BALANCING AUTHORITY OF NORTHERN CALIFORNIA

(BANC)

BANC PC Definition of Qualified Change for NERC FAC-001-4 and FAC-002-4

Technical Bulletin and Compliance Documentation

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Glossary of Industry Terms

BA	Balancing Authority
BANC	Balancing Authority of Northern California
BANC PC Participants	MID, REU, RE and SMUD
BES	Bulk Electric System
DER	Distributed Energy Resource
FAC Standards	NERC Facilities Design, Connections, and Maintenance Standards
FERC	Federal Energy Regulatory Commission
GSU	Generator Step-Up Transformer
IBR	Inverter Based Resource
Interconnection Request	A request by an Interconnection Customer to connect generation facilities to the utility's transmission/generation network.
MID	Modesto Irrigation District
NERC	North American Electric Reliability Corporation
OATT	Open Access Transmission Tariff
PA	Planning Authority
PC	Planning Coordinator
RC	Reliability Coordinator
RE	Roseville Electric
REU	Redding Electric Utility
SMUD	Sacramento Municipal Utility District
TP	Transmission Planner

1 Introduction

This document provides technical guidance on the definition of qualified change as it relates to the North American Electric Reliability Corporation (NERC) FAC-001-4 and FAC-002-4 reliability standards as listed below.

NERC "Project 2020-05 Modifications to FAC-001 and FAC-002" proposed to remove the term "materially modified" and use "qualified changes" for the NERC FAC-001-4, R3 and R4 as well as NERC FAC-002-4, R1 to R4. In addition, R6 will be added for NERC FAC-002-4 as followings:

R6. Each Planning Coordinator shall maintain a publicly available definition of qualified change for the purpose of facility interconnection.

M6. Each Planning Coordinator shall have evidence that it has maintained a publicly available definition of qualified change

The Balancing Authority of Northern California (BANC) is a registered Planning Coordinator, and this document is developed to define the term "qualified change" to comply with upcoming changes in NERC Reliability Standards FAC-001-4 and FAC-002-4. These versions of FAC-001-4 and FAC-002-4 NERC Standards became effective on January 01, 2024, and the older versions ceased to be in effect on December 31, 2023. This qualified change document became effective on January 01, 2024, and the latest version 1.1 update is effective August 22, 2025.

2 Definition of Qualified Change

Based on the newly added requirement FAC-002-4 R6, BANC PC defines the term "qualified change" for BES facilities as following:

Existing Interconnections of Transmission:

Qualified change for existing interconnection of transmission include any interconnection within the BANC control area by BANC PC participants or TPs/TOs seeking interconnection to BANC.

Table 1 – Qualified Changes to Existing Interconnections of Transmission

Category	Examples of Qualified Changes
Change in Rating, Impedance and Voltage Classes	Change in the facility normal or emergency thermal rating of greater than 5%. Change in facility impedance of greater than 5%. Change in facility voltage class.
Change in Protection Coordination	Change the protection coordination that would alter the way a facility would switch.

Category	Examples of Qualified Changes
BES Transformer replacement or removal	Any replacement with changing of MVA ratings of 10% or more, or removal of a BES transformer.
Change in Configuration	Any existing BES substation bus configuration changes or transmission circuit reconfigurations.
Change in Topology	Change topology that would alter powerflows on the BES.
Short Circuit Impedance	Any changes to the short circuit impedance of BES facilities of 5% or more.

Existing Generation:

Qualified changes to existing generation consists of any technically change that could impact the BANC controlled grid and are listed below.

Table 2 – Qualified Changes to Existing Generation

Category	Examples of Qualified Changes
Change in Generator Output	Any existing BES generator whose power real or reactive output is increased by 10% or greater, and the change is expected to last more than 6 months.
Change in Generator Dynamic or Electromagnetic Transient (EMT) Model	Any existing BES generator whose dynamic or EMT model is changed.
Change of GSU	Any change of GSU that results in changing of MVA rating and/or impedance of 10% or more. The GSU changes are also include any change in transformer losses, or change in saturation differences.
Change in Generator Characteristics	Change in the inertia of synchronous generators by more than 10%. Change in steady state transient and sub-transient reactance of synchronous or induction generators or interconnection facilities of 10% or more. Transmission Planner requested generator facility projects in MOD-026 and MOD-027 resulting in changes that alter the response characteristic. Change of 5% or more to the plant or alternate production profile. Changes to a generator's electromagnetic transient models.
Inverter Based Resources (IBR) – Change in inverter or inverter settings or to the Power Plant Controllers (PPC)	Change of 10% or more of inverter-based resource units at a facility that is not replacement in-kind. Change to any inverter and/or PPC settings or firmware resulting in control settings resulting in a difference in

Category	Examples of Qualified Changes
	frequency or voltage support of the IBR, or resulting in a difference in when the IBR discontinues current injection to the grid (i.e. blocking commands). Any modifications to inverter based resources that changes the short circuit response of the facility to faults by 15% or more.
Change in Protection System of Generators, or Generation Interconnection Facilities	Changes in relay settings as required in PRC-024 R3 to support changes or limitations to Transmission Planner and Planning Coordinator within 30 days. This includes high and low frequency and/or voltage settings along with delay times as applicable.
Unplanned change in governor or governor settings and/or exciter or exciter settings	Uncharacteristic changes that result in how the generator responds to grid frequency deviations and is expected to last more than 6 months.
Change in power system stabilizer	Addition or removal of a power system stabilizer, or to settings of power system stabilizers.

Existing End-User Facilities:

Qualified changes for existing end-user facilities that encompass all load interconnections from Distribution Providers.

Table 3 – Qualified Changes to End-User Facilities (Load)

Category	Examples of Qualified Changes
Increase in Demand	Annual increase in demand exceeding 10%. Increase in demand of 75 MW or greater within the next two years. Increase in demand of 20 MW or greater within the next two years for third-party Facility interconnected to a generator owner's facility.
Addition of equipment that would significantly impact the composite load model used to represent the facility	Installation of a motor with 1000 HP or larger where no motors previously existed. Addition of a motor exceeding the size of all other motors connected within a facility with at least 500 HP of motors.
Changes in protection schemes or settings	Changes in settings for under-frequency load shedding.
Changes in Harmonic levels	Addition or removal of steel casting or steel smelter loads.
A change in end-user facility topology that may impact power flows on the BES	Changes to interruptible loads being interrupted during peak load periods. Addition of distributed energy resources (DER) more than 0.5 MW at a distribution substation

3 Specific Sample Examples

Below are some sample examples of qualified changes:

1. Increasing the generation MW output at the Point of Interconnection (POI) by 10% or more.
2. Converting an existing ring bus substation to breaker and a half configuration.
3. Derating an existing 230 kV transmission line rating from 800 MVA to 750 MVA permanently.
4. Replacing a 100 MVA rating BES shunt capacitor or reactor with a 150 MVA rating shunt capacitor or reactor.
5. Reconductoring a BES transmission line resulting change in impedance and/or rating greater than 5%.
6. Modifying inverter controllers at a facility that results in a change of 15% or more in the fault current magnitude.
7. Upgrading a BES transformer from 100 MVA to 125 MVA.

4 Revision History

Below is a table documenting the revision history of this document.

Table 4 – Revision History

Date	Version	Description	Editor
08/15/2025	1.1	Revisions based on application of NERC FAC-002-4 R6 guidance document	Prabal Singh
12/22/2023	1.0	Initial Document	Prabal Singh