
Reliability & Security
Workshop
WECC
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Pre-Registration Expectations

Mark Rogers
Manager Registration and Certification

Electric Reliability
& Security for the West

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Agenda

- Review NERC Rules of Procedure (ROP)
  - Section 500-Organization Registration and Certification
- NERC Key Documentation
- Registration is the Front Door
- WECC Key Documentation
  - Pre-registration Examples
- The Future of Registration (2027 and Beyond)

NERC ROP

- Section 500-Organization Registration and Certification
  - Organization Registration Program is to clearly identify those entities that are responsible for compliance with the FERC approved Reliability Standards.
  - Organizations that are registered are included on the NERC Compliance Registry (NCR) and are responsible for knowing the content of and for complying with all applicable Reliability Standards.
- Appendix 5A
  - Define the process to ensure NERC and the Regional Entities identify which functional entities must register as ***owners, operators, and users of the Bulk Power System.***
  - ***The Registration process for an entity may also be initiated by a Regional Entity, NERC, or Applicable Governmental Authority.***

NERC Key Documentation

- Pre-registration Review should consist of
  - Review All NERC Registration Documentation
    - ERO Enterprise Registration Procedure
    - ERO Enterprise 101 Informational Package
    - ERO Enterprise Onboarding Checklist
    - ERO Portal User Guide
    - CORES User Guide

NERC ROP

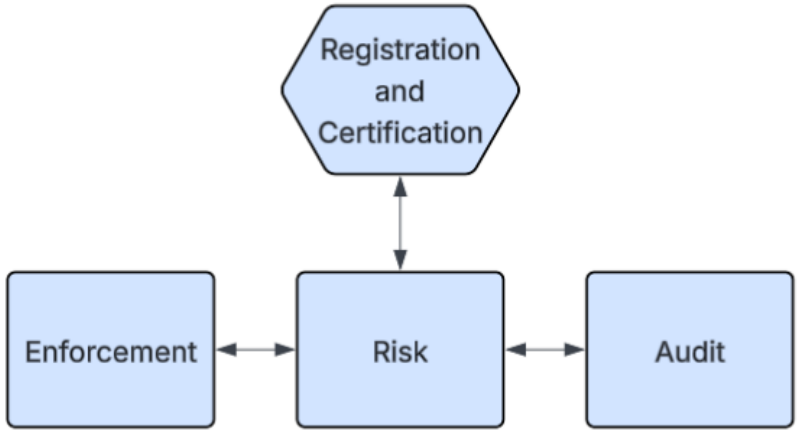
Train subject matter experts and partners within your organization to understand the NERC Rules of Procedures

Registration is the Front Door

- Organization Registration (Registration) identifies and registers Bulk Power System users, owners, and operators who are responsible for performing specified reliability functions.
- Organization Certification (Certification) ensures that a new Reliability Coordinator (RC), Balancing Authority (BA), or Transmission Operator (TOP) has the tools, processes, training, and procedures to demonstrate its ability to operate in a reliable and secure manner and comply with the Reliability Standards applicable to it.
- Both Registration and Certification information and decisions are important inputs to risk and monitoring processes and should be shared with the appropriate CMEP departments.
- Additionally, information from the risk and monitoring can inform Registration and Certification activities, creating the need for a two-way flow of information.

Registration is the Front Door

- Collaboration of Information
- Risk — Enforcement — Audit Staff



- Information sharing across WECC

Third Party:

- Control Centers (location, total generation operated, who is operating CC), including cross-border situations

Agreements:

- Facility information (commercial operation date, history of footprint, ownership changes)
- Aggregate risk at Point of Interconnection (POI)
- Certification engagement results
- Performance qualifier (timeliness and quality of responses during RFIs in both the registration and certification arenas).
- Reactivation of previously registered NCRs and implementation plan schedules

WECC Key Documentation — Registration

- Coordination with the WECC Registration team
  - WECC Registration and Certification Program Areas
- Helpful links for additional information
  - WECC Generation Registration Request Form
  - Generator Welcome Package (updates coming soon)
    - Pre-registration example
      - Interconnection tie line length (useful for determining FAC-003-4 applicability)
      - Location of POI
      - Generator type(s)
      - Reactive devices
      - MW and MVAR capabilities
      - Protection system component ownership
      - TO, TOP, and TP information; remedial action schemes of which the generator may be a part; cybersecurity expectations; shared facility expectations

Pre-registration Examples

- Interconnection agreements
- Interconnection tie line length (useful for determining FAC-003-4 applicability)
- Location of POI
- Generator type(s)
- Reactive devices
- MW and MVAR capabilities
- Protection system component ownership
- TO, TOP, and TP information
- Remedial Action Schemes of which the generator may be a part
- Cybersecurity expectations
- Shared facility expectations

Pre-registration Examples

Family	Standard Version	Requirement Number	GO	GOP
CIP	CIP-002-5.1a	R1.	GO	GOP
CIP	CIP-002-5.1a	R2.	GO	GOP
CIP	CIP-003-8	R1.	GO	GOP
CIP	CIP-003-8	R2.	GO	GOP
CIP	CIP-003-8	R3.	GO	GOP
CIP	CIP-003-8	R4.	GO	GOP
CIP	CIP-004-7	R1.	GO	GOP
CIP	CIP-004-7	R2.	GO	GOP
CIP	CIP-004-7	R3.	GO	GOP
CIP	CIP-004-7	R4.	GO	GOP
CIP	CIP-004-7	R5.	GO	GOP
CIP	CIP-004-7	R6.	GO	GOP
CIP	CIP-005-7	R1.	GO	GOP
CIP	CIP-005-7	R2.	GO	GOP
CIP	CIP-005-7	R3.	GO	GOP
CIP	CIP-006-6	R1.	GO	GOP
CIP	CIP-006-6	R2.	GO	GOP
CIP	CIP-006-6	R3.	GO	GOP
CIP	CIP-007-6	R1.	GO	GOP
CIP	CIP-007-6	R2.	GO	GOP

Family	Standard Version	Requirement Number	GO	GOP
CIP	CIP-007-6	R2.	GO	GOP
CIP	CIP-007-6	R3.	GO	GOP
CIP	CIP-007-6	R4.	GO	GOP
CIP	CIP-007-6	R5.	GO	GOP
CIP	CIP-008-6	R1.	GO	GOP
CIP	CIP-008-6	R2.	GO	GOP
CIP	CIP-008-6	R3.	GO	GOP
CIP	CIP-008-6	R4.	GO	GOP
CIP	CIP-009-6	R1.	GO	GOP
CIP	CIP-009-6	R2.	GO	GOP
CIP	CIP-009-6	R3.	GO	GOP
CIP	CIP-010-4	R1.	GO	GOP
CIP	CIP-010-4	R2.	GO	GOP
CIP	CIP-010-4	R3.	GO	GOP
CIP	CIP-010-4	R4.	GO	GOP
CIP	CIP-011-3	R1.	GO	GOP
CIP	CIP-011-3	R2.	GO	GOP
CIP	CIP-012-1	R1.	GO	GOP
CIP	CIP-013-2	R1.	GO	GOP
CIP	CIP-013-2	R2.	GO	GOP
CIP	CIP-013-2	R3.	GO	GOP
EOP	EOP-004-4	R1.	GO	GOP
EOP	EOP-004-4	R2.	GO	GOP
EOP	EOP-012-3	R1.	GO	
EOP	EOP-012-3	R2.	GO	
EOP	EOP-012-3	R3.	GO	
EOP	EOP-012-3	R4.	GO	
EOP	EOP-012-3	R5.	GO	GOP

Pre-registration Examples

Family	Standard Version	Requirement Number	GO	GOP
EOP	EOP-012-3	R6.	GO	
EOP	EOP-012-3	R7.	GO	
EOP	EOP-012-3	R8.	GO	
EOP	EOP-012-3	R9.	GO	
FAC	FAC-001-4	R2.	GO	
FAC	FAC-001-4	R4.	GO	
FAC	FAC-002-4	R2.	GO	
FAC	FAC-002-4	R5.	GO	
FAC	FAC-003-5	R1.	GO	
FAC	FAC-003-5	R3.	GO	
FAC	FAC-003-5	R4.	GO	
FAC	FAC-003-5	R5.	GO	
FAC	FAC-003-5	R6.	GO	
FAC	FAC-003-5	R7.	GO	
FAC	FAC-008-5	R1.	GO	
FAC	FAC-008-5	R2.	GO	
FAC	FAC-008-5	R6.	GO	
FAC	FAC-008-5	R8.	GO	
IRO	IRO-010-5	R3.	GO	GOP
MOD	MOD-025-2	R1.	GO	
MOD	MOD-025-2	R2.	GO	
MOD	MOD-026-1	R2.	GO	
MOD	MOD-026-1	R3.	GO	
MOD	MOD-026-1	R4.	GO	
MOD	MOD-026-1	R5.	GO	
MOD	MOD-027-1	R2.	GO	
MOD	MOD-027-1	R3.	GO	
MOD	MOD-027-1	R4.	GO	
MOD	MOD-032-1	R2.	GO	
MOD	MOD-032-1	R3.	GO	

Family	Standard Version	Requirement Number	GO	GOP
NUC	NUC-001-4	R2.	GO	GOP
NUC	NUC-001-4	R3.	GO	GOP
NUC	NUC-001-4	R4.	GO	GOP
NUC	NUC-001-4	R6.	GO	GOP
NUC	NUC-001-4	R9.	GO	GOP
PRC	PRC-002-5	R2.	GO	
PRC	PRC-002-5	R3.	GO	
PRC	PRC-002-5	R4.	GO	
PRC	PRC-002-5	R7.	GO	
PRC	PRC-002-5	R8.	GO	
PRC	PRC-002-5	R9.	GO	
PRC	PRC-002-5	R10.	GO	
PRC	PRC-002-5	R11.	GO	
PRC	PRC-002-5	R12.	GO	
PRC	PRC-002-5	R13.	GO	
PRC	PRC-004-6	R1.	GO	
PRC	PRC-004-6	R2.	GO	
PRC	PRC-004-6	R3.	GO	
PRC	PRC-004-6	R5.	GO	
PRC	PRC-004-6	R6.	GO	
PRC	PRC-005-6	R1.	GO	
PRC	PRC-005-6	R2.	GO	
PRC	PRC-005-6	R3.	GO	
PRC	PRC-005-6	R4.	GO	
PRC	PRC-005-6	R5.	GO	
PRC	PRC-012-2	R1.	GO	
PRC	PRC-012-2	R3.	GO	
PRC	PRC-012-2	R5.	GO	
PRC	PRC-012-2	R6.	GO	
PRC	PRC-012-2	R7.	GO	
PRC	PRC-012-2	R8.	GO	

Pre-registration Examples

Family	Standard Version	Requirement Number	GO	GOP
PRC	PRC-017-1	R1.	GO	
PRC	PRC-017-1	R2.	GO	
PRC	PRC-019-2	R1.	GO	
PRC	PRC-019-2	R2.	GO	
PRC	PRC-023-6	R1.	GO	
PRC	PRC-023-6	R3.	GO	
PRC	PRC-023-6	R4.	GO	
PRC	PRC-023-6	R5.	GO	
PRC	PRC-024-3	R1.	GO	
PRC	PRC-024-3	R2.	GO	
PRC	PRC-024-3	R3.	GO	
PRC	PRC-024-3	R4.	GO	
PRC	PRC-024-3	D.A.2.	GO	
PRC	PRC-025-2	R1.	GO	
PRC	PRC-026-2	R2.	GO	
PRC	PRC-026-2	R3.	GO	
PRC	PRC-026-2	R4.	GO	
PRC	PRC-027-1	R1.	GO	
PRC	PRC-027-1	R2.	GO	
PRC	PRC-027-1	R3.	GO	
PRC	PRC-028-1	R1.	GO	
PRC	PRC-028-1	R2.	GO	
PRC	PRC-028-1	R3.	GO	
PRC	PRC-028-1	R4.	GO	
PRC	PRC-028-1	R5.	GO	
PRC	PRC-028-1	R6.	GO	
PRC	PRC-028-1	R7.	GO	
PRC	PRC-028-1	R8.	GO	

Family	Standard Version	Requirement Number	GO	GOP
TOP	TOP-003-6.1	R5.	GO	GOP
TOP	TOP-003-7	R5.	GO	GOP
TPL	TPL-007-4	R6.	GO	
TPL	TPL-007-4	R10.	GO	
VAR	VAR-002-4.1	R5.	GO	
VAR	VAR-002-4.1	R6.	GO	
VAR	VAR-501-WECC-4	R1.	GO	
VAR	VAR-501-WECC-4	R3.	GO	
VAR	VAR-501-WECC-4	R4.	GO	
VAR	VAR-501-WECC-4	R5.	GO	

Source: Combined VRF VSL Matrix
Modified:
03/08/2026

Pre-registration Examples

- Internal controls
  - Preventive controls
  - Detective controls
  - Corrective controls
  - Testing of internal controls
  - Internal controls tables
- Internal Controls Failure Points
- ERO Enterprise Guide for Internal Controls

The Future of Registration

- Current = Reactivate Identification
  - NERC Registration relies on:
    - Self-identification
    - Case-by-case Regional Entity discovery
    - Engineering studies may not be accurate due to facilities already developed
    - Registration is often late relative to project lifecycle of the facilities
  - Increasing system complexity:
    - Grid complexity of increased inverter-based resources
    - Hybrid resources
    - Merchant transmission (multiple solar facilities individually owned that create a sub transmission system of GO 230 kV and 500 kV)
    - Non-traditional ownership models (600 MW solar farm that has five different owners (could have more))

The Future of Registration

- Reliability and Security Technical Committee (RSTC)
  - In April, the following document will be reviewed and approved
    - Draft Reliability Guideline: Commissioning Best Practices For BPS-Connected Inverter-Based Resources
    - Large Generator Interconnection Agreements and Small Generator Interconnection Agreements
    - Future interactions could start at the earliest phase of the project

The Future of Registration

Table ES.1: Recommendations and Applicability	
Recommendations	**Applicability**
Model to Field Parameter Mapping, Verification, and Validation: OEMs should provide a Parameter Verification Report that contains parameter settings that are exported directly from the commissioned IBR Units and includes model (EMT and PS) to field device parameter mapping tables. These tables should include scaling factors, correlation of parameter names, and guidance on translating parameters between software platforms and field devices. The OEM should also provide a means for the GO/GOP to view and export field settings in real-time . GO/GOP should incorporate requirements for model to field parameter mapping, verification, and validation into OEM supply agreements and EPC agreements. Those agreements should stipulate that the updated models be provided to the GO and that the EPC/OEM will support responding to inquiries from the TP/PC/TO. TP/PC/TO should use the recommendations in this guideline to help define As-Built facility model parameter verification and performance validation requirements for the GO/GOP. These requirements should focus on ensuring the parameters, control modes, and products that have been implemented at the actual facility are accurately reflected in the site models and studies.	OEM, GO/GOP, and TP/PC/TO
Commissioning Test Procedures and Checklists: These include device level test procedures and checklists such as gen-tie line relay functional testing and coordination (PRC-027), Collector Substation relay functional testing, IBR Unit hot/cold commissioning, SCADA commissioning, and ancillary system commissioning with clearly defined pass/fail criteria. GO/GOP in coordination with the TP/PC/TO and OEMs should perform Site Acceptance Tests (SAT) which includes the test procedures and data collection methods required for MOD 25, 26, and 27. GO/GOP should make sure that all the required commissioning tests and procedures are well documented and submitted to the TP/PC/TO for operations coordination and monitoring. Relevant test results should be shared with TP/PC/TO for review and necessary approval. GOs should plan for sufficient time in project schedule to perform commissioning and validation processes.	GO/GOP
Keep Track of and Apply Lessons Learned: To facilitate continuous improvement, all stakeholders should maintain a database or repository for lessons learned during commissioning and apply them as applicable to subsequent commissioning processes, technical specifications and interconnection requirements.	TP/PC/TO, GO/GOP and OEM
Plant Monitoring and Continuous Performance Validation Systems: The GO/GOP should perform functional testing of disturbance monitoring and unexpected loss of generation detection, data collection and reporting systems to ensure compliance with PRC-028-1, PRC-030-1, and Voltage Schedule monitoring and reporting to ensure compliance with VAR-002-4.1.	GO/GOP

Source: Draft Reliability Guideline: Commissioning Best Practices For BPS-Connected Inverter-Based Resources

ELECTRIC RELIABILITY & SECURITY FOR THE WEST

ENGAGE WITH WECC


WECC
www.wecc.org | 801-582-0353
155 N 400 W, Salt Lake City, Utah 84103, USA