NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Project 2021-03

CIP-002

Industry Webinar
September 25, 2024

RELIABILITY | RESILIENCE | SECURITY




NERC Public Disclaimer

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

NERC Antitrust

It is NERC's policy and practice to obey the antitrust laws and to avoid all conduct that unreasonably restrains competition. This policy requires the avoidance of any conduct that violates, or that might appear to violate, the antitrust laws. Among other things, the antitrust laws forbid any agreement between or among competitors regarding prices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that unreasonably restrains competition. It is the responsibility of every NERC participant and employee who may in any way affect NERC's compliance with the antitrust laws to carry out this commitment.

DT Members

Name	Entity
Megan Sauter (chair)	Oncor Electric Delivery
Russell A. Noble (vice-chair)	American Public Power Association (APPA)
Mark R. Atkins	Acumen
Brian Evans-Mongeon	Village of Hyde Park
Terry Volkmann	Volkmann Consulting
Josh Aldridge	Ferrovial
Josh Powers	Southwest Power Pool (SPP)
Jennifer Tidwell	Southern Company
Barry Jones	Western Area Power Administration (WAPA)
Dawn Triplett	American Electric Power (AEP)

Webinar Agenda

- Project Background
- Control Center Definition
- CIP-002 Attachment 1
  - Preface Language
  - Functional Obligations
  - Criterion 2.12 and Exclusion Clause
- Implementation Plan
- Questions & Answers

Standards Authorization Request (SAR)

- The focus of this webinar is the portion of the Project 2016-02 SAR relating to Transmission Owner Control Centers (TOCC) that was assigned to the Project 2021-03 Drafting Team (DT)

Transmission Owner (TO) Control Centers Performing Transmission Operator (TOP) Obligations

V5TAG is aware of multiple interpretations of the language "used to perform the functional obligation of" in CIP-002-5.1 Attachment 1, section 2.12 and recommends clarification of:

- The applicability of requirements on a TO Control Center that performs the functional obligations of a TOP, particularly if the TO has the ability to operate switches, breakers and relays in the BES.
- The definition of Control Center.
- The language scope of "perform the functional obligations of" throughout the Attachment 1 criteria.

- The Project 2021-03 DT has been assigned three additional SARs that will be balloted separately from the TOCC issue

SAR-related Comments from Industry

- Control Center Definition
  - Numerous questions were raised by DT's efforts to clarify aspects of the Control Center definition (i.e., associated data centers and reliability tasks) that distracted from the primary objective of providing TOCC clarity; also potentially exceeding SAR scope to fully address
- CIP-002 Attachment 1
  - Creation of an additional criterion for TOP/TO Control Centers for assets that meet criterion 2.6 – outside of SAR scope, but include in separate SAR
  - Creation of an additional criterion for TOP/TO Facilities that interconnect generating units at any number of plant locations where the highest rated net Real Power capability of the preceding 12 months exceeds 1500 MW in a single Interconnection – outside of SAR scope
  - Criteria modifications to specifically exclude non-BES generation from the aggregation of relevant criteria – outside of SAR scope

Additional Background Information

- The DT initiated a Field test on Jan 10, 2022 to inform CIP-002 Criterion 2.12 revisions
  - A report containing the data gathered from the Field Test is posted on the Project 2021-03 project page for informational purposes
- CIP-002-Y
  - First comment period held Sep 26 – Nov 9, 2023
  - Second comment period help Apr 2 – May 16, 2024
- CIP-002-8
  - Third comment period in progress Aug 29 – Oct 15, 2024
  - Numbering updated after CIP-002-7 (Project 2016-02) passed ballot and adopted by the Board on May 9, 2024

Control Center Definition

Draft 2:

Control Center - One or more facilities used by the operating personnel described below to monitor and control the Bulk Electric System (BES) in real-time, and any facilities that contain the Cyber Assets required for operating personnel to monitor and control the BES in real-time. Field assets, such as remote terminal units and data aggregators, are excluded from the scope of the Control Center definition.

1) Reliability Coordinator personnel who perform the BES company-specific Real-time reliability related tasks of a Reliability Coordinator;
2) Balancing Authority personnel who perform the BES company-specific Real-time reliability related tasks of a Balancing Authority;
3) Transmission Operator personnel who perform the BES company-specific Real-time reliability-related tasks of a Transmission Operator for Transmission Facilities at two or more locations;
4) Transmission Owner personnel who have the capability to control Transmission Facilities at two or more locations using Supervisory Control and Data Acquisition (SCADA); or
5) Generator Operator personnel who perform the reliability tasks of a Generator Operator for generation Facilities at two or more locations.

Control Center Definition

Industry comments:

- Disagree with revising the Control Center definition to reference "any facilities that contain the Cyber Assets required for operating personnel to monitor and control the BES in real-time"
- Preferred reverting to the original "associated data centers" language.
- Revert to 'hosting operating personnel' instead of 'used by operating personnel
- The "any facilities" language could be broadly interpreted to encompass facilities that were not intended by the drafting team, and clarity regarding the term 'data center' could be achieved via other means such as technical rationale, implementation guidance, or other supporting materials.
- Language applicable to Reliability Coordinator (RC), Balancing Authority (BA), TOP and Generator Operator (GOP) should remain the same as it is today, including exclusive use of real-time as opposed to Real-time

Control Center Definition

Response to Industry comments:

- TO CC definition is contained with CC Definition but separate from the other 4 types because some of the language does not apply to TO CC's
- The proposed language is inappropriately over-broad and has the potential to errantly identify Transmission Facilities as Control Centers
- Focus on facilities that TO have the capability to control via Supervisory Control and Data Acquisition (SCADA) as using an existing defined term helps with differentiation for different types of control that may exist
- Concern that SCADA definition contains telemetry. Provided exclusion language- excluding field Cyber Assets used for telemetry

Control Center Definition

Redline from Draft 2 to Draft 3:

One or more facilities hosting ~~used by the~~ operating personnel that ~~described below to~~ monitor and control the Bulk Electric System (BES) in real-time to perform the reliability related tasks, ~~and any facilities that contain the Cyber Assets required for operating personnel to monitor and control the BES in real-time. Field assets, such as remote terminal units and data aggregators, are excluded from the scope of the Control Center definition.~~ including their associated data centers, of:

1) a Reliability Coordinator ~~personnel who perform the BES company-specific Real-time reliability-related tasks of a Reliability Coordinator;~~,
2) a Balancing Authority ~~personnel who perform the BES company-specific Real-time reliability-related tasks of a Balancing Authority;~~,
3) a Transmission Operator ~~personnel who perform the BES company-specific Real-time reliability-related tasks of a Transmission Operator~~ for Transmission Facilities at two or more locations~~;~~,
4) ~~Transmission Owner personnel who have the capability to control Transmission Facilities at two or more locations using Supervisory control and Data Acquisition (SCADA);~~ or
5) ~~4)~~ Generator Operator ~~personnel who perform the reliability tasks of a Generator Operator~~ for generation Facilities at two or more locations.

OR

One or more facilities of a Transmission Owner that have the capability to control transmission Facilities at two or more locations in real-time using Supervisory Control and Data Acquisition (SCADA), including their associated data centers and excluding field Cyber Assets used for telemetry.

Control Center Definition

Redline from Current Definition to Draft 3:

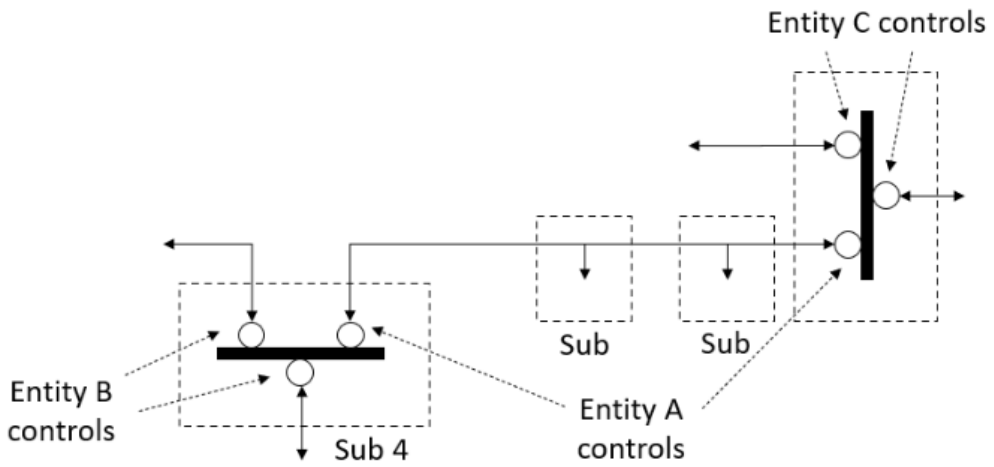
One or more facilities hosting operating personnel that monitor and control the BES in real-time to perform the reliability tasks, including their associated data centers, of: 1) a Reliability Coordinator, 2) a Balancing Authority, 3) a Transmission Operator for transmission Facilities at two or more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

OR

One or more facilities of a Transmission Owner that have the capability to control transmission Facilities at two or more locations in real-time using Supervisory Control and Data Acquisition (SCADA), including their associated data centers and excluding field Cyber Assets used for telemetry.

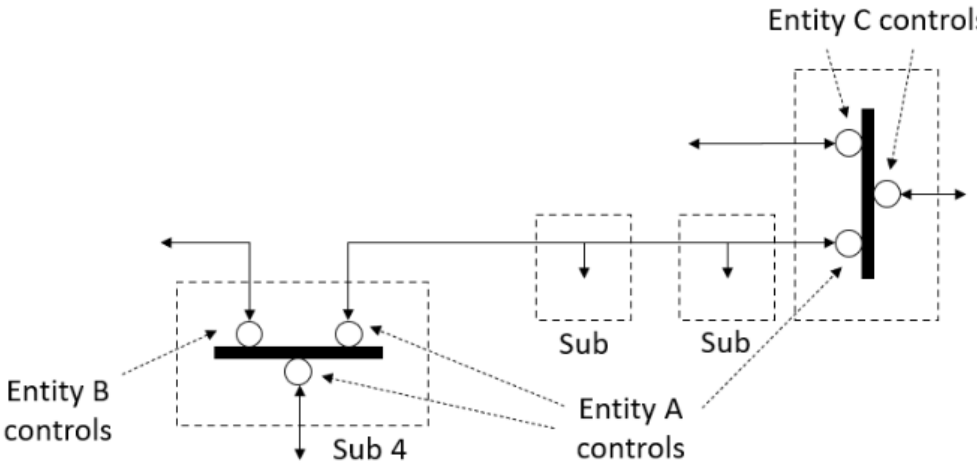
Control Center Definition Revisions

Example 1



- In Example 1, Entities B & C have Transmission Facilities at one location. Entity A has one Transmission Facility at two locations
- None of the entities meet the Control Center criteria

Example 3



- In Example 3, Entity A has Transmission Facilities at two or more locations
- Entity A meets the Control Center criteria

Questions and Answers

CIP-002 Attachment 1 Preface Language

Industry comments:

- Concerned that the use of ‘equipment’ in the preface language of Attachment 1 reduces clarity compared to the original language
- Concerned that the deletion of the phrase ‘that is not already included in High Impact Rating above’ in criteria will result in double classification of Control Centers as both High and Medium

CIP-002 Attachment 1 Preface Language

Redline from Draft 2 to Draft 3:

1. High ~~I~~impact ~~R~~rating ~~(H)~~

Each ~~BES Cyber System~~ BCS used by and located at any of the following:

2. Medium ~~I~~impact ~~R~~rating ~~(M)~~

Each ~~BES Cyber System~~ BCS, not included in Section 1 above, associated with any of the following ~~equipment as described in criteria 2.1 through 2.10~~:

~~Each BES Cyber System, not included in Section 1 above, used by and located at any of the Control Centers or backup Control Centers described in criteria 2.11 through 2.13:~~

3. Low Impact Rating (L)

~~BES Cyber System~~ BCS not included in Sections 1 or 2 above that are ~~used by and located at any of the Control Centers or backup Control Centers described in criteria 3.1:~~

~~BES Cyber Systems not included in Sections 1 or 2 above that are~~ associated with any of the following assets and that meet the applicability qualifications in Section 4 - Applicability, part 4.2 – Facilities, of this standard ~~equipment as described in criteria 3.2 through 3.6~~:

CIP-002 Attachment 1 Preface Language

Redline from CIP-002-5.1a to Draft 3:

1. High ~~I~~impact ~~R~~rating ~~(H)~~

Each ~~BES Cyber System~~ BCS used by and located at any of the following:

2. Medium ~~I~~impact ~~R~~rating ~~(M)~~

Each ~~BES Cyber System~~ BCS, not included in Section 1 above, associated with any of the following:

3. Low ~~I~~impact ~~R~~rating ~~(L)~~

~~BES Cyber System~~ BCS not included in Sections 1 or 2 above that are associated with any of the following assets and that meet the applicability qualifications in Section 4 - Applicability, part 4.2 – Facilities, of this standard:

CIP-002 Attachment 1 Replace Functional Obligations

Industry comments:

- Concern expressed that ‘operated by’ is not representative of the functions being performed and doesn’t account for scenarios where multiple different RCs have appointed an RC agent or non-RC RE to host real-time functions
- Request to separate TOP and TO functions into two different criteria

CIP-002 Attachment 1 Replace Functional Obligations

Redline from Draft 2 to Draft 3:

1.1 For Reliability Coordinators, ~~E~~each Control Center or backup Control Center ~~operated by a~~ used to perform the reliability tasks of the Reliability Coordinator.

1.2 For Balancing Authorities, ~~E~~each Control Center or backup Control Center used to perform the reliability tasks of the ~~operated by a~~ Balancing Authority for: 1) ~~for~~ generation equal to or greater than an aggregate of 2000 MW in a single Interconnection, or 2) ~~for~~ one or more of the assets that meet criterion 2.3, 2.6, or 2.9.

1.3. For Transmission Operators and Transmission Owners, ~~E~~each Control Center or backup Control Center~~, operated by a Transmission Operator or owned by a Transmission Owner,~~ for one or more of the assets that meet criterion 2.2, 2.4, 2.5, 2.7, 2.8, 2.9, or 2.10.

1.4 For Generator Operators, ~~E~~each Control Center or backup Control Center ~~operated by a~~ used to perform the reliability tasks of the Generator Operator for one or more of the assets that met criterion 2.1, 2.3, 2.6, or 2.9.

CIP-002 Attachment 1 Replace Functional Obligations

Redline from Draft 2 to Draft 3:

2.11 For Generator Operators, ~~E~~each Control Center or backup Control Center used to perform the reliability tasks of the ~~operated by a~~ Generator Operator for an ~~where the~~ aggregate highest rated net Real Power capability of the preceding 12 calendar months equal~~s~~ to or exceed~~s~~ing 1500 MW in a single Interconnection.

2.12 *[To be reviewed later in this presentation]*

2.13 For Balancing Authorities, ~~E~~each Control Center or backup Control Center used to perform the reliability tasks of the ~~operated by a~~ Balancing Authority for generation equal to or greater than an aggregate of 1500 MW in a single Interconnection.

CIP-002 Attachment 1 Replace Functional Obligations

Redline from CIP-002-5.1a to Draft 3:

1.1 For Reliability Coordinators, ~~E~~each Control Center or backup Control Center used to perform the reliability tasks ~~functional obligations~~ of the Reliability Coordinator.

1.2 For Balancing Authorities, ~~E~~each Control Center or backup Control Center used to perform the reliability tasks ~~functional obligations~~ of the Balancing Authority for: 1) ~~for~~ generation equal to or greater than an aggregate of 2000 MW in a single Interconnection, or 2) ~~for~~ one or more of the assets that meet criterion 2.3, 2.6, or 2.9.

1.3. For Transmission Operators and Transmission Owners, ~~E~~each Control Center or backup Control Center ~~used to perform the functional obligations of the Transmission Operator~~ for one or more of the assets that meet criterion 2.2, 2.4, 2.5, 2.7, 2.8, 2.9, or 2.10.

1.4 For Generator Operators, ~~E~~each Control Center or backup Control Center used to perform the reliability tasks ~~functional obligations~~ of the Generator Operator for one or more of the assets that met criterion 2.1, 2.3, 2.6, or 2.9.

CIP-002 Attachment 1 Replace Functional Obligations

Redline from CIP-002-5.1a to Draft 3:

2.11 For Generator Operators, ~~E~~each Control Center or backup Control Center~~, not already included in High Impact Rating (H) above,~~ used to perform the reliability tasks ~~functional obligations~~ of the Generator Operator for an aggregate highest rated net Real Power capability of the preceding 12 calendar months equal to or exceeding 1500 MW in a single Interconnection.

2.12 *[To be reviewed later in this presentation]*

2.13 For Balancing Authorities, ~~E~~each Control Center or backup Control Center~~, not already included in High Impact Rating (H) above,~~ used to perform the reliability tasks ~~functional obligations~~ of the Balancing Authority for generation equal to or greater than an aggregate of 1500 MW in a single Interconnection.

CIP-002 Attachment 1 Criterion 2.12

Industry comments:

- Table could be interpreted to mean that all transmission lines below 100kV should be counted in the aggregated weight of a Control Center, as opposed to those designated BES per the process defined in Appendix 5C of the NERC Rules of Procedure
- Concerns expressed that the language may expand to include BES Transmission Lines that do not connect between Transmission stations or substations (where Criterion 2.5 specifically states this)

CIP-002 Attachment 1 Criterion 2.12

Redline from Draft 2 to Draft 3:

2.12 For Transmission Operators and Transmission Owners, ~~E~~each Control Center or backup Control Center~~, operated by a Transmission Operator or owned by a Transmission Owner,~~ with an "aggregate weighted value" exceeding 6000 according to the table below and subject to the listed exclusion. The "aggregate weighted value" for a Control Center or backup Control Center is determined by summing the "weight value per BES Transmission Line" that is ~~shown in the table for each BES Transmission Line~~ monitored and controlled by the Control Center or backup Control Center in the table below. Include each BES Transmission Line that is connected between two or more Transmission stations or substations.

Voltage Value of a BES Transmission Line	Weight Value per BES Transmission Line
<100 kV	100
100 kV to 199 kV	250
200 kV to 299 kV	700
300 kV to 499 kV	1300
500 kV and above	0 (N/A)

CIP-002 Attachment 1 Criterion 2.12

Redline from CIP-002-5.1a to Draft 3:

2.12 For Transmission Operators and Transmission Owners, ~~E~~each Control Center or backup Control Center ~~used to perform the functional obligations of the Transmission Operator not included in High Impact Rating (H), above.~~ with an "aggregate weighted value" exceeding 6000 according to the table below and subject to the listed exclusion. The "aggregate weighted value" for a Control Center or backup Control Center is determined by summing the "weight value per BES Transmission Line" that is monitored and controlled by the Control Center or backup Control Center in the table below. Include each BES Transmission Line that is connected between two or more Transmission stations or substations.

Voltage Value of a BES Transmission Line	Weight Value per BES Transmission Line
<100 kV	100
100 kV to 199 kV	250
200 kV to 299 kV	700
300 kV to 499 kV	1300
500 kV and above	0 (N/A)

CIP-002 Attachment 1 Criterion 2.12 Exclusion

Industry comments:

- Group of Contiguous Transmission Elements (GCTE) is not well understood, consider a new defined term
- Language is not currently clear that an entity can only identify one GCTE
- Requirements for metering infrastructure to support the 2.12 exclusion may be challenging for smaller entities

CIP-002 Attachment 1 Criterion 2.12 Exclusion

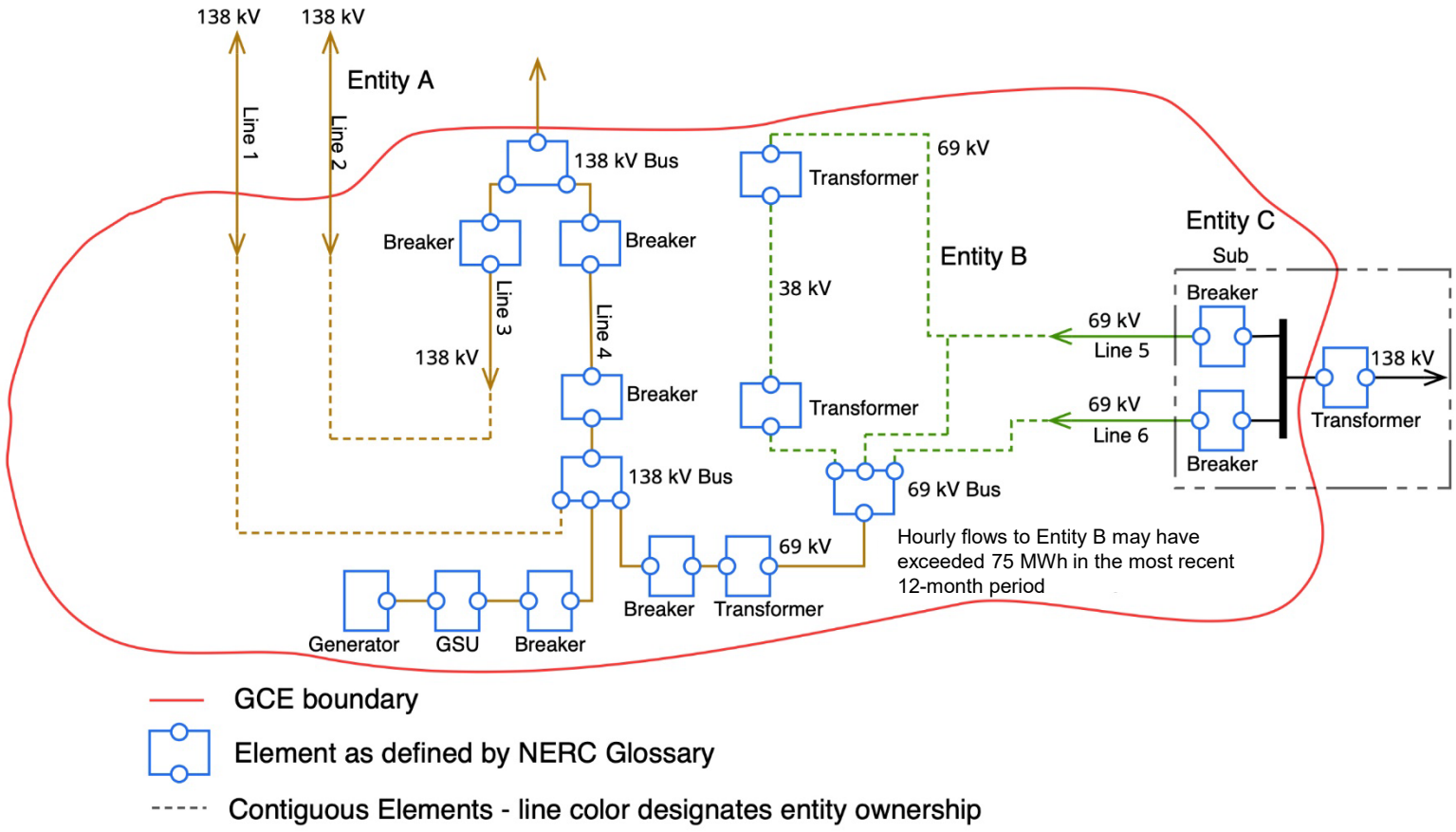
Redline from Draft 2 to Draft 3:

Provided that the "aggregate weighted value" calculated according to the table above is less than 12000, a Transmission Operator or a Transmission Owner may exclude the ~~calculate a modified "aggregate weighted value" that excludes~~ BES Transmission Lines that are contained in ~~monitored and controlled by the Control Center or backup Control Center that are part of~~ a single group of contiguous ~~transmission~~ Elements from their "aggregate weighted value" calculation, where a group of contiguous Elements is defined as:

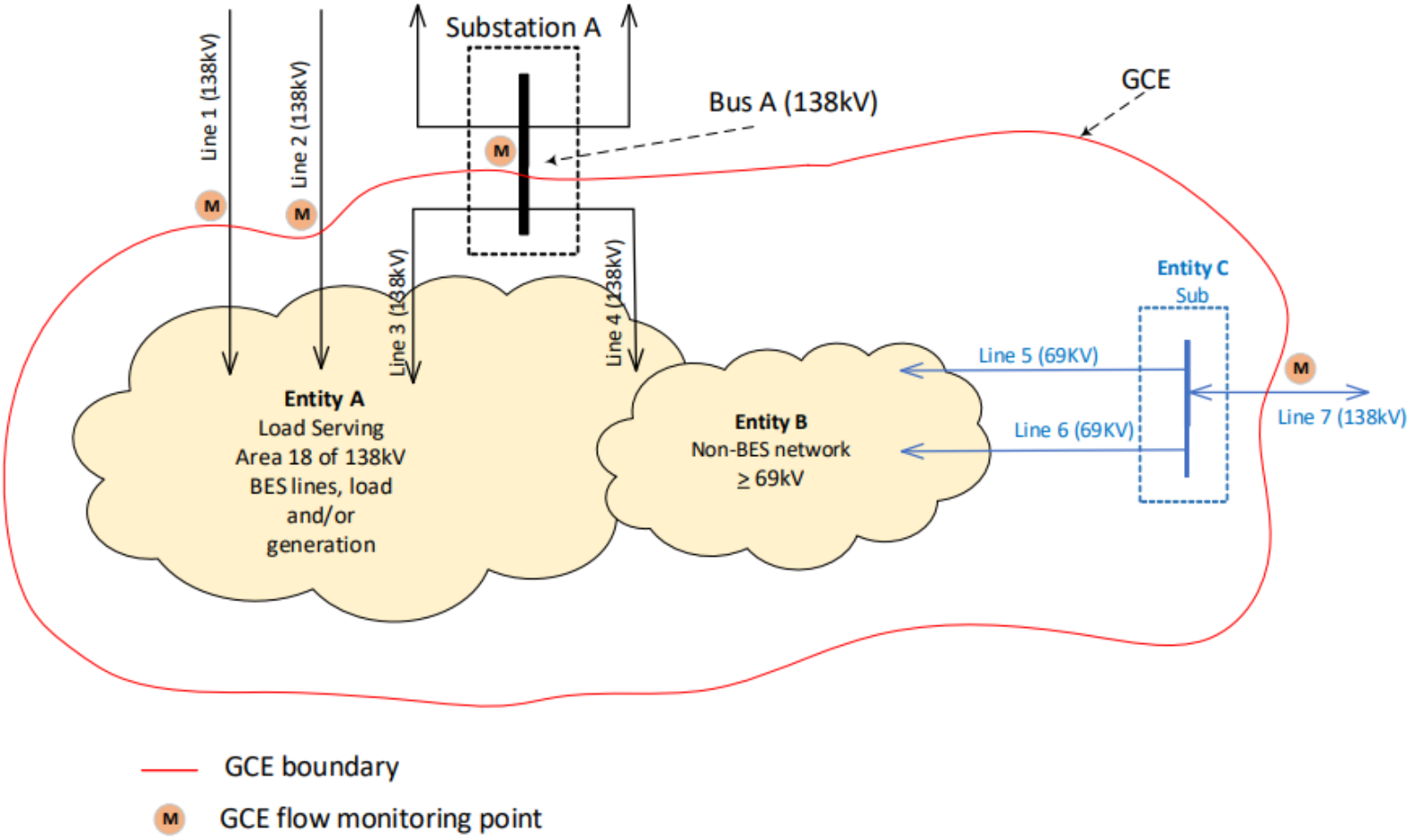
- a group of contiguous Elements emanating from multiple points of connection at 69kV or higher;
- that are operated at less than 300kV;~~,~~ and
- where the gross export does not exceed 75 MWh during non-Energy Emergency Alert ~~(EEA)~~ conditions. The gross export is based on the hourly integrated values of the preceding ~~for the most recent~~ 12-month period.

Important note: the criterion does not require metering to be installed to track the hourly integrated values. The responsible entity may find other avenues such as SCADA.

CIP-002 Attachment 1 Criterion 2.12 Exclusion



CIP-002 Attachment 1 Criterion 2.12 Exclusion



CIP-002 Attachment 1 Criterion 2.12

Changes retained from Draft 2:

- 12,000 AWV cap
- Gross export as opposed to net export

New changes in Draft 3:

- GCE over GCTE
  - "Group of contiguous Transmission Elements" is excessively wordy and change is to recognize that non-Transmission Elements may be included
  - The use of acronym "GCE" is only contained in the Technical Rational, as defined in the standard
  - Language updated for clarify, including identification of a single GCE
- Units of MWh instead of MW
  - MWh correctly represents an hourly integrated value
  - MW is an instantaneous value

Questions and Answers

Implementation Plan

- IP language now governs the interaction between CIP-002-7 and CIP-002-8
- CIP-002-8 and Control Center definition
  - Become effective on the later of:
    - Effective date of CIP-002-7
    - First day of the first calendar quarter that is 3 months after the effective date of the applicable governmental authority's order approving CIP-002-8
- Initial compliance date for CIP-002-8
  - Responsible Entities shall initially comply with the periodic requirements in CIP-002-8, Requirement R2, within **15 calendar months** of their last performance of Requirement R2 under the version of CIP-002 immediately effective prior to CIP-002-8 *(previously noted as CIP-002-5.1a)*

Implementation Plan

- Phased-in implementation date for CIP-002-8, Requirement R1, Attachment 1 – Criterion 2.12
  - Provides Responsible Entities a longer implementation period if criterion revisions would result in a higher impact level categorization of a BCS
  - If the revisions to Criteria 2.12 of Attachment 1 to CIP-002-8 result in a higher impact level categorization of a BCS, the Responsible Entity shall not be required to identify that BCS as that higher categorization nor apply the requirements throughout the CIP standards applicable to that higher categorization until **24 months** after the effective date of CIP-002-8
  - Would be considered a planned change
    - Responsible Entities are expected to comply with the higher categorization **24 months** after the effective date of CIP-002-8 as opposed to further extensions that would be allowable for an unplanned change

Implementation Plan

- Planned or Unplanned Changes section
  - Planned Changes = any changes of the electric system or a BCS that were planned and implemented by the Responsible Entity and subsequently identified through the annual assessment under CIP-002-8, Requirement R2
  - Unplanned Changes = any changes of the electric system or a BCS that were not planned by the Responsible Entity and subsequently identified through the annual assessment under CIP-002-8, Requirement R2
  - Modified statement referencing the initial performance of certain periodic requirements to the following:
    - Eliminated awkward referencing from the CIP-002-8 implementation plan back to the CIP-002-5.1a implementation plan
    - Requires entities to review CIP-004 through CIP-011 to understand the periodic requirements
      - For planned changes, compliance with CIP-004 through CIP-011 begins on the update
      - For unplanned changes, compliance with CIP-004 through CIP-011 begins at the end of the timelines listed in the table discussing unplanned change scenarios (next slide)

Implementation Plan

Scenario of Unplanned Changes After the Effective Date	Compliance Implementation
New high impact BES Cyber System	12 months
New medium impact BES Cyber System	12 months
Newly categorized high impact BES Cyber System from medium impact BES Cyber System	12 months for requirements not applicable to Medium impact BES Cyber Systems
Newly categorized medium impact BES Cyber System	12 months
Responsible Entity identifies its first high impact or medium impact BES Cyber System (i.e., the Responsible Entity previously had no BES Cyber Systems categorized as high impact or medium impact according to the CIP-002 identification and categorization processes)	24 months

Next Steps

- Posting
  - Project Page 2021-03
  - 45-day formal comment period from August 29 – October 15, 2024
  - Ballots and non-binding polls on the Violation Risk Factors (VRFs) and Violation Severity Levels (VSLs), conducted during the last 10 days of the comment period (October 4 – October 15, 2024)

- Point of Contact
  - Dominique Love, Standards Developer
  - Dominique.Love@nerc.net or call 404-217-7578

Questions and Answers

References

- Project Page 2021-03
- 2016-02 SAR
- Field Test Plan
- Field Test Final Report
- CIP-002-8 Clean
- CIP-002-8 Redline To Last Posted
- CIP-002-8 Redline to Last Approved
- Draft 3 - Technical Rationale
- Draft 3 - Implementation Plan