New Resource Integration Protection and Control Standard Requirements Revisions

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FERC Order 901 was issued on October 19, 2023 to address reliability concerns associated with Inverter Based Resources (IBR). In 2025 FERC approved;

1. PRC-028-1: Disturbance Monitoring and Reporting Requirements for Inverter Based Resources

2. PRC-029-1: Frequency and Voltage Ride-through Requirements for Inverter-Based Resources

3. PRC-030-1: Unexpected Inverter-Based Resource Event Mitigation

In accordance with the NERC Implementation schedules the new IBRs must comply with these new standards by October 1, 2026.

PRC-028-1: Disturbance Monitoring and Reporting Requirements for Inverter Based Resources

Requirements R1-R7 define event recording triggers, facility signals, data granularity, time synchronism and data retention requirements .

Triggers are identified as:

- Voltage ride through events
- Inverter-based unit trips
- Over frequency and under frequency events
- AC phase overvoltage and undervoltage events
- Neutral Overcurrent

Signals include :

- Voltage, current, real and reactive power at multiple facility locations.

Data recording characteristics:

- Minimum recording rate of 64 samples per cycle
- 2 cycles pre-trigger with at least 2 seconds of data
- GPS time clock synchronized data

Continuous dynamic disturbance recording (DDR)

- Input sampling of 960 samples per second
- Record at 1 sample per cycle

Generator Interconnection Agreement Transient Data Recording Equipment Requirements

Appendix H of Appendix EE section vi, defines signal requirements.

Plant Level:

(1) Plant three phase voltage and current
(2) Status of ancillary reactive devices
(3) Status of all plant circuit breakers
(4) Status of plant controller
(5) Plant control set points
(6) Position of main plant transformer no-load taps
(7) Position of main plant transformer tap changer (if extant)
(8) Protective relay trips or relay target data

Inverter Level:

(1) Frequency, current, and voltage during frequency ride-through events
(2) Voltage and current during momentary cessation for transient high voltage events (when used)
(3) Voltage and current during reactive current injection for transient low or high voltage events
(4) Inverter alarm and fault codes
(5) DC current
(6) DC voltage

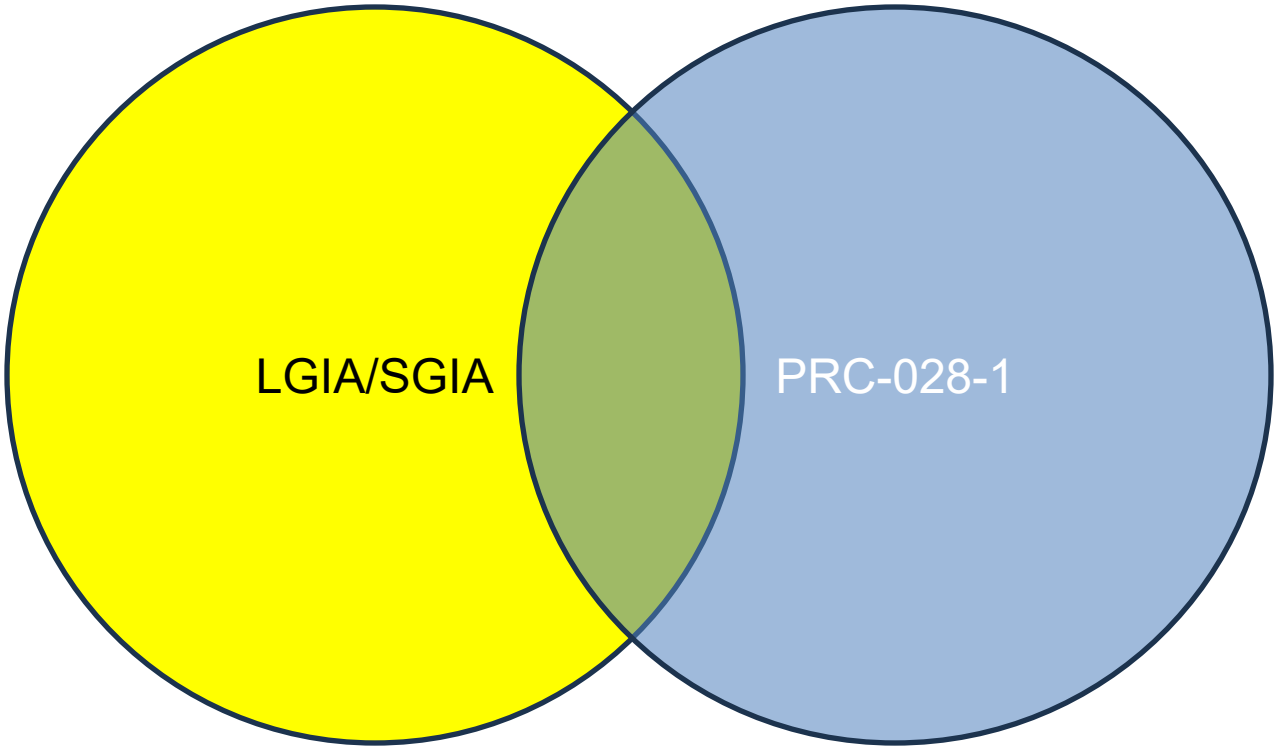
Triggers are identified as:

- Ride through events
- Inverter-based unit trips
- Overfrequency and underfrequency events

Data Recording characteristics

- All data GPS synchronized to 1ms
- Inverter data shall be recorded at 10mS intervals
- Phase angle measuring unit – not a synchrophasor unit- at facility main substation transformer.
- 150ms pre-trigger with 1 seconds of data after event trigger
- Data available within10 calendar days, available for 30 days

Disturbance Monitoring and Reporting Requirements for Inverter Based Resources in the CAISO are inclusive of both PRC-028-1 and the LGIA/SGIA



Conflicting Disturbance Monitoring and Reporting Requirements for Inverter Based Resources - Examples

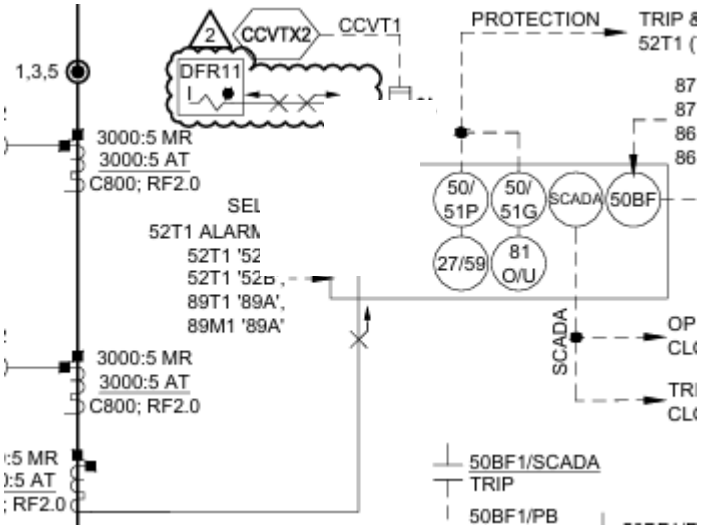
When the requirements conflict the more stringent requirement will apply;

1. PRC-028-1 does not list individual inverter data logging but the LGIA/SGIA requires specific prescriptive inverter 10ms data. LGIA requirements will be enforced.
2. PRC-028-1 requires a Dynamic Disturbance Recording (DDR) but the LGIA/SGIA does not. PRC-028-1 requirements must be implemented.
3. The LGIA/SGIA requires all data to be synchronized to within 1ms of UTC while PRC-028-1 allows IBR units to be synchronized within 100mS of UTC. LGIA requirements will be enforced.
4. The LGIA data response and date retention requirements are 10 days and 30 days respectfully. PRC-028 requires a 15 day response and the data be retained for 20 days. LGIA requirements will be enforced.
5. PRC-028-1 requires specific signals to be recorded at 64 samples per cycle while the LGIA only requires 16 samples per cycle. PRC-028-1 requirements must be implemented.

New NRI Approval process: ControlProtectionDataRecording

Documents needed to complete approval:

1. Description of the data recordation system and how the system complies with all data logging requirements.
2. Equipment configuration, signal list and trigger settings for data recording devices.
3. Single line diagram issued for protective relaying approval shall include identification of data recording signal connections.



New NRI Approval process: Implementation File Naming

Documents needed to complete approval:

1. Description of the data recordation system and how the system complies with all data logging requirements.
   XXNGR1234 ControlProtectionDataRecording Report Ver1.pdf

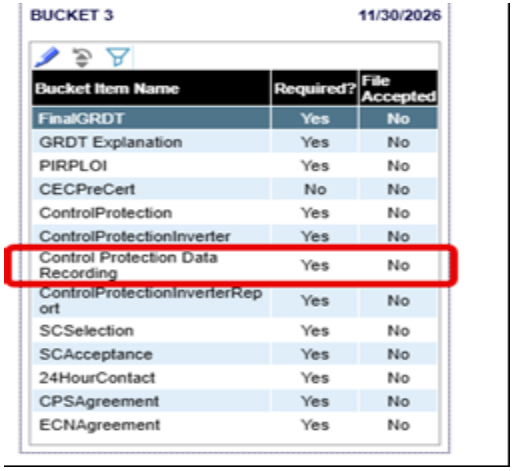
2. Equipment configuration, signal list and trigger settings for data recording devices.
   XXNGR1234 ControlProtectionDataRecording Ver1.pdf

New NRI Approval process: Implementation Existing Projects

For Projects that met Bucket 3 requirements prior to September 17th RIMs Update, data recording submittals and documentation will be reviewed as part of Bucket 5 requirements.

For Project that met Bucket 5 requirements prior to the RIMs Update, no additional information will be required

All other projects that had not met Bucket 3 requirements will be required to submit the new information to receive Bucket 3 approvals.



BUCKET 3 11/30/2026

Bucket Item Name	Required?	File Accepted
FinalGRDT	Yes	No
GRDT Explanation	Yes	No
PIRPLOI	Yes	No
CECPreCert	No	No
ControlProtection	Yes	No
ControlProtectionInverter	Yes	No
Control Protection Data Recording	Yes	No
ControlProtectionInverterReport	Yes	No
SCSelection	Yes	No
SCAcceptance	Yes	No
24HourContact	Yes	No
CPSAgreement	Yes	No
ECNAgreement	Yes	No

PRC-029-1: Frequency and Voltage Ride-through Requirements for Inverter-Based Resources

- Requirements R1-R3 define ride through requirements during and after defined frequency and voltage excursions.
- Revises and replaces criteria established in PRC-024.
    - Attachment 1 : Voltage Ride Through Criteria for IBRs
    - Attachment 2 : Frequency Ride Through Criteria for IBRs
- New values do not affect LGIA ride through performance criteria
- Existing NRI process will be utilized to verify ride through settings

LGIA Appendix H requirements:

"An Asynchronous Generating Facility shall remain online for the voltage disturbance caused by any fault on the transmission grid,…having a duration equal to the lesser of the normal three-phase fault clearing time (4-9 cycles) or one-hundred fifty (150) milliseconds.

PRC-030-1: Unexpected Inverter-Based Resource Event Mitigation

- Requirements R1-R3 defines the process requirement to be put in place to identify, analyze and mitigate unexpected Inverter-Based Resource sudden changes in power output.

- The scope of PRC-030 -1 is not considered in the New Resource Integration process since it is only applicable to facilities that are operating.

Questions