NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

DRAFT Implementation Guidance
Pending Submittal for ERO Enterprise Endorsement

Implementation Guidance for FAC-002-4

Implementation Guidance for FAC-002-4

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RELIABILITY | RESILIENCE | SECURITY




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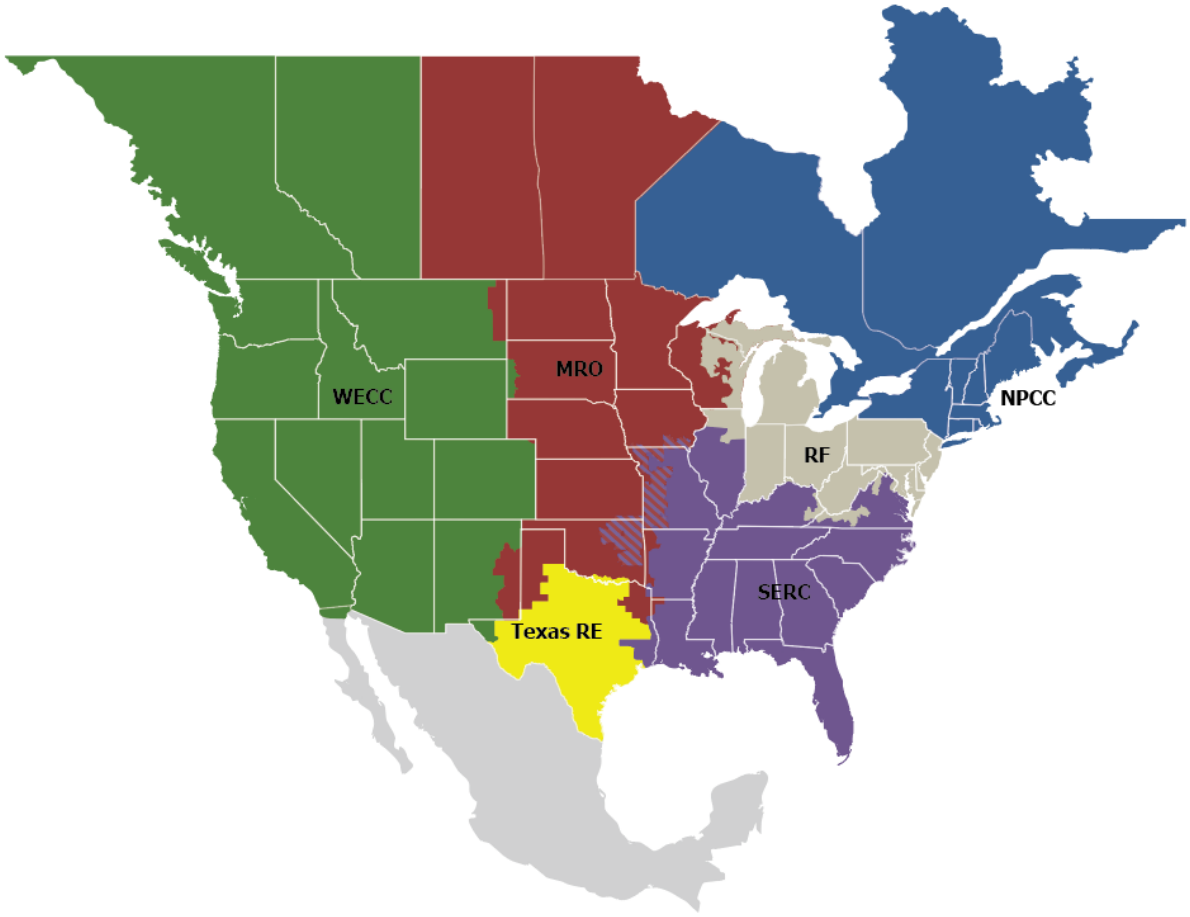
Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of the North American Electric Reliability Corporation (NERC) and the six Regional Entities, is a highly reliable and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
Because nearly 400 million citizens in North America are counting on us

The North American BPS is made up of six Regional Entity boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one Regional Entity while associated Transmission Owners/Operators participate in another.



MRO	Midwest Reliability Organization
NPCC	Northeast Power Coordinating Council
RF	ReliabilityFirst
SERC	SERC Reliability Corporation
Texas RE	Texas Reliability Entity
WECC	WECC

Introduction

The Project 2020-05 Standard Drafting Team (SDT) drafted this Implementation Guidance to provide example approaches for compliance with FAC-002-4 Requirement R6. Implementation Guidance does not prescribe the only approach, but highlights one or more approaches that would be effective in achieving compliance with the standard. Because Implementation Guidance only provides examples, entities may choose alternative approaches that better fit their individual situations.

This document will be reviewed and updated upon initiation of a standards development project to modify the FAC-002-4 Standard.

Background

Project 2020-05 modified FAC-001-3 and FAC-002-3 to clarify the use of "materially modifying", particularly as it relates to compliance with the standards.

FAC-001-3 and FAC-002-3 imply that the term "materially modified" should be used to distinguish between facility changes that are required to be studied and those that need not be studied. While the existing standards do require coordination and cooperation between a Facility owner and the Transmission Planner (TP) or Planning Coordinator (PC) when a new or materially modified interconnection Facility is connected to their system, neither standard specifies what entity is responsible for determining what is considered a material modification. Further, the existing language is unclear about whether these requirements only apply when a different entity is proposing to interconnect to a Facility owner's Facility or if they also apply to the Facility owner's new or modified Facility.

Additionally, in FERC-jurisdictional areas, the term "Material Modification" means "those modifications that have a material impact on the cost or timing of any Interconnection Request with a later queue priority date." This has led to widespread confusion across the industry regarding the correct application of these terms related to the FERC Open Access Transmission Tariff (OATT) implementation and the NERC Reliability Standards requirements.

To address the confusion described above, the standard drafting team changed the term from "materially modified" to "qualified change". The standard drafting team also added a new Requirement R6 in FAC-002-4 to require the Planning Coordinator to define qualified change and make the definition publicly available.

Requirement R6

R6. Each Planning Coordinator shall maintain a publicly available definition of qualified change for the purposes of facility interconnection. [Violation Risk Factor: Lower] [Time Horizon: Long-term Planning]

The Project 2020-05 SDT drafted Requirement R6. Examples of factors the PC could consider in developing its definition of "qualified change" for purposes of required studies are included in the tables below. The PC should consider what is appropriate for their region in determining the definition of qualified change.

Table 1.1: Qualified Changes for End-User Facilities

Category	Description	Detailed Example(s)
1	Increase in Demand	**Example 1:** • Annual increase in Demand exceeding 10% **Example 2:** • Increase in Demand of 75 MW or greater within the next two years; or • Increase in Demand of 20 MW or greater within the next two years for a third-party Facility interconnected to a Generator Owner's Facility
2	Addition of equipment that would significantly impact the composite load model used to represent a Facility	**Example 1:** • Installation of a motor 1,000 hp or larger where no motors previously existed; or • Addition of a motor exceeding the size of all other motors connected within a Facility with at least 500 hp of motors
3	Changes in protection schemes or settings	
4	Changes in harmonic levels	
5	A change in end-user Facility topology that may affect power flows on the BES	

Table 1.2: Qualified Changes for Transmission		
Category	**Description**	**Detailed Example(s)**
1	Change in Rating	**Example 1:** • Change in the facility thermal rating by greater than 5% **Example 2:** • Change in the facility impedance by greater than 5% **Example 3:** • Change in facility voltage class
3	Change in Protection Coordination	**Example 1:** • Change in the protection coordination that would alter the way a facility would switch
4	Change in topology	**Example 1:** • Change in topology that would alter power flows on the BES

Table 1.3: Qualified changes for generation		
Category	**Description**	**Detailed Example(s)**
1	Change in Generator Output	**Examples** • Change that affects its Seasonal Real Power or Reactive Power capability by more than 10 percent of the last reported verified capability and is expected to last more than six months. • Change in power factor capability of the generator
2	Change of GSU	**Examples** • Change of GSU that results in any of the following differences ▪ Reduction in rating by more than 10% ▪ Impedance change by more than 10% ○ Change in transformer losses ○ Change in transformer saturation differences
3	Change in Generator Characteristics	**Examples** • Change in the inertia of the Generator by more than 10% • Change in steady state transient and sub-transient reactance of the Generator or generator Interconnection Facilities by more than 10% • Transmission Planner requested Generator facility projects in MOD-027 or MOD-026 resulting in changes that alter the equipment response characteristic. • Changes to a generator's electromagnetic transient models.
4	Change in Protection System of the generator facilities or generator interconnection facilities	**Examples** • Changes in relay settings as required in PRC-024 R3 to report changes or limitations to Transmission Planner and Planning Coordinator within 30 days. ▪ include high and low frequency settings along with delay times if applicable ▪ include high and low voltage settings along with delay times if applicable
5	Inverter Based Resource (IBR) Only: Change in Inverter or inverter settings or	**Examples** • Change of 10% or more of the inverter-based resource units at a facility that is not replacement in-kind. • Change in any control settings ▪ resulting in a difference in frequency or voltage support of the Inverter Based Resource ▪ resulting in a difference in when the IBR discontinues current injection to the GRID (i.e. blocking commands)

Table 1.3: Qualified changes for generation		
Category	**Description**	**Detailed Example(s)**
6	Unplanned change in governor or governor settings	**Examples** Uncharacteristic changes that result in how the generator responds to grid frequency deviations and is expected to last more than six months.
7	Unplanned change in exciter or exciter settings or	**Examples** Uncharacteristic changes that result in how the generator responds to grid voltage deviations and is expected to last more than six months.
8	Change in power system stabilizer	**Examples** • Addition or removal of power system stabilizer • Setting changes of power system stabilizer