



Certification Best Practices and Activities Review

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Marie Kozub – *SERC*

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Agenda

NERC Rules of Procedure for Certification and Certification Reviews

- Section 500 and Appendix 5A

Triggers for Certification Reviews

Certification & Certification Reviews Process Steps

- Examples of Certification Reviews and Evaluation Items

Best Practices and Testimonials

Resources

Slido Question

Which Functional Registrations require certification?

- A. Balancing Authorities (BA)**
- B. Reliability Coordinators (RC)**
- C. Transmission Operators (TOP)**
- D. All the above**



NERC Rules of Procedure

- **Section 500 and Appendix 5A Govern Certifications**

- ROP revised and re-issued January 2021 | Appendix 5A, pages 13-30
- ROP changes are in the [Second Compliance Filing](#) and were approved by FERC on [January 19, 2021](#)

Clean ROP Versions

Attachment 1, Section 500
Attachment 5, Appendix 5A

Redline ROP Versions

Attachment 2, Section 500
Attachment 6, Appendix 5A

- **Certifications are required for BAs, RCs, and TOPs**

Slido Question

Have you been a participant in a certification or a certification review?



Certification vs. Certification Review

Certification Appendix 5A Section IV

Certification activities assess the processes, procedures, tools, and training these organizations use in performing these functions and provide a prospective level of assurance that the organization has the capacity to meet the reliability obligations of its registration.

Trigger Examples

- A new entity applying for registration & certification
- An existing entity applying for a certification of a new function

Certification Review Appendix 5A Section V

Provides reasonable assurance an already certified and operational Registered Entity will continue to support reliable operations of the BPS after initiating a material change.

Trigger Examples

- Expand or contract the Entity's footprint, territory
- Relocate the Control Center
- Modify the Energy Management System (EMS)

Note: This is a non-exhaustive list

Audit vs Certification

Audits	Certifications/ Certification Reviews
Gather historical evidence to demonstrate compliance	Sometimes
Gather control information that informs Compliance Oversight Plans and other CMEP activities	Sometimes
Defined processes and roles	Yes
Use Reliability Standards as a basis	Yes
Communication is key	Yes
Leadership skills are critical	Yes

Audits determine compliance over past audit period IN ADDITION to using risk-based principles to look forward.

Nuances on the Collaborative Decision

- Collaborative decisions between NERC and the Regions are required for selecting any review activity involving already certified entities
 - NERC has final oversight over determinations
 - This “collaborative decision” language allows certification reviews to be more risk-based than before
 - In 2021, the ERO Enterprise mutually decided to do 12 certification reviews and 11 lesser activities
- We are relying on entities to be proactive and recognize these certification review triggers
- The earlier an entity reaches out, the easier it is to stay on schedule
- We are seeing an increase in cross-regional review activities

Nuances on the Collaborative Decision

- Informal dialogue on potential certification activity is encouraged as far in advance as possible
- The decision may be:
 - To conduct a review under the Appendix 5A Certification Review process or verify tasks performed by others associated with a certified RC, TOP, or BA
 - To engage in any lesser activity necessary to understand changes that are material to an entity's operations or inherent risk
 - Evaluate and document the changes
 - Meet with entity project teams to discuss
 - Influenced by responses to requests for information, questionnaires or data requests
 - Influenced by ERO risk priorities, entity inherent risk and recent or future CMEP activity

Appendix 5A, Section V: Certification Review Triggers

Changes to Registered Entity's Footprint

Including de-certification changes to existing JRO/CFR assignments or sub-set list of requirements:

- The review of changes to an already registered and operational Entity's footprint is primarily concerned with ensuring the gaining functional entity has the tools, training, and security in place to reliably operate with new responsibilities.
- Possibly characterized by new metered boundaries associated with the integration or disassociation of existing electrical areas of the BPS.

Note: This is a non-exhaustive list

Relocation of the Control Center

Control Centers are fundamental to the reliable operation of the interconnected transmission network as they continuously monitor, assess, and control the generation and transmission power flows on the BES. Impacts to the functionality provided within these facilities can affect:

- Tools and applications that System Operators use for situational awareness of the BES
- Data exchange capabilities
- Interpersonal (and alternate) Communications capabilities
- Power source(s)
- Physical and cyber security

The impact of the relocation of the Control Center on the entity's ability to perform the functions for which the entity is registered under normal and emergency conditions should be explored and documented to understand the manner in which the Control Center continues to support the reliable operations of the BES.

Modification of the Energy Management System (EMS)

- Modification of the Energy Management System which is expected to materially affect CIP security perimeters or the System Operator's
 - Situation Awareness
 - Monitoring and Control functionality, including alarming and advanced app
 - Human performance (machine interface)
 - BES Cyber Systems and their associated BES Cyber Assets

Slido Question

Does your entity have any planned changes scheduled in the next year or two that may impact operations?



Certification Notification & Preliminary Questionnaire

Certification Notification & Preliminary Questionnaire	
Entity Legal Name (NCR #)	
Entity Acronym	Date Submitted
Applicable Registered Function(s):	<input type="checkbox"/> Balancing Authority (BA) <input type="checkbox"/> Transmission Operator (TOP) <input type="checkbox"/> Reliability Coordinator (RC) (Check all that apply.)
Applicant's Contact Information:	Name: Click here to enter text. Title: Click here to enter text. Address: Click here to enter text. City, State, Zip Code: Click here to enter text. Telephone: Click here to enter text. Email Address: Click here to enter text.
Multi Regional Registered Entity (MRRE):	<input type="checkbox"/> MRO <input type="checkbox"/> NPCC <input type="checkbox"/> RF <input type="checkbox"/> SERC <input type="checkbox"/> Texas RE <input type="checkbox"/> WECC
MRRE 'Coordinated Oversight' Group Name & Number:	
Reliability Coordinator (RC)	
Adjacent BA(s) and TOP(s)	
Triggering Event¹ (Check all the apply): <input type="checkbox"/> New Registration (Balancing Authority (BA), Transmission Operator (TOP) and/or Reliability Coordinator (RC)) <input type="checkbox"/> Changes to a Registered Entity's footprint (This includes changes in ownership of BES Facilities, changes in the applicability of the BES Definition to a Facility, and newly installed BES Facilities.) and may include changes (expansion or contraction of responsibilities) to existing JRO/CFR assignments or sub-set list of requirements. <input type="checkbox"/> Construction and/or relocation of the Control Center (primary and/or backup) which impacts the functionality provided within these facilities for continued reliable operations of the BES that include but are not limited to the following: <ul style="list-style-type: none"> • Tools and applications that System Operators use for situational awareness of the BES • Data exchange capabilities • Interpersonal (and alternate) Communications capabilities • Power source(s) • Physical and cyber security 	

¹ NERC Rules of Procedure, [Appendix 5A](#) Organization Registration and Certification Manual (Effective Date: January 19, 2021), Section V, Parts a - c.

Modification of the Energy Management System (EMS) which is expected to materially affect CIP security perimeters or the System Operator's: 1) situational awareness tools, 2) functionality, or 3) machine interfaces.

 Other (Please describe):
[Click here to enter text.](#)

In order to determine the scope and type of certification engagement that may be needed, please provide answers to the General Questions and the additional questions based upon the 'triggering event.'

For all 'triggering' events, please provide answers to the following General Questions:

1. Please provide your entity's characteristics including size, geographic service territory, and registered function(s) under the NERC Compliance Registry, etc.
[Click here to enter text.](#)
2. What is the expected completion date for this project?
[Click here to enter text.](#)
3. Please provide a general project timeline including major milestones and tentative completion dates.
[Click here to enter text.](#)
4. Is there a need for training of System Operators, Cyber Security Professionals or other impacted personnel resulting from the 'triggering event'?
[Click here to enter text.](#)
5. Are there other entity specific or unique factors that you believe should be considered in determining the need for a certification review?
[Click here to enter text.](#)

In addition to the General Questions, if the 'triggering event' is a 'Change to the Registered Entity's footprint,' please provide answers to the following:

1. Describe the changes to your 'footprint'.
[Click here to enter text.](#)

Certification Notification & Preliminary Questionnaire (Cont.)

2. Explain if the changes to your 'footprint' will result in any modifications/updates to the Energy Management System (EMS) in relation to:
 - a. Tools and applications that System Operators use for situational awareness of the BES, and/or
 - b. Data exchange capabilities.

Click here to enter text.

3. Has the 'footprint' change impacted the Physical Security Perimeter (PSP) or Electronic Security Perimeter (ESP) of existing or newly acquired facilities, including related access procedures (both logical and physical), physical security plan, the addition of card key readers, fencing, alarms or cameras?

Click here to enter text.

In addition to the General Questions, if the 'triggering event' is a 'Construction and/or relocation of the Control Center (primary and/or backup),' please provide answers to the following:

1. Describe how your entity currently achieves primary and backup Control Center functionality.

Click here to enter text.

2. How will the transition between the current functionality and the new Control Center(s) be addressed?

Click here to enter text.

3. Describe the changes for the current primary Control Center or backup Control Center when the new Control Center is operable.

Click here to enter text.

4. Please describe whether this change will include upgrades or new system installation of any BES cyber systems, assets or storage areas.

Click here to enter text.

5. Has the construction and/or relocation of the Control Center (primary and/or backup) impacted the Physical Security Perimeter (PSP) or Electronic Security Perimeter (ESP) of existing or new facilities, including related access procedures (both logical and physical), physical security plan, the addition of card key readers, fencing, alarms or cameras?

Click here to enter text.

In addition to the General Questions, if the 'triggering event' is a 'Modification of the Energy Management System (EMS),' please provide answers to the following:

1. Please describe the Energy Management System (EMS) (software and/or hardware) replacement, upgrade and/or virtualization.
 - a. Please be specific in describing the specific hardware components being replaced, if applicable.
 - b. Please include whether the change will include a change in Vendor.
 - c. Please provide the Vendor 'Release Notes' for the EMS and/or Platform software updates.

Click here to enter text.

2. Will the modification of the EMS result in changes to the Physical Access Control System (PACS), Physical Security Perimeter (PSP), Electronic Security Perimeter (ESP), physical or logical access control procedures or alarms?

Click here to enter text.

3. Will the modification of the EMS impact existing Technical Feasible Exceptions (TFEs)?

Click here to enter text.

4. Explain if the modification of the EMS will result in changes to the System Recovery Plans or responder 'roles.'

Click here to enter text.

5. Will the modification of the EMS impact the current patch management process or require Active Vulnerability Assessments to be conducted?

Click here to enter text.

Note: Be prepared to provide copies of any revised documentation including respective policies, procedures, PSP and ESP diagrams, reflecting the changes associated with the 'triggering event.'

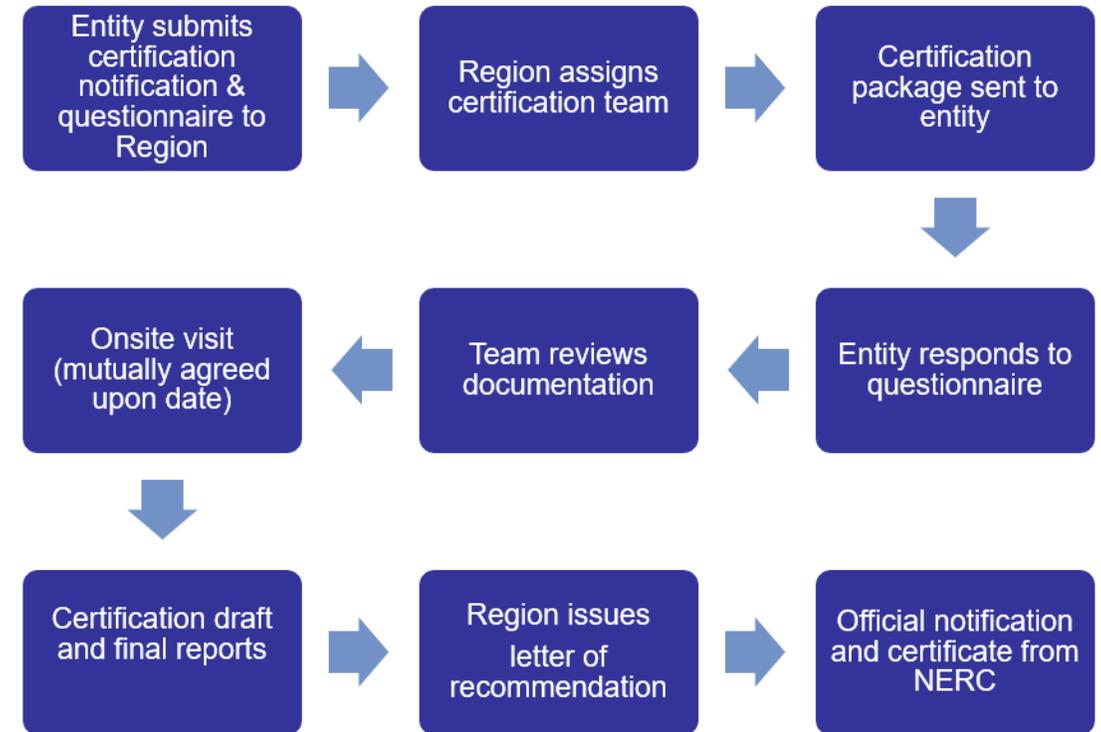
This form and all supporting documentation must be uploaded via the [Texas RE Extranet](#).

For questions about the certification review process, please contact Abby Fellingner at 512-583-4927 or via email at registration@texasre.org.

Overview of the Process Steps

- **Assemble the Certification/Certification Review Team**
- **Create and send Certification/Certification Review Package to Entity**
 - Include Matrix of relevant requirements

Note: Certifications are a forward-looking engagement and may look at standards that have recently become enforceable or will soon become enforceable
- **Review Request for Information (RFI) and documentation from Entity supplied to review team**
 - Team reviews responses and documentation and closes out those that require no further action
- **Conduct onsite (or virtual) visit to entity for control room tours, interviews, and demonstrations**
 - Address open items
 - Record positive observations and recommendations
- **Issue Final Report and Letter**



Entity must commence operation within 12 months of certification

Certification Review – Reasonable Assurance

Certification Reviews are an effort to continue to endorse entities registered as BAs, TOPs and RCs that were previously certified by the Region and NERC following a ‘triggering’ event (i.e. Material Change).

- Evaluate the entity’s Reliability Standard based **capabilities** associated with the registered functions.
- Used to gain **reasonable assurance** that the entity has the processes, procedures, tools, training, and personnel in place to continue to reliably perform the registered functions following a ‘triggering’ event (i.e. Material Change).

Certification Review – Scoping

Certification Review scoping is based on the ‘triggering’ event, the entity’s registrations, compliance history and ‘risk profile’. Scoping begins with reviewing:

- Pre-certification questionnaire
- Applicable ‘capability based’ Reliability Standards and Requirements

The scope is defined by:

- Refined ‘Master Matrix’ (Data Request)
- Engagement activities:
 - Facility Tours
 - Functionality Demonstrations
 - Interview Sessions

Potential Evaluation Items

Evaluation Items are based on the 'triggering' event and could include:

Operator Situational Awareness:

- Ability to monitor, assess, and control the grid (EMS, Map Boards/Displays, RTCA, etc.)
- EMS/SCADA Functionality
- Communication Capabilities
- Operator Training

Cyber and Physical Security:

- Review Cyber and Physical Security Plans
- Inspect/Walk Through ESP, EAP, PSP
- Data Exchange Capabilities
- CIP Assets

Control Center Functionality

- EMS Recovery Plans
- Back-Up Power Supplies

Potential Evaluation Items (cont.)

The Certification Review Team, at any time during the process, is authorized and obligated to expand the scope of an engagement to any other requirements they may deem necessary based on the documentation reviewed, interview responses, and the Team's collective professional judgment.

Potential Results of Engagement

Certification

- **Certified** as a BA, TOP and/or RC (12 months to begin operations)
- **Conditional Certification**
 - Requires an Implementation Plan
- Decision not to Certify
 - Entity may appeal this decision.
- Identify Positives
- Make Recommendations (Not included in Summary Report)

Certification Review

- Continue to **endorse** Certification as a BA, TOP and/or RC
- Recommend full Certification
- Identification of Open Issues
 - Must be closed within 180 days of identification and prior to issuance of Summary Report (Included in the Summary Report).
- Identify Positives
- Make Recommendations (Not included in Summary Report)

Value of Certifications

External review from a different perspective

- Regional SMEs provide another set of eyes to ensure the entity is prepared for the new certification duties (BA, RC, TOP) or for certification review changes to an already certified entity.

Ensuring the entity is prepared to comply with NERC standards

- It is not an audit (which looks back), but an engagement that looks forward before go-live with new duties or changes.

Ensuring the entity is aware of open issues that must be completed for successful change implementation

- The entity may not be aware of new required process, or changes they need to their processes, including ensuring proper training is provided to operators, ensuring CIP and cyber security protocols are in place, etc. that affect new certifications or certification reviews.



Value of Certifications (continued)

Providing recommendations to the entity to drive continuous improvement

- This could include any entity processes and internal controls critical to the new certification or certification review which could be implemented for improved performance.

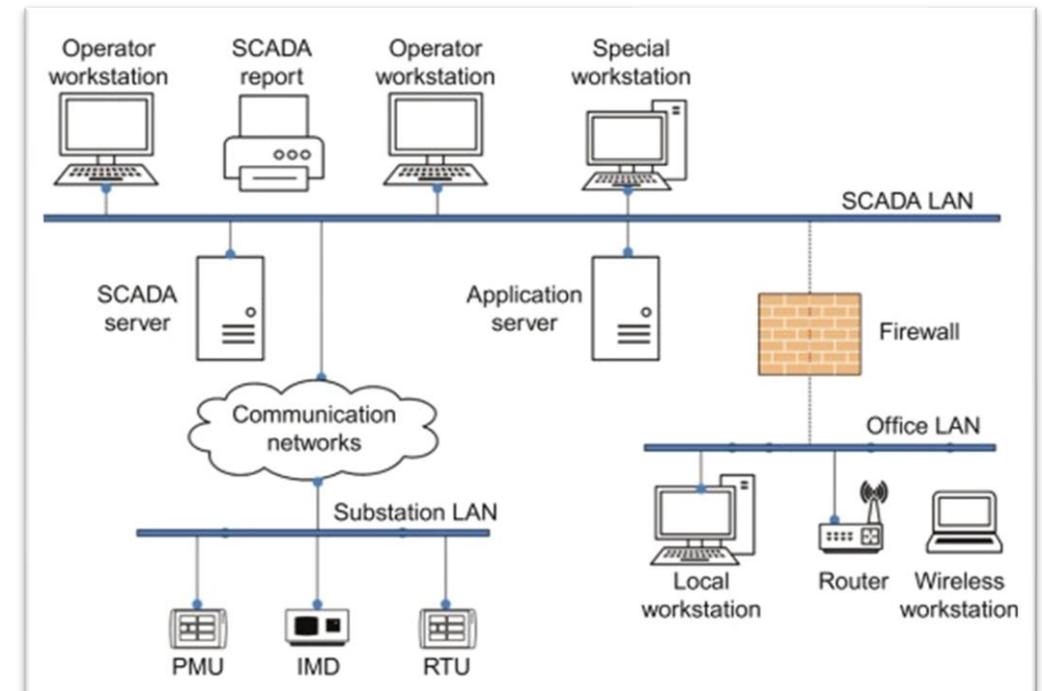
Pointing out positives and best practices that the entity, with the Region's help, can share with other entities that are also new or making changes.



EMS Changes – Successes and Best Practices

Several entities have recently elected to either replace or upgrade their EMS environment, and in many cases, replace EMS related hardware in the process. Listed below are several stories of past successes, as well as a few lessons learned. A big thanks to the entities who were willing to share these stories.

- Seeking CIP and EMS Implementation Expertise
- Obtaining Real-Time data to test new EMS
- Specifications for a Training Simulator
- Employee buy-in for the EMS replacement
- Opportunity to clean-up displays
- Opportunity to revamp CIP program
- Management of testing requirements
- Further consideration of CIP environment



Testimonials

It was a positive engagement!

We incorporated the certification process into our project plan.

The certification team worked collaboratively with us through the certification process.

The engagement provided an avenue for a thorough review of our processes and evidence related to affected standards.

The Region was easy to work with, had great upfront communication to help us through the process and took the time to understand our project plan and specific timing needs.

The entity truly appreciates the flexibility of the Region's team to fast-track reviews upon request.

Resources

- [NERC Rules of Procedures in Effect](#)
- [NERC Organization Registration Webpage](#) | [NERC Organization Certification Webpage](#)
- [Texas RE Registration and Certification Webpage](#) | [Texas RE Training](#)
- [RF Certification Webpage](#) | [RF Knowledge Center](#)
- [SERC Certification Webpage](#) | [SERC Entity Assistance](#)

Additional Resource(s)

Lessons Learned | <https://www.nerc.com/pa/rrm/ea/Pages/Lessons-Learned.aspx>

Home > Program Areas & Departments > Reliability Risk Management > Event Analysis > Lessons Learned

Lessons Learned

Disclaimer for Lessons Learned: These documents are designed to convey lessons learned from NERC's various activities. They are 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 these lessons learned is not a substitute for compliance with requirements in NERC's Reliability Standards.

For a brief summary of the lessons learned that have been posted, please refer to the Lessons Learned Quick Reference Guide.

Type	LL#	Title	Category	Date
Lessons Learned 2022 (12)				
	LL20221101	Preventing Unwanted Operations during Relay Diagnostic Restarts	Relaying and Protection Systems	11/16/2022
	LL20220901	Loss of Energy Management System Functionality due to Server Resource Deadlock	Communications	9/28/2022
	LL20220801	EMS Pausing During Database Deployment	Communications	8/22/2022
	LL20220702	Tower Climber Incident	Transmission Facilities, Bulk-Power System Operations	7/20/2022
	LL20220701	Forecasted High Winds	Generation Facilities, Transmission Facilities, Bulk-Power System Operations	7/20/2022
	LL20220406	Intermittent Network Connection Causes EMS Disruption	Communications	4/13/2022
	LL20220405	Unintended Consequences of Altering Protection System Wiring to Accommodate Failing Equipment	Transmission Facilities	4/13/2022
	LL20220404	Substation Flooding Events Highlight Potential Design Deficiencies	Transmission Facilities	4/13/2022
	LL20220403	Model Data Error Impacts State Estimator and Real-Time Contingency Analysis Results	Communications	4/13/2022
	LL20220402	Islanding and Insufficient Primary Frequency Response Resulted in Unintended UFLS	Generation Facilities, Bulk-Power System Operations	4/13/2022
	LL20220401	Distributed Energy Resource Performance Characteristics during a Disturbance	Generation Facilities, Transmission Facilities, Bulk-Power System Operations	4/13/2022
	LL20220301	Managing UFLS Obligations and Service to Critical Loads during an Energy Emergency	Bulk-Power System Operations	3/9/2022
Lessons Learned 2021 (12)				

ERO Enterprise Onboarding Checklist | Published in Nov. 2022

New ERO Enterprise Entity Onboarding Checklist

**ERO Enterprise Entity
Onboarding Checklist**







The Electric Reliability Organization (ERO) Enterprise is looking forward to working with you to maintain the reliability and security of the bulk power system (BPS). Ensuring electric reliability is no small task. To help you get started, the ERO Enterprise has created a short checklist of action items that will help you get involved and keep you up to date on BPS reliability and security matters!

The purpose of this checklist is to help new Primary Compliance Contacts (PCCs), Primary Compliance Officers (PCOs), and Alternate Compliance Contacts (ACCs) with signing up for the applications and communications provided by the ERO Enterprise. To learn more specific details about initial steps for new entities and new entity contacts, please review the [ERO Enterprise 101 Informational Package](#) and the [ERO Enterprise Registration Procedure](#).

Required Action Items for Registered Entity Contacts

- Set up an ERO Portal account.** The ERO Portal is used to access the Centralized Organization Registration ERO System (CORES), which is used across the ERO Enterprise for all registration activities, as well as to access [Align](#) and the [ERO Secure Evidence Locker](#) (SEL), which are used for compliance and enforcement activities.
- Update contact roles in CORES.** Review the [CORES Video Library](#) and Chapter 2 of the [CORES User Guide](#).
- Manage ERO Portal application permission rights in the ERO Portal.** Review Chapter 5 of the [ERO Portal User Guide](#).
- Submit Section 1600 Reporting based on NERC Function.** See Table 1.1.

Table 1.1: Section 1600 Reporting				
Reporting Type ¹	Description	Required For	Access Needed	Contact E-mail
Demand Response Availability Data System (DADS)	Mandatory semi-annual reporting for entities with dispatchable demand response programs over 10 MW and in service over 12 months	Balancing Authority (BA), Distribution Provider (DP)	OATI NERC Web Portal	dads@nerc.net
Generation Availability Data System (GADS)	Mandatory quarterly reporting of generator performance and outage data for conventional generating units that are 20 MW and larger, including smaller units that are aggregated	GO	OATI NERC Web Portal	gads@nerc.net
Generation Availability Data System Wind (GADS Wind)	Mandatory quarterly reporting of generator performance data for wind plants that are 75 MW and larger	Generator Operator (GOP)	ERO Portal, GADS Wind Data Submission Access	gadswind@nerc.net

**ERO Enterprise Entity
Onboarding Checklist**







Required Action Items for Registered Entity Contacts (Continued)

- Send an email to nerc.alert@nerc.net to sign up for NERC Alerts.** The email request should read: "My name is _____, and I am the Primary Compliance Contact for _____ (NCR _____). I would like to register with the NERC Alert System. Please send an email to _____@com or contact me at _____ when I have been registered, or if further information is needed."
- Submit Periodic Data Submittals based on NERC Function.** Review the ERO Enterprise Periodic Data Submittals Schedule located under the Compliance section on the [One-Stop Shop \(Compliance Monitoring & Enforcement Program\) web page](#).
- Provide reporting of system events and incidents** ([EOP-004](#) | [CIP-008](#) | [Event Analysis Program](#)).

Recommended Action Items for All Registered Entities

- Join the Electricity Information Sharing and Analysis Center (E-ISAC) for free access to cyber and physical security bulletins, webinars, and events.** More information about E-ISAC is available on pages 3–4 of this document.
- Participate in the biennial grid security exercise, [GridEx](#), and the annual grid security conference, [GridSecCon](#).**
- Review past NERC announcements and newsletters on [this page](#).**
- Sign up for the weekly Standards, Compliance, and Enforcement Bulletin.²**
- Attend free training events.** Check the [NERC calendar](#) to see what's coming up. For Regional Entity training, review the "Stay Informed | Training Opportunities" section in the [ERO Enterprise 101 Informational Package](#).
- Submit a NERC Helpdesk [ticket](#) for assistance with any ERO technical support.**

Additional Recommended Action Items Based on Regional Entity

Table 1.2: Region-Specific Applications	
Region	Application Names
MRO	File Transfer Protocol (FTP) sites: FTP1 - Reliability Analysis FTP2 - Compliance FTP3 - Risk Assessment and Mitigation (RAM) FTP4: Enforcement

Published on NERC's Registration [Webpage](#) | Onboarding reference document for PCCs, ACCs, and PCOs

Contact Information

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The background of the slide features a blurred Texas state flag on the left and a target with several darts on the right. The darts are clustered in the center of the target, suggesting a focus or a goal.

Questions?



TEXAS RE

Ensuring electric reliability for Texans