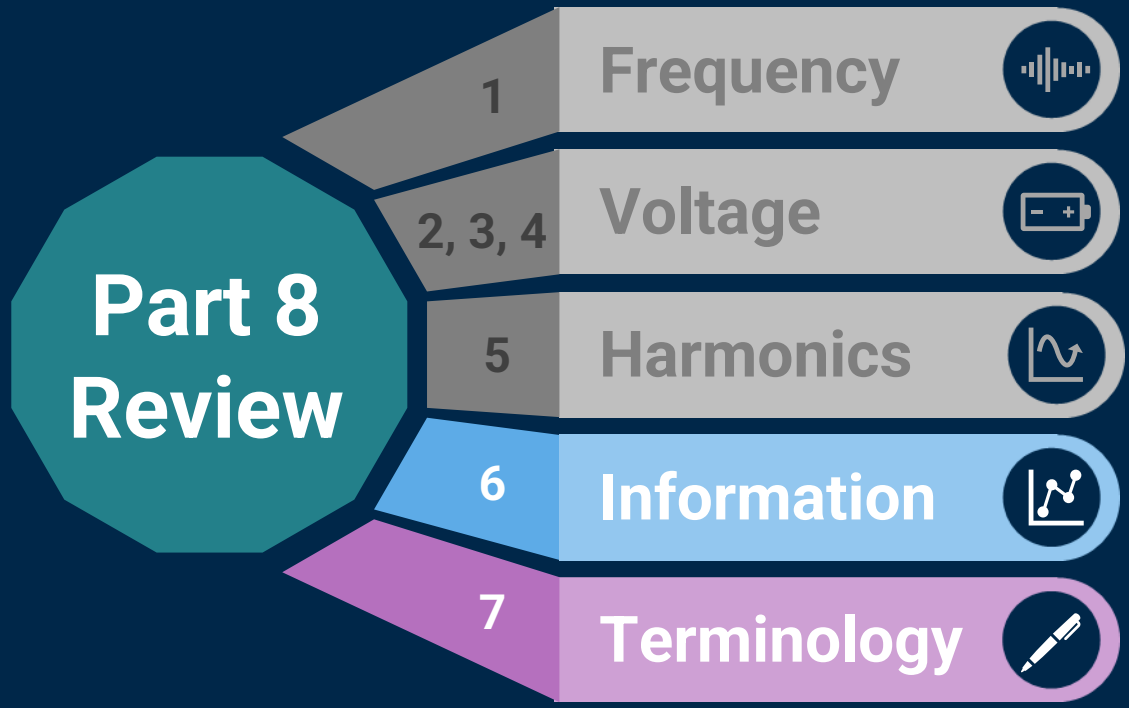
Future Security and Resilience: Common Quality Technical Group (FSR CQTG)

Meeting 8: 29 January 2025



ELECTRICITY AUTHORITY
TE MANA HIKO

Purpose and agenda

Purpose

Provide feedback on draft decision paper for **Issues 6 & 7** Code amendment proposal 1 of the Part 8 common quality requirements review

Agenda

Time	Item
10:00 am	Review and approve meeting #7 minutes
10:10 am	CAP-1 decision paper summary and discussion

FSR-001

Remove the exclusion for wind-powered generation from periodic testing requirements

Draft decision

- Proceed with proposal with following clarification:
  - For inverter generation, the periodic testing requirements in clauses 2, 3 and 5 of Appendix B, Technical Code A apply at the point of control for a generating unit.

Key points for discussion

- Clarify that for inverter generation, the periodic testing requirements in clauses 2, 3 and 5 of Appendix B, Technical Code A apply at the point of control for a generating unit.

FSR-002

Embedded generators must provide an ACS in specified format

Draft decision

- Amend the Code as proposed.
- The Code amendment clarifies the information format for the system operator without adding new requirements for embedded generators or older assets. Grandfathering provisions are unnecessary.

Key points for discussion

- 'Rated net maximum capacity'
  - Continuous rating vs short term overload capability?

FSR-003

Include all participants as potential causers of under-frequency events

Draft decision

- Amend the Code with amended definition of ‘under-frequency event’, to include an increase in electricity demand.

Key points for discussion

- Definition of UFE does not include increase in electricity demand.
- Distributors seeking to back-to-back their UFE causer obligations with embedded generators.

FSR-004

Amend the requirement to have a speed governor

Draft decision

- Amend the Code with two changes:
  - Periodic testing in clause 3 of Appendix B, Technical Code A applies at the generating unit's control point, and
  - Is triggered by control setting changes affecting frequency control or firmware changes affecting frequency response performance.

Key points for discussion

- Not practical to test wind turbines and IBRs at a generating unit level.
- Testing triggers too broad – exclude minor adjustments to control settings.
- Grandfathering unnecessary as legacy assets should have a dispensation or equivalence arrangement.

FSR-005

Amend the requirement to have an excitation system

Draft decision

- Amend the Code with two changes:
  - Periodic testing in clause 5 of Appendix B, Technical Code A applies at the generating unit's control point, and
  - Is triggered by control setting changes affecting voltage control or firmware changes affecting voltage response performance.

Key points for discussion

- Not practical to test wind turbines and IBRs at a generating unit level.
- Testing triggers too broad – exclude minor adjustments to control settings.
- Grandfathering unnecessary as legacy assets should have a dispensation or equivalence arrangement.

FSR-006

Apply the Code to all dynamic reactive power compensation devices

Draft decision

- Amend the Code with two changes:
  - ‘directly connected to the grid’
  - **dynamic reactive power compensation device** means a device, other than a generating unit, that normally is provided specifically to inject or absorb reactive power and which includes static synchronous compensators, static synchronous series compensators, thyristor controlled series devices and thyristor controlled shunt devices.

Key points for discussion

- ‘Connected to the grid’ ambiguous.
- ‘Dynamic reactive power compensation device’ undefined (e.g. could include generating units).

FSR-007

Treat energy storage systems as only generation for the purposes of Part 8

Draft decision

- Amend the Code with one change:
  - Amend clause 8.24 to clarify that ESSs exporting 30MW or more are not subject to the AUFLS load shedding obligation in clause 8.24(2).

Key points for discussion

- Do clauses 8.17 and 8.19 achieve policy intent of >30MW ESSs contributing to supporting frequency during an under-frequency event?

FSR-007

Cl. 8.17 & 8.19

8.17 Contribution by injections to overall frequency management

Each **generator** (while **synchronised**) and the **HVDC owner** must at all times ensure that its **assets**, other than any **generating units** within an **excluded generating station**, make the maximum possible **injection** contribution to maintain frequency within the **normal band** (and to restore frequency to the **normal band)**. Any such contribution must be assessed against the **technical codes**.

8.19 Contributions to frequency support in under-frequency events

(1) Subject to subclause (3), each **generator** must at all times ensure that, while **electrically connected**, its **assets**, other than any **excluded generating stations**, contribute to supporting frequency by remaining **synchronised**, ensuring that each of its **generating units** can and does, at a minimum, sustain pre-event output—

- (a) at all times when the frequency is above 47.5 Hertz; and
- (b) for at least 120 seconds when the frequency is 47.5 Hertz; and
- (c) for at least 20 seconds when the frequency is 47.3 Hertz; and
- (d) for at least 5 seconds when the frequency is 47.1 Hertz; and
- (e) for at least 0.1 seconds when the frequency is 47.0 Hertz; and
- (f) at any frequencies between those specified in paragraphs (b) to (e) for times derived by linear interpolation.

(2) If the **inherent characteristics** and design of a **generator's generating unit** are such that it is reasonably able to operate beyond the above requirements, the **generator** must declare such capabilities in accordance with clause 2(5) of **Technical Code** A of Schedule 8.3.

FSR-007

Cl. 8.19

(3) Each South Island **generator** must ensure that each of its **assets**, other than excluded **generating units**, remains **synchronised**, and can and do, at a minimum, sustain pre-event output—

(a) at all times when the frequency is above 47 Hertz; and

(b) for 30 seconds if the frequency falls below 47 Hertz but not below 45 Hertz.

(4) The **HVDC owner** must at all times ensure that, while **electrically connected**, its **assets** contribute to supporting frequency during an **under-frequency event** in either **island** by—

(a) remaining **electrically connected** to those **assets** making up the **grid** in the North Island and South Island while the frequency in both **islands** remains above 48 Hertz; and

(b) remaining **electrically connected** to those **assets** making up the **grid** in the North Island and South Island while the frequency in both **islands** remains below 48 Hertz and above 47 Hertz for 90 seconds; and

(c) remaining **electrically connected** to those **assets** making up the **grid** in the North Island and South Island while the frequency in both **islands** remains above 45 Hertz for 35 seconds, unless the frequency in either **island** is less than 46.5 Hertz and the frequency is falling at a rate of 7 Hertz per second or greater; and

(d) subject to the level of transfer and the **HVDC link configuration** at the beginning of the **under-frequency event**, if the **HVDC link** itself is not the cause of the **under-frequency event**, modifying the instantaneous transfer on the **HVDC link** by up to 250 **MW** with the objective of limiting the difference between the North Island and South Island frequencies to no greater than 0.2 Hertz.

FSR-008

Clarify the definition of generating unit

Draft decision

- Amend the definition to be as follows:

  generating unit means–

  a) the smallest set of all equipment functioning together as a single entity to produce electricity and that has its own frequency and/or voltage control system, or

  b) for an actuated, asynchronous or induction electricity production machine without its own frequency and/or voltage control system, the smallest set of equipment functioning together as a single entity to produce electricity.

Key points for discussion

- Proposed definition was not applicable to generating units with no speed control or voltage control (actuated, asynchronous or induction).

FSR-009

Clarify the Code's fault ride through requirements

Draft decision

- Do not proceed with the proposal.
- Authority plans to review the FRT requirements for different generation technologies.

Key points for discussion

- Resource/time required to establish clear criteria for assessing whether generator has taken all "reasonable measures" to support grid stability.
- Transaction costs for generators to demonstrate this.

ELECTRICITY AUTHORITY
TE MANA HIKO

THANK YOU

Appendix: Feedback being considered in other workstreams

FSR-002	Granting distributors access to the ACS platform for all embedded generation on their networks.
	ACS information requirements should be less onerous for smaller generators than larger generators.
FSR-002, FSR-003, FSR-007, FSR-008	Exclusion of generator aggregators from the Code.
FSR-004, FSR-005	Under a lower excluded generating station threshold, some existing assets are unable to comply with the FRT requirements or the requirement to have a speed governor or frequency control system.
FSR-007	Voltage obligations on embedded generators, including ESSs.
	Need for a comprehensive, long-term regulatory solution to address the rapidly evolving role of ESSs in the power system.
FSR-008	Consider placing common quality obligations at the generating unit level or generating station level.
FSR-009	Investigate FRT requirements based on generation type.