



Australian Energy Market Commission

Draft Rule Determination

**National Electricity Amendment (Queensland
Generator Technical Performance Standards
Derogations) Rule 2008**

Rule Proponent
Queensland Government

16 October 2008

Signed:

John Tamblyn
John Tamblyn
Chairman
For and on behalf of
Australian Energy Market Commission

Commissioners
Tamblyn
Ryan
Woodward

Inquiries

The Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

E: aemc@aemc.gov.au

T: (02) 8296 7800

F: (02) 8296 7899

Citation

AEMC 2008, *Queensland Generator Technical Performance Standards Derogations*, Draft Rule Determination, 16 October 2008, Sydney

About the AEMC

The Council of Australian Governments, through its Ministerial Council on Energy, established the Australian Energy Market Commission (AEMC) in July 2005 to be the Rule maker for national energy markets. The AEMC is currently responsible for Rules and policy advice covering the National Electricity Market. It is a statutory authority. Our key responsibilities are to consider Rule change proposals, conduct energy market reviews and provide policy advice to the Ministerial Council as requested, or on AEMC initiative.

This work is copyright. The Copyright Act 1968 permits fair dealing for study, research, news reporting, criticism and review. Selected passages, tables or diagrams may be reproduced for such purposes provided acknowledgement of the source is included.

Contents

| | |
|--|----|
| Abbreviations | iv |
| Summary | v |
| | |
| 1 The Queensland Government Rule Change Proposal | 1 |
| 1.1 Summary of the Rule Change Proposal | 1 |
| 1.2 Context and Background | 1 |
| 1.3 Consultation on the Queensland Government proposal..... | 3 |
| | |
| 2 Methodology for developing the draft Rule determination..... | 5 |
| 2.1 The Commission's power to make the Rule | 5 |
| 2.2 Assessment of the draft Rule: the Rule making test and the national electricity objective | 6 |
| 2.3 The Queensland Government Rule change proposal and proposed Rule..... | 6 |
| 2.4 Submissions received on the Rule change proposal..... | 7 |
| 2.5 The Commission's test of the national electricity objective | 7 |
| 2.6 Differences between Proposed Rule and Draft Rule | 8 |
| | |
| A Commission's analysis of the Proposed Rule | 9 |
| A.1 Reactive power capability | 9 |
| A.2 Generating unit response to disturbances | 13 |
| A.3 Frequency control | 15 |
| A.4 Excitation control system | 16 |

Abbreviations

| | |
|------------|--|
| AEMC | Australian Energy Market Commission |
| AER | Australian Energy Regulator |
| Commission | see AEMC |
| MCE | Ministerial Council on Energy |
| NEL | National Electricity Law |
| NEM | National Electricity Market |
| NEMMCO | National Electricity Market Management Company Limited |
| NEO | National Electricity Objective |
| NER | See Rules |
| Rules | National Electricity Rules |
| TNSP | Transmission Network Service Provider |

Summary

On 5 August 2008, the Queensland Government lodged a National Electricity Rule (Rule) change proposal to remove from the Rules most of the jurisdictional derogations on technical requirements which apply to some generating units in Queensland (by means of Rule 9.37).

The Queensland Government's Rule change proposal seeks to ensure that these generating units comply with the (generally) more onerous technical requirements set out in clause S5.2.5 of the Rules rather than the (generally) less onerous technical requirements set out in the derogations. The Queensland Government provided reasons why the technical requirements in the derogations should not apply to these generating units (with the exception of those derogations applying to the generating units at the Gladstone and Collinsville power stations) and has proposed amendments to the derogations to implement this policy change.

The Rule change proposal also seeks the removal of "Swanbank 'A' Units 1 to 6" generating units from the derogations as these generating units have been decommissioned.

The Rule change proposal can be divided into four sections:

- reactive power capability (governed by clauses 9.37.10 and S5.2.5.1 of schedule 5.2);
- generating unit response to disturbances (governed by clauses 9.37.19 and S5.2.5.3 of schedule 5.2);
- frequency control (governed by clauses 9.37.20 and S5.2.5.11 of schedule 5.2); and
- excitation control system (governed by clauses 9.37.21 and S5.2.5.13 of schedule 5.2).

The Australian Energy Market Commission (Commission) published the Rule change proposal in accordance with section 95 of the National Electricity Law (NEL) on 28 August 2008. Submissions on this Rule change proposal closed on 26 September 2008. The Commission received no submissions at this stage of consultation.

The Commission is satisfied that the draft Rule will or is likely to contribute to the achievement of the national electricity objective (NEO) by promoting the efficient operation and use of, electricity services with respect to safety, reliability and security of supply of electricity, and the reliability, safety and security of the national electricity system by:

- applying the (generally) more onerous technical requirements set out in clause S5.2.5 of the Rules on these generating units rather than the (generally) less onerous technical requirements set out in the derogations which, according to the Australian Energy Regulator (AER) had the potential to compromise the power system security; and

- creating more consistency in the application of the technical requirements to these generating units.

More generally, the Commission considers it good regulatory industry practice to remove derogations from the Rules as it provides for more transparency and efficiency in the market as all market participants must follow the same Rules and generator technical performance standards.

Following this, the Commission has decided to make a draft Rule under section 99 of the NEL. In coming to this decision, the Commission considered the Rule change proposal and the requirements under the NEL.

In this draft Rule determination, the Commission has approved the Queensland Government's Rule change proposal .

In accordance with section 101 of the NEL, any interested person or body may request the Commission hold a pre-final Rule determination hearing in relation to the draft Rule determination. Any request must be received no later than 23 October 2008.

Submissions on the draft Rule determination must be received by the Commission by 28 November 2008. Submissions should cite the project reference code: "ERC0070".

Submissions can be emailed to submissions@aemc.gov.au

or mailed to:

Australian Energy Market Commission

PO Box A2449

Sydney South NSW 1235

Fax: (02) 8296 7899

1 The Queensland Government Rule Change Proposal

On 5 August 2008, the Queensland Government lodged a Rule change proposal to remove from the Rules most of the jurisdictional derogations on technical requirements which apply to some generating units in Queensland (by means of Rule 9.37).

1.1 Summary of the Rule Change Proposal

The Queensland Government seeks to ensure that these generating units comply with the (generally) more onerous technical requirements set out in clause S5.2.5 of the Rules rather than the (generally) less onerous technical requirements set out in the derogations. It has proposed amendments to the derogations to implement this policy change.¹

The Queensland Government's Rule change proposal can be divided into four sections:

1. reactive power capability (governed by clauses 9.37.10 and S5.2.5.1 of schedule 5.2);
2. generating unit response to disturbances (governed by clauses 9.37.19 and S5.2.5.3 of schedule 5.2);²
3. frequency control (governed by clauses 9.37.20 and S5.2.5.11 of schedule 5.2); and
4. excitation control system (governed by clauses 9.37.21 and S5.2.5.13 of schedule 5.2).

1.2 Context and Background

According to the Queensland Government's Rule change proposal, "[a] new regime of technical performance standards for generators was recently introduced into the NER [National Electricity Rules] ... [T]hat process was completed in June 2007".³ The Rule change proposal notes that "[t]hese standards established explicit compliance obligations on market participants with respect to the technical performance of plant and required generators to register the actual capability of their plant with NEMMCO [National Electricity Market Management Company Limited]".⁴

In November 2007, the Australian Energy Regulator (AER) published its final investigation report that looked "into the events of 16 January 2007 when bushfires

¹ Queensland Government Rule change proposal, 5 August 2008, Pp.2-3.

² It should be noted that clause S5.2.5.3 of the Rule is called the "Generating unit response to frequency disturbances".

³ Queensland Government Rule change proposal, 5 August 2008, p.2.

⁴ Queensland Government Rule change proposal, 5 August 2008, p.2.

in the north east of Victoria resulted in widespread load shedding”.⁵ The Rule change proposal refers to this report and states that “[t]he report highlighted the importance of generators ensuring that the technical performance obligations under the Rules are satisfied, particularly during a power system disturbance”.⁶ This report also indicated that the AER would recommend to the Queensland Government for the removal of the Chapter 9 derogations relating to generator technical standards.⁷

The Queensland Government states in its Rule change proposal that the AER sent it a letter in November 2007 requesting the deletion of the technical performance derogations in Chapter 9 of the Rules which applies to specific Queensland generating units listed in the derogations.

The Rule change proposal sets out reasons why the technical requirements in the derogations should not apply to the listed generating units (other than those derogations applying to the Gladstone and Collinsville power stations). Some of these reasons were reproduced from a letter from the AER to the Queensland Government:⁸

- “[a] new regime of technical performance standards for generators was recently introduced into the NER”;
- “some generators in Queensland operate under jurisdictional derogations in Chapter 9, Part E of the NER that prevail over all other Chapters in the NER”;
- “[t]hese [existing] derogations, in part, apply less onerous technical performance standards than those contained within Schedule 5 [Chapter 5] of the NER, including in cases where a power system disturbance has occurred”;
- “[t]he application of less exacting technical performance standards to some Queensland generators through Chapter 9 derogations has the potential to compromise system security”;
- “[w]ith all generators having now registered the actual capability of their plant and equipment, we [the AER] believe the Chapter 9 derogations have become redundant since they incorporate technical standards that are inconsistent with those registered with NEMMCO”;
- “[w]here the actual capabilities could not match or exceed the standards set out in the NER, the Generators and NEMMCO entered into negotiated access standards agreements specific for each of [the] generating units”;
- “because the technical performance standards detailed in the derogations still take precedence over the technical performance capabilities registered with

⁵ The AER’s final investigation report can be found at <http://www.aer.gov.au/content/index.phtml/itemId/714828>.

⁶ Queensland Government Rule change proposal, 5 August 2008, p.2.

⁷ AER Decision - Investigation into the events of 16 January 2007, Final Report, November 2007, p.6.

⁸ Queensland Government Rule change proposal, 5 August 2008, Pp.2-3.

NEMMCO, there is little incentive for the Generators to ensure their generating units continue to comply with the registered technical performance capabilities [that is, the technical requirements set out in clause S5.2.5 of the Rules]”; and

- “Swanbank ‘A’ [power station] has been decommissioned and the derogations applying to its units are no longer applicable”.

1.3 Consultation on the Queensland Government proposal

On 28 August 2008, the Commission published notice under section 95 of the NEL of its intention to commence the Rule change process and the initial consultation on this Rule change proposal.

The Rule change proposal was open for public consultation for four weeks. Submissions on the Rule change proposal closed on 26 September 2008. The Commission received no submissions by the submission closing date.

The NEL also requires the Commission to have regard to any Ministerial Council on Energy (MCE) statement of policy principles in making a Rule under the NEL. The Commission notes that currently there are no relevant MCE statement of policy principles which it must have regard to for this Rule change proposal.

In addition, no public hearing has been held on this Rule change proposal to date.

This page has been intentionally left blank

2 Methodology for developing the draft Rule determination

The Commission has determined to make a draft Rule in accordance with section 99 of the NEL based on the Queensland Government's proposed Rule.

This draft Rule determination sets out the Commission's reasons for making the draft Rule. The Commission has taken into account:

1. the Commission's powers under the NEL to make the Rule;
2. the Queensland Government's Rule change proposal and proposed Rule;
3. submissions received (if any); and
4. the Commission's analysis on the ways in which the draft Rule will or is likely to contribute to the achievement of the national electricity objective (NEO) so that it satisfies the statutory Rule making test.

2.1 The Commission's power to make the Rule

Under the NEL, the Commission may make a Rule if it falls within the subject matter for which the Commission may make Rules, as set out in section 34 and Schedule 1 of the NEL.

The Commission is satisfied that the draft Rule relates to section 34(1) of the NEL, which states that:

“...the AEMC, in accordance with this Law and the Regulations, may make Rules, to be known, collectively, as the “National Electricity Rules”, for or with respect to –

(a) regulating –

...

(ii) the operation of the national electricity system for the purposes of the safety, security and reliability of that system;

(iii) the activities of persons (including Registered participants) participating in the national electricity market or involved in the operation of the national electricity system;” and

item 11 of Schedule 1 of the NEL, which relates to:

- item 11. the operation of generating systems, transmission systems, distribution systems or other facilities.

2.2 Assessment of the draft Rule: the Rule making test and the national electricity objective

Under the NEL, the Commission may make a Rule if it is satisfied that the Rule will or is likely to contribute to the achievement of the NEO.

The Rule making test requires the Commission to consider whether the proposed Rule promotes efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect of:

- (a) price, quality, reliability and security of supply of electricity; and
- (b) the reliability, safety and security of the NEM.

2.3 The Queensland Government Rule change proposal and proposed Rule

The Queensland Government's Rule change proposal seeks to remove from the Rules most of the jurisdictional derogations on technical requirements which apply to some generating units in Queensland (by means of Rule 9.37).

By doing so, the Queensland Government submitted that this will contribute to the achievements of the NEO by "ensuring the Generators comply only with their [generally] more onerous registered technical performance capabilities" which are set out in clause S5.2.5 of the Rules rather than the (generally) less onerous technical requirements set out in the derogations which would "improv[e] the security of the national electricity system".⁹

The Queensland Government has also provided a statement addressing the expected benefits and costs of its Rule change proposal and the potential impacts of the change on those likely to be affected. It indicates that it consulted with NEMMCO, the transmission network service provider (TNSP) (Powerlink) and all the affected Generators "to determine if removal of the derogations would have any financial and/or operational impacts".¹⁰ The comments from these bodies are reproduced in the tables below:¹¹

⁹ Queensland Government Rule change proposal, 5 August 2008, p.4.

¹⁰ Queensland Government Rule change proposal, 5 August 2008, p.4.

¹¹ Queensland Government Rule change proposal, 5 August 2008, p.4.

| Network Operator | Comments on Effects of the Proposed NER changes |
|-------------------------|--|
| Powerlink | No adverse impact on the operation of the Queensland transmission system |
| NEMMCO | No longer any need for the technical derogations |

| NEM Generator | Comments on Effects of the Proposed NER changes |
|----------------------|---|
| Stanwell Corporation | Agrees to deletion of derogations applying to Stanwell, Barron Gorge and Kareeya power stations; recommends the continuation of the derogations applying to Gladstone Power Station |
| CS Energy | Agrees to the deletion of derogations applying to Swanbank and Callide power stations; recommends the continuation of the derogations applying to Collinsville Power Station |
| Tarong Energy | No adverse impact on Tarong Energy; agrees to deletion of the derogations |
| Origin Energy | No issues with the deletion of the derogations |

2.4 Submissions received on the Rule change proposal

There were no submissions received on the Rule change proposal.

2.5 The Commission's test of the national electricity objective

The Commission has applied the Rule making test to the draft Rule, as modified by the outcomes of analysis and discussion in Appendix A of this draft Rule determination. The Commission is satisfied that the draft Rule will or is likely to contribute to the achievement of the NEO by promoting the efficient operation and use of, electricity services with respect to safety, reliability and security of supply of electricity, and the reliability, safety and security of the national electricity system by:

- applying the (generally) more onerous technical requirements set out in clause S5.2.5 of the Rules on these generating units rather than the (generally) less onerous technical requirements set out in the derogations which, according to the AER had the potential to compromise the power system security; and
- creating more consistency in the application of the technical requirements to these generating units.

More generally, the Commission considers it good regulatory industry practice to remove derogations from the Rules as it provides for more transparency and efficiency in the market as all market participants must follow the same Rules and generator technical performance standards.

Appendix A presents the Commission's reasoning on the issues raised by the Queensland Government's proposal.

2.6 Differences between Proposed Rule and Draft Rule

The Commission has accepted the Queensland Government's proposed Rule for removing most of the technical requirements which apply to some generating units in Queensland as set out in the derogations (with the exception of those derogations applying to the units at the Gladstone and Collinsville power stations) and removing the references to "Swanbank 'A' Units 1 to 6" as these generating units have been decommissioned.

A Commission's analysis of the Proposed Rule

In this appendix, the Commission addresses a number of issues that have been raised during the public consultation or that have emerged during its analysis.

In summary, there are four areas covered in this draft Rule determination:

1. reactive power capability (governed by clauses 9.37.10 and S5.2.5.1 of schedule 5.2);
2. generating unit response to disturbances (governed by clauses 9.37.19 and S5.2.5.3 of schedule 5.2);
3. frequency control (governed by clauses 9.37.20 and S5.2.5.11 of schedule 5.2); and
4. excitation control system (governed by clauses 9.37.21 and S5.2.5.13 of schedule 5.2).

This section details the Commission's analysis and reasons underlying its draft Rule in relation to each of the issues identified above.

The Queensland Government has proposed several amendments to the jurisdictional derogations for Queensland set out in rule 9.37 of the Rules, in particular, the changes that cover the transitional arrangements for network connections under Chapter 5 of the Rules.

A.1 Reactive power capability

A.1.1 The Queensland Government proposal

The Queensland Government's first proposal was to amend clause 9.37.10 of the Rules.

Clause S5.2.5.1 specifies the technical requirements on reactive power capability with respect to the type of access standard:

- to meet the automatic access standard, "a generating system ... must be capable of supplying and absorbing continuously at its connection point an amount of reactive power of at least the amount equal to the product of the rated active power of the generating system and 0.395";
- for the minimum access standard, "no capability is required to supply or absorb reactive power at the connection point";
- for the negotiated access standard:
 - the Generator and NSP "must ... ensure that the reactive power capability of the generating system is sufficient to ensure that all relevant system standards are met before and after credible contingency events under normal and

- planned outage operating conditions of the power system” subject to certain conditions;
- the Generator and NSP “may negotiate either a range of reactive power absorption and supply, or a range of power factor, at the connection point, within which the plant must be operated”;
 - the Generator and NSP “may negotiate a limit that describes how the reactive power capability varies as a function of active power output due to a design characteristic of the plant”;
 - if the generating system is not capable of the level of performance the Generator, depending on what is reasonable in the circumstances, must either pay compensation to the NSP, install additional equipment, reach a commercial arrangement with a Registered Participant, or agree to operational arrangements by which the plant can achieve an agreed level of performance for those operating conditions ;
- the agreed value for rated active power and the method for determining this value must be recorded; and
 - an access standard for consumption of energy by a generating system must be established when not supplying or absorbing reactive power under an ancillary services agreement.

Under clause 9.37.10, the technical requirements on reactive power capability set out in clause S5.2.5.1 of the Rules are replaced by the technical requirements on reactive power capability set out in clause 9.37.10 for each of the generating units situated at the relevant power station listed in the table in clause 9.37.10(b). Clause 9.37.10 requires that:

- while operating at any level of active power output, these generating units must be capable of:
 - “supplying at its terminals an amount of reactive power of at least the amount that would be supplied if the generating unit operated at rated active power output, nominal terminal voltage and a lagging power of 0.9”; and
 - “absorbing at its terminals an amount of reactive power of at least the amount that would be absorbed if the generating unit operated at rated active power output, nominal terminal voltage and a leading power factor set out in respect of that generating unit in column 3 of the ... table” in clause 9.37.10; and
- if any of the relevant power factors referred to in clause 9.37.10 cannot be provided to a generating unit in clause 9.37.10, “the relevant Generator must reach a commercial arrangement under its connection agreement with the relevant Network Service Provider, or with another Registered Participant, for the supply of the deficit in reactive power as measured at that generating unit’s terminals”.

The Queensland Government seeks to remove the references to a number of these generating units from the table to ensure that clause S5.2.5.1 will apply to these generating units rather than clause 9.37.10.

This is because, “[a] new regime of technical performance standard for generators was recently introduced into the NER”¹² which would impose (generally) more onerous technical requirements on generators, according to the AER in its letter to the Queensland Government which was reproduced in the Queensland Government’s Rule change proposal. If the derogations are not amended, the (generally) “less onerous technical performance standards [set out in the derogations] than those contained within Schedule 5 [Chapter 5] of the NER”¹³ would apply.

The Queensland Government has proposed the references to the following generating units be removed from the table:¹⁴

- Tarong units 1 to 4;
- Callide “A” units 1 to 4;
- Callide “B” units 1 and 2;
- Stanwell units 1 to 4;
- Swanbank “B” units 1 to 4; and
- Mount Stuart units 1 and 2.

Excluded from the proposed deletion are:

- Gladstone units 1 to 6; and
- Collinsville units 1 to 5.

This is because, according to the Rule change proposal:¹⁵

“Enertrade, the previous Nominated Generator for both the Gladstone Power Station and the Collinsville Power Station, had submitted, to NEMMCO, technical performance standards which were not agreed to by the owners/operators of those power stations.

Stanwell Corporation, the current Nominated Generator for the Gladstone Power Station and CS Energy, the current Nominated Generator for the Collinsville Power Station, have advised that the current derogation applying to those power station should remain in place until mutually agreed generator

¹² Queensland Government Rule change proposal, 5 August 2008, p.2.

¹³ Queensland Government Rule change proposal, 5 August 2008, p.2.

¹⁴ Queensland Government Rule change proposal, 5 August 2008, p.6.

¹⁵ Queensland Government Rule change proposal, 5 August 2008, p.3.

technical performance standards can be developed and accepted by NEMMCO.”

A.1.2 The Commission's consideration and reasoning

The Commission considers that the Queensland Government’s proposal to remove the references to these generating units from the table in clause 9.37.10 is consistent with the Queensland Government’s intention to remove the derogations that apply to these generating units in relation to reactive power stability.

By removing these generating units from the table in clause 9.37.10, clause S5.2.5.1 will apply to these generating units, which is considered by the AER to have (generally) more onerous technical requirements than set out in the derogations.

This is because clause 9.37.10 only applies to “each of the generating units situated at the relevant power station listed in the following table”:

| Power station | Generating units | Leading power factor |
|----------------------|-------------------------|-----------------------------|
| Gladstone | Units 1 to 4 | 0.99 |
| Gladstone | Units 5 & 6 | 0.94 |
| Tarong | Units 1 to 4 | 0.95 |
| Callide “A” | Units 1 to 4 | 0.95 |
| Callide “B” | Units 1 & 2 | 0.95 |
| Stanwell | Units 1 to 4 | 0.95 |
| Swanbank “B” | Units 1 to 4 | 0.97 |
| Mount Stuart | Units 1 & 2 | 0.95 |
| Collinsville | Units 1 to 5 | 0.95 |

The Commission considers the (generally) more onerous technical requirements will likely improve the power system security of the NEM.

A.1.3 The Commission's finding in relation to this issue

The Commission accepts the Queensland Government’s proposal to remove the references to the generating units outlined in its proposal from the table set out in clause 9.37.10 and accepts that it satisfies the NEO.

A.2 Generating unit response to disturbances

A.2.1 The Queensland Government proposal

The Queensland Government's second proposal was to amend clause 9.37.19 of the Rules.

Clause S5.2.5.3 specifies the technical requirements on generating unit response to frequency disturbances with respect to the type of access standard:

- to meet the automatic access standard, “a generating system and each of its generating units must be capable of continuous uninterrupted operation for frequencies” for a particular range “unless the rate of change of frequency is outside the range of -4 Hz to 4 Hz per second for more than 0.25 seconds or such other range as determined by the Reliability Panel”;
- to meet the minimum access standard, “a generating system and each of its generating units must be capable of continuous uninterrupted operation for frequencies” for a particular range “unless the rate of change of frequency is outside the range of -1 Hz to 1 Hz per second for more than one second or such other range as determined by the Reliability Panel”;
- the NSP can accept a negotiated access standard provided that NEMMCO and the NSP agree that:
 - “the negotiated access standard is as close as practicable to the automatic access standard while respecting the need to protect the plant from damage”;
 - “the frequency would be unlikely to fall below the lower bound of the operational frequency tolerance band as a result of over-frequency tripping of generating units”; and
 - “there would be no material adverse impact on quality of supply to other Network Users or power system security”; and
- “NEMMCO must advise on matters relating to negotiated access standards under this clause S5.2.5.3”.

Under clause 9.37.19, the technical requirements on generating unit response to frequency disturbances set out in clause S5.2.5.3 of the Rules do not apply to the generating units listed in the table in clause 9.37.19(a). Rather, these generating units “are not required to operate continuously outside the corresponding frequency band specified in column three of the ... table” in clause 9.37.19(a).

The Queensland Government seeks to remove the references to a number of these generating units from the table to ensure that the technical requirements on generating unit response to frequency disturbances set out in clause S5.2.5.3 of the Rules will apply to these generating units rather than the technical requirements set out in clause 9.37.19 of the Rules for the same reasons outlined in section A.1.1.

The Queensland Government has proposed the references to the following generating units be deleted from the table:¹⁶

- Tarong units 1 to 4;
- Callide “B” units 1 and 2; and
- Stanwell units 1 to 4.

For the same reasoning applied by the Queensland Government in section A.1.1, excluded from the proposed deletion are:

- Gladstone units 1 to 6; and
- Collinsville units 1 to 5.

A.2.2 The Commission's consideration and reasoning

The Commission considers that the Queensland Government’s proposal to remove the references to these generating units from the table in clause 9.37.19 is consistent with the Queensland Government’s intention to remove the derogations that apply to these generating units in relation to generating unit response to disturbances.

By removing the references to these generating units from the table, clause S5.2.5.3 will apply to these generating units, which is considered by the AER to have (generally) more onerous technical requirements than set out in the derogations.

This is because clause 9.37.19(a) only applies to “the generating units listed in the following table [which] are not required to operate continuously outside the corresponding frequency band specified in column three of the following table”:

| Power station | Generating units | Frequency band |
|----------------------|-------------------------|-----------------------|
| Tarong | Units 1 to 4 | 47.5 Hz to 51 Hz |
| Callide “B” | Units 1 & 2 | 47.5 Hz to 51 Hz |
| Stanwell | Units 1 to 4 | 47.5 Hz to 51 Hz |
| Gladstone | Units 1 to 6 | 47.5 Hz to 51.5 Hz |
| Collinsville | Units 1 to 4 | 48.0 Hz to 51 Hz |
| | Unit 5 | 48.0 Hz to 52 Hz |

The Commission considers the (generally) more onerous technical requirements will likely improve the power system security of the NEM.

¹⁶ Queensland Government Rule change proposal, 5 August 2008, p.7.

A.2.3 The Commission's finding in relation to this issue

The Commission accepts the Queensland Government's proposal to remove the generating units outlined in its proposal from the table set out in clause 9.37.19 and accepts that it satisfies the NEO.

A.3 Frequency control

A.3.1 The Queensland Government proposal

The Queensland Government's third proposal was to delete clause 9.37.20 of the Rules in its entirety.

Clause S5.2.5.11(b)(3) specifies that to meet the automatic standard, "a generating system must be capable of automatically increasing its active power transfer to the power system":

- "whenever the system frequency falls below the lower limit of the normal operating frequency band";
- "by the amount that equals or exceeds the least of":
 - "20% of its maximum operating level times the percentage frequency difference between the lower limit of the normal operating frequency band and system frequency";
 - "5% of its maximum operating level"; and
 - "one third of the difference between the generating unit's maximum operating level and pre-disturbance level, but zero if the difference is negative"; and
- "sufficiently rapidly for the Generator to be in a position to offer measurable amounts of raise services to the spot market for market ancillary services".

Under clause 9.37.20, the technical requirements on frequency control set out in clause S5.2.5.11(b)(3) of the Rules are replaced by the technical requirements on frequency control set out in clause 9.37.20 for each of the generating units situated at the power stations listed in the table in clause 9.37.20. Under clause 9.37.20 these generating units are required to be "capable of automatically increasing its active power output by 4 per cent for a 0.1 Hz reduction in system frequency".

The Queensland Government seeks to delete clause 9.37.20 in its entirety to ensure that clause S5.2.5.11(b)(3) of the Rules would apply to these generating units rather than clause 9.37.20 of the Rules for the same reasons outlined in section A.1.1.

Further, the Queensland Government seeks the removal of "Swanbank 'A' Units 1 to 6" generating units from the derogations as these generating units have been decommissioned.

A.3.2 The Commission's consideration and reasoning

The Commission considers that the Queensland Government's proposal to delete clause 9.37.20 in its entirety is consistent with the Queensland Government's intention to remove the derogations that apply to these generating units in relation to frequency control. Further it agrees with the removal of "Swanbank "A" Units 1 to 6" generating units from the derogations.

By removing clause 9.37.20 in its entirety, clause S5.2.5.11(b)(3) will apply to these generating units, which is considered by the AER to have (generally) more onerous technical requirements than set out in the derogations.

This is because clause 9.37.20 modified clause S5.2.5.11(b)(3) by deleting it and replacing it with clause 9.37.20 for each of the generating units situated at the power stations listed in the table in clause 9.37.20.

The Commission considers the (generally) more onerous technical requirements will likely improve the power system security of the NEM.

A.3.3 The Commission's finding in relation to this issue

The Commission accepts the Queensland Government's proposal for the deletion of the clause 9.37.20 in its entirety and accepts that it satisfies the NEO.

A.4 Excitation control system

A.4.1 The Queensland Government proposal

The Queensland Government's fourth proposal was to amend clause 9.37.21 of the Rules.

Under clause 11.10.7(b), "[f]or the purposes of clause 9.37.21, clause S5.2.5.13 of the old Chapter 5¹⁷ applies as the Amending Rule [National Electricity Amendment (Technical Standards for Wind Generation and other Generator Connections) Rule 2007] had not been made".

Clause S5.2.5.13(a) of the Old Chapter 5 specifies that "[a] Generator must ensure that the excitation control system of a synchronous generating unit is also capable of ... controlling generating unit excitation to maintain the short-time average generating unit stator voltage at its highest rated power output level which must be at least 5 percent above the nominal stator voltage".

Clause S5.2.5.13(b) of the Old Chapter 5 specifies that "[a] Generator must ensure that the excitation control system of a synchronous generating unit is also capable of

¹⁷ "Old Chapter 5" means Chapter 5 of the Rules in force immediately prior to the commencement date of the National Electricity Amendment (Technical Standards for Wind Generation and other Generator Connections) Rule 2007.

... maintaining adequate generating unit stability under all operating conditions including providing power system stabilising action if fitted with a power system stabiliser”.

Clause S5.2.5.13(c) of the Old Chapter 5 specifies that “[a] Generator must ensure that the excitation control system of a synchronous generating unit is also capable of ... providing a ceiling excitation voltage at least 1.6 times the excitation voltage required to achieve maximum continuous rating at nominal voltage”.

Clause 9.37.21 modifies:

- “the application of clause S5.2.5.13(a) [of the Old Chapter 5] ... by amending it to ensure that the short-time average generating unit stator voltage at highest rated power output level is not required to be more than 5% above nominal stator voltage”; and
- “the application of clause S5.2.5.13(b) [of the Old Chapter 5] ... by deleting the words ‘all operating conditions’ and replacing them with the words ‘all normal operating conditions and all single credible contingency events’”

for each of the generating units listed in the table in clause 9.37.21, and

- “[f]or Wivenhoe Power Station, the application of clause S5.2.5.13(c) [of the Old Chapter 5] ... by replacing sub-clause (c) [of the Old Chapter 5] with the words ‘providing a five second ceiling excitation voltage to a maximum of 730 V excitation voltage’”.

The Queensland Government seeks to remove the reference to a number of these generating units from the table to ensure that the technical requirements on excitation control system set out in clause S5.2.5.13(a) and (b) of the Rules will apply to these generating units rather than the technical requirements set out in clause 9.37.21 of the Rules for the same reasons outlined in section A.1.1.

It also seeks to remove clause 9.37.21(b) in its entirety to ensure that the technical requirements on excitation control system set out in clause S5.2.5.13(c) of the Rules will apply to the Wivenhoe Power Station rather than the technical requirements set out in clause 9.37.21(b) of the Rules.

Further, the Queensland Government seeks the removal of “Swanbank ‘A’ Units 1 to 6” generating units from the derogations as these generating units have been decommissioned.

The Queensland Government has proposed the deletion of clause 9.37.21(b) and the references to the following generating units from the table in clause 9.37.21:¹⁸

- Tarong units 1 to 4;
- Callide “A” units 1 to 4;

¹⁸ Queensland Government Rule change proposal, 5 August 2008, p.10.

- Callide “B” units 1 and 2;
- Stanwell units 1 to 4;
- Swanbank “A” units 1 to 6;
- Swanbank “B” units 1 to 4;
- Wivenhoe units 1 and 2;
- Barron Gorge units 1 and 2; and
- Kareeya units 1 to 4.

For the same reasoning applied by the Queensland Government in section A.1.1, excluded from the proposed deletion are:

- Gladstone units 1 to 6; and
- Collinsville units 1 to 5.

A.4.2 The Commission's consideration and reasoning

The Commission considers that the Queensland Government’s proposal to delete clause 9.37.21(b) in its entirety and these generating units from the table in clause 9.37.21 are consistent with the Queensland Government’s intention to remove the derogations that apply to these generating units.

By removing these generating units from the table in clause 9.37.21, clause S5.2.5.13(a) and (b) of the Rules will apply to these generating units. By removing clause 9.37.21(b) in its entirety, clause S5.2.5.13(c) of the Rules will apply to the Wivenhoe Power Station. The AER considers these changes will impose (generally) more onerous technical requirements than set out in the derogations.

The Commission considers the (generally) more onerous technical requirements will likely improve the power system security of the NEM.

A.4.3 The Commission's finding in relation to this issue

The Commission accepts the Queensland Government’s proposal for the deletion of clause 9.37.21(b) and these generating units from the table in clause 9.37.21 and accepts that it satisfies the NEO.