48 states, D.C., and Canada
- One of the nation's cleanest and lowest-cost power generation fleets
- The nation's leading competitive energy provider
- Six utilities deliver electricity and natural gas to approximately 10 million customers in Delaware, the District of Columbia, Illinois, Maryland, New Jersey and Pennsylvania



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Ensuring Sustainable Compliance CIP and 0&P

A sustainable compliance program enables our mission of the reliability and security of the BES. Sustainability requires three critical components: People, Tools, and Governance. We keep it strong via benchmarking, best practices, and continuous

improvement.

Key Activities

Standard Readiness: Monitoring and communicating NERC standards under development, Rules of Procedure (ROP) changes, NERC Alerts, NERC Committee news, Guidelines and Surveys, Standards Readiness Reviews Internal Controls: Activities performed to provide a consistent level of security and compliance assurance

Annual Self Assessments: Internal review of compliance programs by each Registered Entity Annual Document Review: Management model process and procedures are reviewed by all stakeholders

Investigations: We challenge our work and process issues systematically by leveraging business unit Corrective Action Programs (CAP) to evaluate and propose corrective actions



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Have you done a recent EMS upgrade or are you planning one in the next two years?

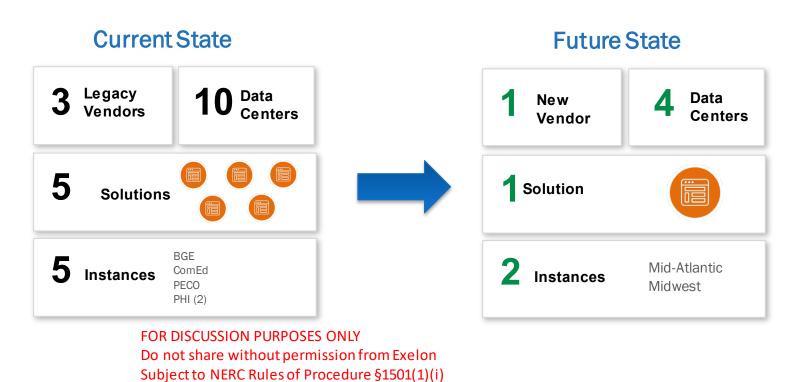
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EMS Consolidation Project – Scope Review One Company, One Process, One System – One Way Forward

The EMS Consolidation Project is a multi-year program with the following objectives:

- Standardize on a single vendor's Transmission SCADA/EMS solution
- Standardize our Transmission operating and IT EMS-related business processes
- Standardize tools that enable Exelon Utilities to meet Compliance standards and objectives
- Build out new Real Time Data Network to enable connectivity to four (4) Real Time Data Centers
- Separate the Transmission & Distribution SCADA systems
- Align all OpCos on a common line of demarcation between Transmission and Distribution





EMS Project Approach

> Embedded Resources

- Compliance and Security resources were embedded with the project team.
- Compliance/Security reviews were conducted from RFP to production go-live

Communication

- Weekly Status Meetings
- Monthly Exelon NERC Steering Committee Updates
- Quarterly NERC Compliance Executive Updates
- Daily SCRUM meetings as go-live date was approaching

Collaboration

- Business Unit NERC Compliance Managers
- IT and Security Support Teams (supporting each workstream)
- Compliance Management Team (centralized NERC oversight)
- Project Managers collaborated on common activities

Coordination

- Large degree of testing and compliance/security review activities were conducted virtually.
- Production system hardware was established on prem instead of being at the vendor site then shipped
- Vulnerability scans were conducted at various points throughout the last year of the project.

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Schedule/Logistics Challenges during the Project

- Pandemic Planning
 - Worldwide pandemic began in last year of project
 - Exelon quickly pivoted to all virtual project team
 - Implemented safety protocols at Control Centers and company wide.
- Delays in Defect Testing
 - Testing was slower in all virtual work environment
- > Tight Timeframe
 - For multi-entity launch it required pulling in additional resources to make the project work
- Pending RF audit/certification
 - Open communication early and often on status of project implementation
 - Helped both parties achieve their objectives to ensure reliability of the BES while not distracting resources from system implementation.

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EMS Benefits

Device and Device Type Reductions

In Scope Devices	Device Count	Device Type Count
Reduction	(52%)	(45%)

- Consolidated Geographical Footprint
 - Overall datacenter footprint was reduced
 - Control Center consolidation is underway as Phase 2 of project
- Combined Procedures
 - Job Aids and Procedures across Business Units were consolidated.
 - Training from an operations perspective was simplified and consolidated.
- ➤ Capitalized on Knowledge of Internal SMEs
 - Used compliance and security resources to review architecture and proposed processes early and often.
 This prevented re-work in last year of project.
 - Evidence review was completed prior to go-live with a change freeze period.
 - Execution for internal resources of processes prior to go-live
 - Heightened support for all internal teams for a couple of months after cutover
 - Multiple vulnerability scans of assets months prior to go-live to address any critical vulnerabilities ahead of change freeze.
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Retirement/Reclassification Plan

Timing	Step
Before EMS Go- Live	 Finalize evidence requirements Ensure teams understand that both legacy and new system will be considered "production" from a compliance perspective until the system is clear from any roll backs to legacy system.
After EMS Go-Live	 Gather and approve evidence for declassification/decommissioning of systems Identify all legacy devices and create change tickets Clean up controls around legacy devices Work with vendor to destroy assets that will not be kept in distribution capacity Retire/update procedures and job aids Retire TFEs Retire PSPs as appropriate
Control Center Consolidation	Continue Phase 2 of project for Control Center Consolidation

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Questions/Comments



CIP and O&P Perspectives on CIP-012-1

Lew Folkerth, Principal Reliability Consultant, RF

Mike Hughes, Principal Technical Auditor, RF

Tom Foster, Manager, NERC Compliance, PJM

Brian Kiefer, Manager, Operations Technology Integration, MISO

Brian Scalf, Manager, Networking Operations, MISO

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Overview

- > Introduction to CIP-012-1
- > Aspects of Data Identification
- > PJM Perspective
- ➤ MISO Perspective
- ➤ Discussion of Possible Gaps
- > Q&A



CIP-012-1 Fundamentals

- Protect certain types of information when transferred between Control Centers
- Information protected must include Real-time Assessment data and Real-time monitoring data
- Must identify type of protection used and where that protection is applied
- ➤ For communications between different Responsible Entities, must document each entity's responsibilities



CIP-012-1 Resources

- ➤ Enforceable Language
 - CIP-012-1
 - Implementation Plan
 - NERC Glossary of Terms
- > Technical Rationale
- > Implementation Guidance
- ➤ CIP-012-1 Development Page (2016-02 SDT)
- ➤ CIP-012-2 Development Page (2020-04 SDT)
- ➤ Lighthouse (Jul/Aug 2020 CIP-012 In Depth)
- ➤ TexasRE ERO-wide 2021 CIP Workshop (under Archived Presentations)
- Coming Attractions
 - Possible RF Tech Talk (Watch RF's <u>Upcoming Events</u>)
 - Possible WECC ERO-wide CIP-012 Webinar



Why is this data important?

- ➤ Data types are identified in TOP-003-4 (for BAs and TOPs) and IRO-010-3 (for RCs)
- Support for real-time generation/load balancing (BA)
- ➤ Support wide-area visibility (RC)
- > Support for real-time contingency analysis for BES reliability (TOP)



Communications

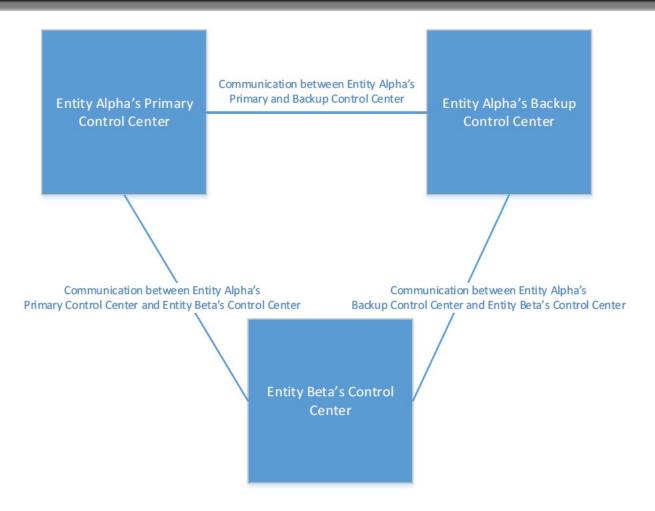


Figure 1: High Level Block Diagram of Reference Model Control Centers

From: Cyber Security - Communications Between Control Centers, Implementation Guidance for CIP-012-1



Data Identification

CIP-012 Implementation Guidance

TOP-003 and IRO-010

Manual 1: Control Center and Data Exchange Requirements

Operations
Validation of RealTime Assessment
and Real-Time
Monitoring Data



Real-Time Assessment and Real-Time Monitoring Connections

PJM Members

PJM Administered Routers

Encryption

PJM Only

Encryption

CIP-012 Responsibilities

PJM

- Encryption of communication link
- Administration of routers at both PJM and member sites
- Documentation to help support members

Members

- Physically protect router
- Any additional protections necessary
- Dependent on demarcation point

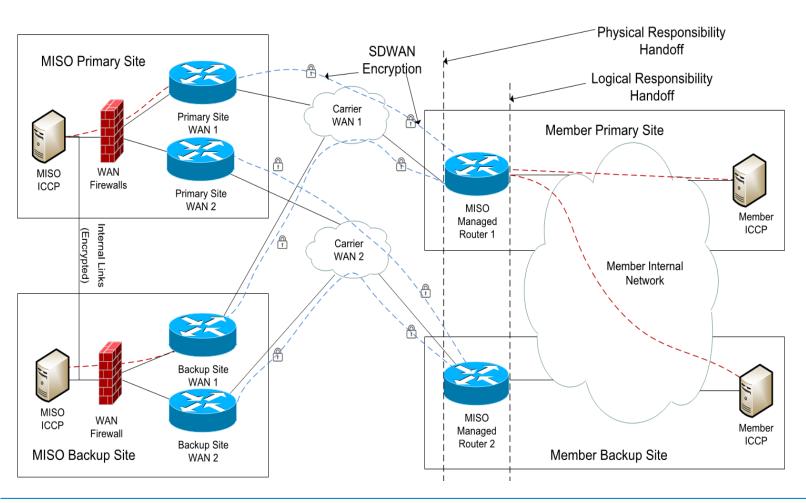
Alignment with CIP-012 Implementation Guidance

In-Scope Data between MISO and its Members

- CIP-012 R1 mentions Real-time Assessment and Real-Time Monitoring, which for MISO means EMS State Estimator (SE) and Contingency Analysis (CA)
- NERC Implementation guidance refers to the data specification for Real-time Assessment and Real-time monitoring identified in TOP-003-3 and IRO-010-2.
- The key inputs into these applications come to MISO via <u>ICCP</u> and is documented in MISO's Reliability Data Standard, SPEC-006
- MISO's plan currently only includes ICCP as data applicable for CIP-012. For example, generator set points and other operations data is currently not.



Security Protections and Demarcation Points



- MISO will manage encryption for data connections between MISO and its member routers.
- Each member will be required to demonstrate they have physically secured the routers at their site.
- All traffic between the member router and the member ICCP must be secured by the member.



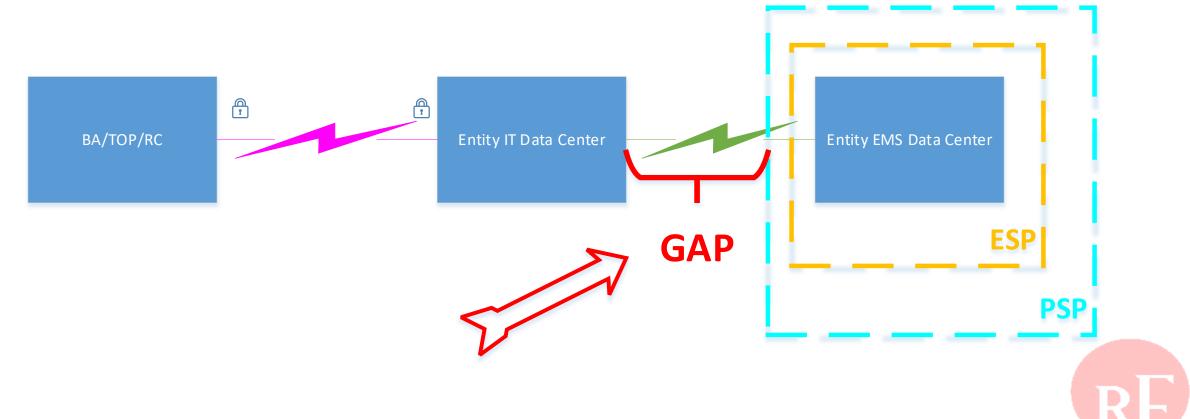
Identification of Roles and Responsibilities

- NERC's Implementation Plan suggests a Memorandum of Understanding signed by both Parties in the case when Control Centers are owned and operated by different Parties.
- MISO has drafted an Agreement for the Installation of Data Links to Control Centers to be signed by the applicable Parties.
- MISO's Agreement addresses ownership, responsibility for compliance with NERC Standards, equipment location, control and operation.



Possible Gaps

- > Not identifying all data in scope
- ➤ Not protecting communications outside the bounds of the Control Center:



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Break

See you back at 4:10 for our presentation sharing both the CIP and O&P perspectives on the Engagement Scoping Process!

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Compliance Monitoring Engagement Scoping

Ryan Mah, CIP Auditor

Curtis Crum, O&P Auditor

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Maturity of Scoping in the ERO

- > Initially All Requirements in Scope
- NERC creates Active Monitoring List (AML)
 - ERO wide risk
- Reliability Assurance Initiative (RAI)
 - Inherent Risk Assessment (IRA)
 - ERO-wide Risk
 - Regional Risk
 - Entity Inherent Risk
 - Performance Risk Recently Added
 - Internal Controls Evaluation (ICE)
 - ICE Incorporated into the Engagements
 - Impact Scoping More as the Process Matures
 - Compliance Oversight Plan (COP)



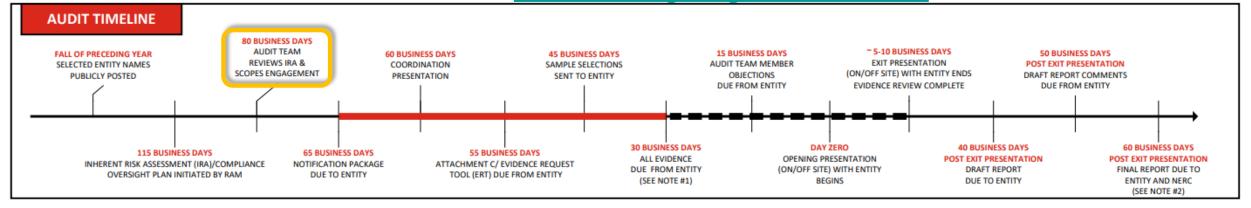
RF Engagement Timeline

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ReliabilityFirst CMEP Engagement Timelines



Document Link: www.rfirst.org/ProgramAreas/COMO



- Engagement scoping begins at the 80 business day mark.
- The Notification Package (65 business days) will inform the Entity of the engagement scope.
- At the point of posting next year's engagement schedule, engagement scope is not yet determined.



Scoping Involvement

The Audit Team Lead (ATL) is responsible for the initial scoping of the engagement.

- > The ATL touches base with the Risk Analysis and Mitigation (RAM) Team.
 - Compliance Oversight Plan (COP)
 - Inherent Risk Assessment (IRA)
- > The ATL touches base with the Enforcement Team.
 - Open Enforcement Actions (OEA's)
- The ATL touches base with the Engineering & System Performance Team.
 Performance/Misoperation Information
- Compliance Monitoring Management approves the final audit scope.



Scoping Considerations

When designing the audit scope the ATL considers the following:

- Inherent Risk Assessment (IRA) Risk Categories
- ERO Risk Elements
- Previous Audit Engagement Scopes
- Previous Engagement Results
- Open Enforcement Actions
- Open or Recently Closed Mitigation Plans
- IRA Performance Metrics
- Validated Internal Controls
- Type of Engagement
- Planned Location of the Engagement



Scoping Impacts to Long-term Scheduling

> The final engagement scope does have an impact on long-term planning and future scheduling.

➤ For Entities with smaller, but more frequent, touchpoints – scope and engagement results are also considered for the long-term planning of future engagements.



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Importance of Internal Controls in Building Sustainable Mitigation

Mike Hattery, Associate Counsel, RF

Kyle Down, Manager NERC Reliability Assurance, PSEG

James Ruddell, Manager IT Business Coordination, PJM

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Repeatable Programs and Preventative Measures

- ➤ The important relationship between preventative controls and sustainable programs
- ➤ High frequency conduct requirements and reducing the impact of human error
 - Discussing Cyber Security Training Program evolution with PSEG
 - PJM provides insight into a mature Configuration Change Management Program
- ➤ Updating and training on procedures versus implementing tools and controls to aid employees in executing program requirements



PSEG CIP-004-6 R2 Program Evolution

- ➤ Challenges driving change in PSEG's CIP-004-6 R2 program
 - Attacking weak links and pain points in the training process
- >Addressing uncertainty and process risk posed by individuals performing self-training and photocopying evidence
 - Entity introduced quality assurance control by requiring original forms and evidence be provided to NERC Compliance Team
- **➤** Control gaps and introducing automation
 - Entity identified three process risks and turned to automation to address them



PJM CIP-010-2 R1 and Configuration Change Management Broadly

- > Challenges driving change
 - PJM focused on preventing human performance driven unauthorized changes
- ➤ How the Entity structured its tool to attack challenge areas
 - The CIP Shield acts as virtual validation of intent prior to allowing access
- >Implementation of the tool, development and growing pains
- > Pairing the tool's preventative capability with identifying capability
 - Internal monitoring tools receive analytics from the tool for review of asset "touches"



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QUESTIONS & ANSWERS

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Slido – Share What You've Learned!

In a few words, what's your biggest actionable takeaway from today's presentations?

Join the conversation at Slido.com #RF1





Trivia Giveaway Winners

Thank you and Congrats to today's five trivia winners!

To claim your \$100 Amazon gift card, please email Jody Tortora at Jody Tortora@rfirst.org.



Closing Remarks

Thank you for attending Day 1 of our Annual Reliability and Compliance Workshop! Your feedback is extremely important to us and allows RF to continuously improve our webinars, workshops and outreach efforts.

Please take our event survey in Slido now at **Slido.com #RF1**.



