



## **National Electricity Amendment (Managing power system fault levels) Rule 2017 No. 10**

under the National Electricity Law to the extent applied by:

- (a) the National Electricity (South Australia) Act 1996 of South Australia;
- (b) the Electricity (National Scheme) Act 1997 of the Australian Capital Territory;
- (c) the Electricity - National Scheme (Queensland) Act 1997 of Queensland;
- (d) the Electricity - National Scheme (Tasmania) Act 1999 of Tasmania;
- (e) the National Electricity (New South Wales) Act 1997 of New South Wales;
- (f) the National Electricity (Victoria) Act 2005 of Victoria;
- (g) the National Electricity (Northern Territory)(National Uniform Legislation) Act 2015; and
- (h) the Australian Energy Market Act 2004 of the Commonwealth.

The Australian Energy Market Commission makes the following Rule under the National Electricity Law.

John Pierce  
Chairman  
Australian Energy Market Commission

## **National Electricity Amendment (Managing power system fault levels) Rule 2017 No. 10**

### **1 Title of Rule**

This Rule is the *National Electricity Amendment (Managing power system fault levels) Rule 2017 No.10*.

### **2 Commencement**

Schedule 10 commences operation on 19 September 2017.

Schedules 1, 2 and 3 commence operation on 17 November 2017.

Schedules 4 to 9 commence operation on 1 July 2018 immediately after the commencement of Schedules 1 to 7 of the *National Electricity Amendment (Managing the rate of change of power system frequency) Rule 2017 No.9*.

### **3 Amendment of the National Electricity Rules**

The National Electricity Rules are amended as set out in Schedule 1.

### **4 Amendment of the National Electricity Rules**

The National Electricity Rules are amended as set out in Schedule 2.

### **5 Amendment of the National Electricity Rules**

The National Electricity Rules are amended as set out in Schedule 3.

### **6 Amendment of the National Electricity Rules**

The National Electricity Rules are amended as set out in Schedule 4.

### **7 Amendment of the National Electricity Rules**

The National Electricity Rules are amended as set out in Schedule 5.

### **8 Amendment of the National Electricity Rules**

The National Electricity Rules are amended as set out in Schedule 6.

### **9 Amendment of the National Electricity Rules**

The National Electricity Rules are amended as set out in Schedule 7.

**10 Amendment of the National Electricity Rules**

The National Electricity Rules are amended as set out in Schedule 8.

**11 Amendment of the National Electricity Rules**

The National Electricity Rules are amended as set out in Schedule 9.

**12 Savings and Transitional Amendments to the National Electricity Rules**

The National Electricity Rules are amended as set out in Schedule 10.

## Schedule 1      Amendment to the National Electricity Rules

(Clause 3)

### [1] New Clause 4.6.6 System strength impact assessment guidelines

After clause 4.6.5, insert:

#### 4.6.6 System strength impact assessment guidelines

- (a) *AEMO* must make, *publish* and may amend *system strength impact assessment guidelines* that set out the methodology to be used by *Network Service Providers* when undertaking *system strength impact assessments* under clause 5.3.4B in relation to a proposed new *connection* of a *generating system* or *market network service facility* or an alteration to a *generating system* to which clause 5.3.9 applies.
- (b) The *system strength impact assessment guidelines* must:
  - (1) provide for a two-stage assessment process comprising:
    - (i) a preliminary assessment to screen for the need for a full assessment; and
    - (ii) a full assessment;
  - (2) require the full assessment to be carried out using a *power system* model that is reasonably appropriate for conducting *system strength impact assessments* and applicable to the location on the *transmission network* or *distribution network* at which the *facility* is or may be *connected* and specified by *AEMO* from time to time for this purpose;
  - (3) exclude from the assessment of an *adverse system strength impact* the impact on any *protection system* for a *transmission network* or *distribution network*;
  - (4) provide guidance about the different *network* conditions and *dispatch* patterns and other relevant matters that should be examined when undertaking a full assessment;
  - (5) specify the nature of the impacts that *AEMO* considers to be *adverse system strength impacts* and that must be avoided or overcome by undertaking *system strength connection works* or implementing a *system strength remediation scheme* in accordance with clause 5.3.4B;

- (6) provide guidance about the matters that must be considered when determining whether a *connection* or alteration will result in an *adverse system strength impact*;
  - (7) include if applicable any thresholds below which an impact may be disregarded when determining the need for a *system strength remediation scheme* or *system strength connection works* under clause 5.3.4B; and
  - (8) provide general guidance about options for *system strength remediation schemes* and *system strength connection works*.
- (c) Subject to paragraph (d), *AEMO* must comply with the *Rules consultation procedures* when making or amending the *system strength impact assessment guidelines*.
  - (d) *AEMO* may make minor or administrative amendments to the *system strength impact assessment guidelines* without complying with the *Rules consultation procedures*.
  - (e) *AEMO* must provide the model referred to in subparagraph (b)(2) to a *Local Network Service Provider* or, subject to paragraph (f), to a *Generator* or *Connection Applicant* who requests the model in connection with a *system strength impact assessment*.
  - (f) If *AEMO* receives a request under paragraph (e) from a *Generator* or a *Connection Applicant*:
    - (1) *AEMO* must treat the request as if it were information reasonably required by a *Registered Participant* under clause 3.13.3(k)(2) and *AEMO* is only required to provide the model referred to in subparagraph (b)(2) (or the source code for that model) in the form contemplated by clause 3.13.3(1)(2); and
    - (2) *AEMO* may require a *Connection Applicant* who is not a *Registered Participant* to give an undertaking in a form satisfactory to *AEMO* to comply with rule 8.6 as if the *Connection Applicant* were a *Registered Participant* as a condition of providing a model to the *Connection Applicant* under paragraph (e).

## **Schedule 2      Amendment to the National Electricity Rules**

(Clause 4)

### **[1] Clause 5.2.3      Obligations of network service providers**

In clause 5.2.3(e1)(2), omit "exceed" and substitute "breach".

### **[2] Clause 5.2.3      Obligations of network service providers**

After the note in clause 5.2.3(g)(7), insert:

- (g1) A *Network Service Provider* must comply with any terms and conditions of a *connection agreement* for its *market network service facilities* that provide for the implementation, operation, maintenance or performance of a *system strength remediation scheme*.

### **[3] Clause 5.2.5      Obligations of Generators**

After clause 5.2.5(b)(6), insert:

- (c) A *Generator* must comply with any terms and conditions of a *connection agreement* for its *generating system* that provide for the implementation, operation, maintenance or performance of a *system strength remediation scheme*.

### **[4] Clause 5.3.3      Response to connection enquiry**

After clause 5.3.3(b4), insert:

- (b5) For a *connection point* for a proposed new *connection* of a *generating system* or *market network service facility*, within the time applicable under paragraph (b1), the *Network Service Provider* must provide the *Connection Applicant* with the following written details:
- (1) the minimum *three phase fault level* at the *connection point*; and
  - (2) the results of the *Network Service Provider's* preliminary assessment of the impact of the new *connection* undertaken in accordance with the *system strength impact assessment guidelines* and clause 5.3.4B.

### **[5] Clause 5.3.4      Application for connection**

In clause 5.3.4(a), omit "and clause 5.3.4A" and substitute ", clause 5.3.4A and clause 5.3.4B."

**[6] Clause 5.3.4 Application for connection**

After 5.3.4(f)(3), insert:

- (g) A *Connection Applicant* who proposes a *system strength remediation scheme* under clause 5.3.4B must submit its proposal with the *application to connect*.

**[7] Clause 5.3.4A Negotiated access standards**

In clause 5.3.4A(d), omit "AEMO advisory matters." and substitute "AEMO advisory matters."

**[8] New Clause 5.3.4B System strength remediation for new connections**

After clause 5.3.4A, insert:

**5.3.4B System strength remediation for new connections**

- (a) A *Network Service Provider* must, in accordance with the *system strength impact assessment guidelines*, undertake a *system strength impact assessment* for each proposed new *connection* of a *generating system* or *market network service facility* and any proposed alteration to a *generating system* to which clause 5.3.9 applies. A *Network Service Provider* must make:
  - (1) a preliminary assessment if it is in receipt of a *connection enquiry* or a request by a *Generator* under clause 5.3.9(c1); and
  - (2) a full assessment if it is in receipt of an *application to connect* or submission from a *Generator* under clause 5.3.9, unless the preliminary assessment indicates that the full assessment is not needed.
- (b) The *Network Service Provider* must give the results of the preliminary assessment and the full assessment to the *Connection Applicant* or *Generator* concerned following consultation with AEMO.
- (c) A dispute referred to in paragraph (d) between any of:
  - (1) AEMO;
  - (2) a *Network Service Provider* required to conduct an assessment under paragraph (a);
  - (3) a *Connection Applicant* who has submitted an *application to connect* for which a full assessment is required under paragraph (a); and

- (4) a *Generator* who proposes an alteration to a *generating system* to which clause 5.3.9 applies and for which a full assessment is required under paragraph (a),
- may be determined under rule 8.2.
- (d) Paragraph (c) applies to any dispute relating to the assessment of an *adverse system strength impact* as a result of conducting a *system strength impact assessment* including a dispute in relation to:
- (1) whether the model specified by *AEMO* for the purposes of clause 4.6.6(b)(2) was reasonably appropriate for conducting the *system strength impact assessment*; and
  - (2) the application of the *system strength impact assessment guidelines* when undertaking a *system strength impact assessment*.
- (e) Subject to paragraph (f), a *Network Service Provider* must undertake *system strength connection works* at the cost of the *Connection Applicant* or *Generator* (as applicable) if the full assessment undertaken in accordance with the *system strength impact assessment guidelines* indicates that the *Connection Applicant's* proposed new *connection* of a *generating facility* or *market network service facility* or the *Generator's* proposed alteration to a *generating system* to which clause 5.3.9 applies will have an *adverse system strength impact*.
- (f) Paragraph (e) does not require a *Network Service Provider* to undertake, nor permit a *Network Service Provider* to require, *system strength connection works* in the following circumstances:
- (1) the proposed new *connection* or alteration does not proceed;
  - (2) to the extent that the *adverse system strength impact* referred to in paragraph (e) is or will be avoided or remedied by a *system strength remediation scheme* agreed or determined under this clause and implemented by the *Registered Participant* in accordance with its *connection agreement*; or
  - (3) to the extent that the impact is below any threshold specified in the *system strength impact assessment guidelines* for this purpose.
- (g) A *Connection Applicant* must include any proposal for a *system strength remediation scheme* in its *application to connect* or its proposal under clause 5.3.9(b)(4).
- (h) A *Connection Applicant* proposing to install *plant* as part of a *system strength remediation scheme* must include a description of the *plant*, the ratings of the proposed *plant* (in MVA) and other information (including models) reasonably required by the *Network*

*Service Provider* and *AEMO* to assess the *system strength remediation scheme*.

- (i) A *Network Service provider* must, following the receipt of a proposal for a *system strength remediation scheme*, consult with *AEMO* as soon as practical in relation to the proposal.
- (j) Following the submission of a proposal for a *system strength remediation scheme*, *AEMO* must use reasonable endeavours to respond to the *Network Service Provider* in writing in respect of the proposal within 20 *business days*.
- (k) A *Network Service Provider* must within 10 *business days* following the receipt of a response from *AEMO* under paragraph (h) to a proposal for a *system strength remediation scheme*, accept or reject the proposal.
- (l) The *Network Service Provider* must reject a proposal for a *system strength remediation scheme* if the scheme is not reasonably likely to achieve its required outcome or would:
  - (1) in the reasonable opinion of the *Network Service Provider* adversely affect quality of *supply* for other *Network Users*; or
  - (2) on *AEMO's* reasonable advice, adversely affect *power system security*.
- (m) If a *Network Service Provider* rejects a proposal for a *system strength remediation scheme*, the *Network Service Provider* must give its reasons but has no obligation to propose a *system strength remediation scheme* that it will accept.
- (n) The *Connection Applicant* submitting a proposal for a *system strength remediation scheme* rejected by a *Network Service Provider* may:
  - (1) propose an alternative *system strength remediation scheme* to be further evaluated following the process initiated under paragraph (i); or
  - (2) request negotiations under paragraph (o).
- (o) If a *Connection Applicant* requests negotiations under this paragraph, the *Connection Applicant*, the *Network Service Provider* and *AEMO* must negotiate in good faith to reach agreement in respect of the proposal for a *system strength remediation scheme*.
- (p) If the matter is not resolved by negotiation under paragraph (o), the matter may be dealt with as a dispute under rule 8.2.
- (q) The parties to a *connection agreement* containing a *system strength remediation scheme* must not modify the scheme unless the

modified scheme has been agreed or determined under this clause. A *Registered Participant* proposing to modify a *system strength remediation scheme* must submit its proposal for modification to the *Network Service Provider* for evaluation by the *Network Service Provider* and *AEMO* under this clause. Once agreed or determined, the modified scheme must be incorporated as an amendment to the *connection agreement* and notified to *AEMO* under clause 5.3.7(g).

### **[9] Clause 5.3.5 Preparation of offer to connect**

After clause 5.3.5(d)(4), insert:

- (e) The *Network Service Provider* preparing the offer to *connect* must specify in reasonable detail any *system strength connection works* to be undertaken by the *Network Service Provider*.
- (f) **[Deleted]**

### **[10] Clause 5.3.6 Offer to connect**

Omit clauses 5.3.6(a1) and 5.3.6(a2), substitute:

- (a1) The *Network Service Provider* may amend the time period referred to in paragraph (a1) to allow for any additional time taken in excess of the period allowed in the *preliminary program* for the negotiation of *negotiated access standards* in accordance with clause 5.3.4A or a *system strength remediation scheme* in accordance with clause 5.3.4B or any time taken by *AEMO* to respond under clause 5.3.4B(j) in excess of 20 *business days*.
- (a2) In relation to the timeframes fixed in paragraph (a2), for the purposes of calculating elapsed time, the following periods shall be disregarded:
  - (1) the period that commences on the day when a dispute is initiated under clause 8.2.4(a) and ends on the day on which the dispute is withdrawn or is resolved in accordance with clauses 8.2.6D or 8.2.9(a);
  - (2) any time taken to resolve a *distribution services access dispute*; and
  - (3) any time taken by *AEMO* to respond under clause 5.3.4B(j) in excess of 20 *business days*.

### **[11] Clause 5.3.7 Finalisation of connection agreement and network operating agreements**

In clause 5.3.7(d), after "*extension works to a network*" insert "*or any system strength connection works.*"

**[12] Clause 5.3.7 Finalisation of connection agreement and network operating agreements**

In clause 5.3.7(g)(4), omit "; and" and substitute ";".

**[13] Clause 5.3.7 Finalisation of connection and network operating agreements**

In clause 5.3.7(g)(5), after "*connection agreement*", omit "." and substitute "; and".

**[14] Clause 5.3.7 Finalisation of connection and network operating agreements**

After clause 5.3.7(g)(5), insert:

- (6) the details of any *system strength remediation scheme* agreed, determined or modified under clause 5.3.4B.

**[15] Clause 5.3.8 Provision and use of information**

In clause 5.3.8(b)(2)(ii), omit "or".

**[16] Clause 5.3.8 Provision and use of information**

In clause 5.3.8(b)(2)(iii), omit "*augmentation or extension.*", substitute "*augmentation or extension or system strength connection works; or*"

**[17] Clause 5.3.8 Provision and use of information**

After clause 5.3.8(b)(2)(iii), insert:

- (iv) assess *system strength remediation scheme* proposals.

**[18] Clause 5.3.9 Procedure to be followed by a Generator proposing to alter a generating system**

Omit clause 5.3.9(a), and substitute:

- (a) This clause 5.3.9 applies where a *Generator* proposes to alter a *connected generating system* or a *generating system* for which *performance standards* have been previously accepted by *AEMO* and that alteration:
  - (1) will affect the performance of the *generating system* relative to any of the technical requirements set out in clauses S5.2.5, S5.2.6, S5.2.7 and S5.2.8; or
  - (2) will, in *AEMO's* reasonable opinion, have an *adverse system strength impact*; or

**[19] Clause 5.3.9 Procedure to be followed by a Generator proposing to alter a generating system**

In clause 5.3.9(b)(3)(ii), after "*negotiated access standard*", omit "." and substitute "; and".

**[20] Clause 5.3.9 Procedure to be followed by a Generator proposing to alter a generating system**

After clause 5.3.9(b)(3)(ii), insert:

- (4) where relevant, the *Generator's* proposed *system strength remediation scheme*.

**[21] Clause 5.3.9 Procedure to be followed by a Generator proposing to alter a generating system**

After clause 5.3.9(c), insert:

- (c1) Clause 5.3.4B applies to a submission by a *Generator* under subparagraph (b)(4). A *Generator* may request the *Network Service Provider* to undertake a preliminary assessment in accordance with the *system strength impact assessment guidelines* before making a submission under paragraph (b).

**[22] Clause 5.3.10 Acceptance of performance standards for generating plant that is altered**

In clause 5.3.10(b), after "*AEMO's* advisory role under clause 5.3.4A" insert "and clause 5.3.4B,".

**[23] Clause 5.3.10 Acceptance of performance standards for generating plant that is altered**

In clause 5.3.10(b)(2)(ii), omit "." and substitute "; and".

**[24] Clause 5.3.10 Acceptance of performance standards for generating plant that is altered**

After clause 5.3.10(b)(2)(ii), insert:

- (3) any *system strength remediation scheme* satisfies clause 5.3.4B.

**[25] Clause 5.3.11 Notification of request to change to normal voltage**

In clause 5.3.11(b), substitute "AEMO" with "*AEMO*".

**[26] Clause 5.3A.3 Publication of Information**

Omit clause 5.3A.3(b)(1)(vi), and substitute:

- (vi) the process for negotiating *negotiated access standards* under clause 5.3.4A and any *system strength remediation scheme* under clause 5.3.4B and a summary of the factors the *Distribution Network Service Provider* takes into account when considering proposed *negotiated access standards* and *system strength remediation schemes*; and

**[27] Clause 5.3A.3 Publication of Information**

In clause 5.3A.3(b)(6)(ix), omit "and".

**[28] Clause 5.3A.3 Publication of Information**

After clause 5.3A.3(b)(6)(x), insert:

- (xi) circumstances in which a *system strength remediation scheme* or *system strength connection works* will be required as a condition of *connection*; and

**[29] Clause 5.3A.8 Detailed Response to Enquiry**

Omit clause 5.3A.8(g)(2) and substitute:

- (2) paragraphs (a) - (e1), (h) - (l) and (n)-(o) of Schedule 5.4B.

**[30] Clause 5.3A.9 Application for connection**

Omit clause 5.3A.9(a), and substitute:

- (a) Following receipt of a detailed response under clause 5.3A.8, a *Connection Applicant* may make an *application to connect* in accordance with this clause 5.3A.9, clause 5.3.4A and clause 5.3.4B.

**[31] Clause 5.3A.9 Application for connection**

After clause 5.3A.9(g)(2), insert:

- (h) A *Connection Applicant* who proposes a *system strength remediation scheme* under clause 5.3.4B must submit its proposal with the *application to connect*.

**[32] Clause 5.3A.10 Preparation of offer to connect**

After clause 5.3A.10(e), insert:

- (f) The *Distribution Network Service Provider* preparing the offer to *connect* must specify in reasonable detail any *system strength*

*connection works* to be undertaken by the *Distribution Network Service Provider*.

### **[33] New Clause 5.7.3A Tests to demonstrate compliance with system strength remediation schemes**

After clause 5.7.3, insert:

#### **5.7.3A Tests to demonstrate compliance with system strength remediation schemes**

- (a) Each *Registered Participant* required under a *connection agreement* to implement a *system strength remediation scheme* by means of *facilities* owned, operated or controlled by the *Registered Participant* must at the request of *AEMO* or the relevant *Network Service Provider* made not more than once in a calendar year provide evidence that those *facilities* satisfy the requirements of the *system strength remediation scheme* set out in the *connection agreement*.
- (b) If at any time the *facilities* do not satisfy the requirements of the *system strength remediation scheme* set out in the *connection agreement*, the *Registered Participant* must:
  - (1) promptly notify the relevant *Network Service Provider* and *AEMO* of that fact;
  - (2) promptly notify the *Network Service Provider* and *AEMO* of the remedial steps it proposes to take and the timetable for such remedial work;
  - (3) diligently undertake such remedial work and report at monthly intervals to the *Network Service Provider* on progress in implementing the remedial action; and
  - (4) conduct further tests or monitoring on completion of the remedial work to confirm compliance with the requirements of the *system strength remediation scheme*.
- (c) If *AEMO* reasonably believes the requirements of a *system strength remediation scheme* are not being complied with, *AEMO* may instruct the *Registered Participant* to conduct tests within 25 *business days* to demonstrate that the requirements are being met.
- (d) If the tests undertaken in accordance with paragraph (c) provide evidence that the requirements of a *system strength remediation scheme* are being complied with, *AEMO* must reimburse the *Registered Participant* for the reasonable expenses incurred as a direct result of conducting the tests.
- (e) If *AEMO*:

- (1) is satisfied that the requirements of a *system strength remediation scheme* are not being complied with; and
- (2) holds the reasonable opinion that the failure is impeding or will impede *AEMO's* ability to carry out its role in relation to *power system security*,

*AEMO* may direct the relevant *Registered Participant* to operate its *facility* at a particular output or *power transfer capability* or in a particular mode until the relevant *Registered Participant* submits evidence reasonably satisfactory to *AEMO* that the requirements of the *system strength remediation scheme* are being complied with.

- (f) Each *Registered Participant* referred to in paragraph (a) must maintain records for 7 years for each of its relevant *facilities* setting out details of the results of monitoring and testing conducted under this clause 5.7.3A and make these records available to *AEMO* on request.

**[34] Clause S5.2.4 Provision of information**

In clause S5.2.4(e1)(4), after "and *voltage* unbalance;", omit "and".

**[35] Clause S5.2.4 Provision of information**

In clause S5.2.4(e1)(5)(ii), omit "." and substitute "; and".

**[36] Clause S5.2.4 Provision of information**

After clause S5.2.4(e1)(5)(ii), insert:

- (6) the *Network Service Provider's* expected *three phase fault level* at the *connection point* for the *generating system* following the *connection* of the *generating system*.

**[37] Schedule 5.4A Preliminary Response**

In schedule 5.4A(a)(7), after "*synchronising* arrangements;", omit "and".

**[38] Schedule 5.4A Preliminary Response**

In schedule 5.4A(a)(8) after ";", insert "and".

**[39] Schedule 5.4A Preliminary Response**

After schedule 5.4A(a)(8), insert:

- (9) remedy or avoid an *adverse system strength impact* caused by the *connection*;

**[40] Schedule 5.4A Preliminary Response**

After schedule 5.4A(i), insert:

- (i1) an indication of whether the new *connection* is expected in the reasonable opinion of a *Network Service Provider* to have an *adverse system strength impact*;

#### **[41] Schedule 5.4A Preliminary Response**

After schedule 5.4A(o)(2), insert:

- (3) the *Connection Applicant's* proposal for any *system strength remediation scheme*;

#### **[42] Schedule 5.4B Detailed Response to Enquiry**

After schedule 5.4B(e), insert:

- (e1) written details of:
  - (1) the minimum *three phase fault level* at the *connection point*; and
  - (2) the results of the *Network Service Provider's* preliminary assessment of the impact of the new *connection* undertaken in accordance with the *system strength impact assessment guidelines* and clause 5.3.4B;

#### **[43] Schedule 5.6 Terms and Conditions of Connection agreements and network operating agreements**

After schedule 5.6(c1), insert:

- (c2) details of any *system strength remediation scheme* agreed, determined or modified in accordance with clause 5.3.4B and associated terms and conditions;
- (c3) details of any *system strength connection works*;

## Schedule 3      Amendment to the National Electricity Rules

(Clause 5)

### [1] Chapter 10      New Definitions

In Chapter 10, insert the following definitions in alphabetical order:

#### ***adverse system strength impact***

An adverse impact, assessed in accordance with the *system strength impact assessment guidelines*, on the ability under different operating conditions of:

- (a) the *power system* to maintain system stability in accordance with clause S5.1a.3; or
- (b) a *generating system* or *market network service facility* forming part of the *power system* to maintain stable operation including following any *credible contingency event* or *protected event*,

so as to maintain the *power system* in a *secure operating state*.

#### ***system strength connection works***

Investment in a *transmission or distribution system* in order to remedy or avoid an *adverse system strength impact* arising from establishing a *connection* for a *generating system* or *market network service facility* or from any alteration to a *generating system* to which clause 5.3.9 applies.

#### ***system strength impact assessment***

*Power system* studies to assess the impact of the *connection* of a new *generating system* or *market network service facility* or of any proposed alteration to a *generating system* to which clause 5.3.9 applies on the ability under different operating conditions of:

- (a) the *power system* to maintain system stability in accordance with clause S5.1a.3; and
- (b) *generating systems* and *market network service facilities* forming part of the *power system* to maintain stable operation including following any *credible contingency event* or *protected event*,

so as to maintain the *power system* in a *secure operating state*.

#### ***system strength impact assessment guidelines***

The guidelines for conducting *system strength impact assessments* developed by *AEMO* under clause 4.6.6.

***system strength remediation scheme***

A scheme agreed or determined under clause 5.3.4B required to be implemented as a condition of a *connection agreement* to remedy or avoid an *adverse system strength impact*.

***three phase fault level***

Measured in MVA at a location on a *transmission network* or a *distribution network*, the product of the pre-fault *nominal voltage* (measured in kV between a pair of phases), the fault current in each phase for a three phase fault at the location (measured in kA), and the square root of 3.

**[2] Chapter 10            Substituted Definitions**

In Chapter 10, substitute the following definitions:

***AEMO advisory matter***

A matter that relates to *AEMO's* functions under the *National Electricity Law* and a matter in which *AEMO* has a role under clause 5.3.4B or in schedules 5.1a, 5.1, 5.2, 5.3 and 5.3a.

***negotiated transmission service***

Any of the following services:

- (a) *a shared transmission service* that:
  - (1) exceeds the *network* performance requirements (whether as to quality or quantity) (if any) as that *shared transmission service* is required to meet under any *jurisdictional electricity legislation*; or
  - (2) except to the extent that the *network* performance requirements which that *shared transmission service* is required to meet are prescribed under any *jurisdictional electricity legislation*, exceeds or does not meet the *network* performance requirements (whether as to quality or quantity) as are set out in schedule 5.1a or 5.1;
- (b) *connection services* that are provided to serve a *Transmission Network User*, or group of *Transmission Network Users*, at a *single transmission network connection point*, other than *connection services* that are provided by one *Network Service Provider* to another *Network Service Provider* to *connect* their *networks* where neither of the *Network Service Providers* is a *Market Network Service Provider*; or
- (c) undertaking *system strength connection works*,

but does not include an *above-standard system shared transmission service* or a *market network service*.

***plant***

- (a) In relation to a *connection point*, includes all equipment involved in generating, utilising or transmitting electrical *energy*.
- (b) In relation to *dispatch bids* and *offers*, controllable generating equipment and controllable *loads*.
- (c) In relation to the *statement of opportunities* prepared by *AEMO*, individually controllable generating facilities registered or capable of being registered with *AEMO*.
- (d) In relation to the *regulatory investment test for transmission*, any of the definitions of *plant* in paragraphs (a) to (c) relevant to the application of the *regulatory investment test for transmission* to a RIT-T project.
- (e) In relation to the *regulatory investment test for distribution*, any of any of the definitions of *plant* in paragraphs (a) to (c) relevant to the application of the *regulatory investment test for distribution* to a RIT-D project.
- (f) In relation to a *system strength remediation scheme*, includes all equipment involved in the implementation of the scheme.

## Schedule 4      Amendment to the National Electricity Rules

(Clause 6)

### [1] Clause 3.9.7      Pricing for constrained on scheduled generating units

Omit clause 3.9.7(c) and substitute:

- (c) In the event that:
  - (1) an *inertia network service* under an *inertia services agreement* is enabled such that an *inertia generating unit* is *constrained on* in any *dispatch interval* to provide *inertia*; or
  - (2) a *system strength service* under a *system strength services agreement* is enabled such that a *system strength generating unit* is *constrained on* in any *dispatch interval* to provide a *system strength service*,

the relevant *generating unit* must comply with *dispatch instructions* from *AEMO* in accordance with its availability as specified in its *dispatch offer* but may not be taken into account in the determination of the *dispatch price* in that *dispatch interval* except to the extent that the *generating unit* is *dispatched* at a level above its minimum *loading level*.

## Schedule 5      Amendment to the National Electricity Rules

(Clause 7)

### [1] Clause 4.1.1      Purpose

In clause 4.1.1(a)(3)(iv) after "to *enable inertia network services*", insert "or *system strength services*".

### [2] Clause 4.2.5      Technical envelope

In clause 4.2.5(c)(7) after "*inertia network service*", insert "and *system strength service*".

### [3] Clause 4.2.6      General principles for maintaining power system security

After clause 4.2.6(f), insert:

- (g) Sufficient *three phase fault level* should be maintained at each *fault level node* to meet the applicable *system strength requirements*.

### [4] Clause 4.3.1      Responsibility of AEMO for power system security

In clause 4.3.1(o) after "*ancillary services*", insert ", *system strength services*".

### [5] Clause 4.3.1      Responsibility of AEMO for power system security

After clause 4.3.1(pb), insert:

- (pc) to determine the *system strength requirements* for each *region* and to *enable system strength services*;

### [6] Clause 4.3.4      Network Service Providers

After clause 4.3.4(k), insert:

- (l) Each *Transmission Network Service Provider* that is a *System Strength Service Provider* must make *system strength services* available to *AEMO* in accordance with clause 5.20C.3(b).
- (m) Each *Transmission Network Service Provider* that is a *System Strength Service Provider* must give *AEMO* information about *system strength services* made available by the *System Strength Service Provider* in accordance with clause 5.20C.4 and must update *AEMO* if there is a material change to that information.

## **[7] New Clause 4.4.5 Instructions to enable system strength services**

After clause 4.4.4, insert:

### **4.4.5 Instructions to enable system strength services**

- (a) *AEMO* may at any time *enable* a range and quantity of *system strength services* to maintain the minimum *three phase fault level* at a *fault level node* when the *three phase fault level* at the *fault level node* would otherwise be below the minimum *three phase fault level* or when reasonably considered necessary by *AEMO* to maintain the *power system* in a *secure operating state*.
- (b) In selecting the *system strength services* to be *enabled* under paragraph (a), *AEMO* must use reasonable endeavours to select services in the order of priority specified by the *System Strength Service Provider* in its schedule of *system strength services* given to *AEMO* under clause 5.20C.4(a).
- (c) For the purposes of paragraph (a), *AEMO* may at any time give an instruction to a *System Strength Service Provider* who is providing *system strength services* or a *Registered Participant* who has agreed with a *System Strength Service Provider* to provide *system strength services* stating that *AEMO* requires *system strength services* to be *enabled*. Where the *system strength services* are provided by a *system strength generating unit*, the instruction must be given in accordance with the procedures for giving *dispatch instructions* under the *Rules*. Otherwise, the instruction must be given in accordance with the arrangements for giving instructions applicable to the *system strength service* approved by *AEMO* under clause 5.20C.4(e).
- (d) *AEMO* may at any time give an instruction stating that *AEMO* requires the provision of a *system strength service* to cease. The instruction must be given in the manner provided for in paragraph (c).
- (e) An instruction to *enable* or cease providing *system strength services* must include:
  - (1) specific reference to the *system strength service* to which the instruction applies;
  - (2) the time the instruction is issued; and
  - (3) the time at which the service is to be *enabled* or cease, if that is different from the time the instruction is issued.

- (f) A *System Strength Service Provider* or a *Registered Participant* providing *system strength services* must comply with an instruction given under paragraph (c) or (d).
- (g) A *System Strength Service Provider* or a *Registered Participant* providing *system strength services* must ensure that appropriate personnel or electronic facilities are available at all times to receive and immediately act upon instructions issued by *AEMO* to *enable* the *system strength service* or cease providing it.

## **[8] Clause 4.6.1 Power system fault levels**

Omit clause 4.6.1 in its entirety and substitute:

### **4.6.1 Power system fault levels**

- (a) *AEMO*, in consultation with *Network Service Providers*, must:
  - (1) determine the fault levels at all *busbars* of the *power system* as described in clause 4.6.1(b); and
  - (2) determine the *three phase fault level* at *fault level nodes*.
- (b) *AEMO* must ensure that there are processes in place that will allow the determination of fault levels for normal operation of the *power system* and in anticipation of all *credible contingency events* and *protected events* that *AEMO* considers may affect the configuration of the *power system*, so that *AEMO* can identify:
  - (1) any *busbar* which could potentially be exposed to a fault level which exceeds the fault *current ratings* of the circuit breakers associated with that *busbar*; and
  - (2) any *fault level node* where the *three phase fault level* is likely to be below the minimum *three phase fault level*.

## **[9] New Clause 4.9.9D System strength service availability changes**

After clause 4.9.9C, insert:

### **4.9.9D System strength service availability changes**

A *System Strength Service Provider* must, without delay, notify *AEMO* of any event which has changed or is likely to change the availability of any *system strength services* made available by the *System Strength Service Provider* to *AEMO* under clause 5.20C.3, as soon as the *System Strength Service Provider* becomes aware of the event.

**[10] Clause 4.10.2      Transmission network operations**

In clause 4.10.2(c) after "*inertia services agreement*", insert ", *system strength services agreement*".

**[11] Clause 4.11.1      Remote control and monitoring devices**

In clause 4.11.1(b) after "*ancillary services*", insert ", *system strength services*".

## Schedule 6      Amendment to the National Electricity Rules

(Clause 8)

### [1] Clause 5.1A.1      Purpose and Application

After clause 5.1A.1(f)(6), insert:

- (7) rule 5.20C.

### [2] Clause 5.3.4B      System strength remediation for new connections

Omit clause 5.3.4B(p), substitute:

- (p) If the matter is not resolved by negotiation under paragraph (o):
  - (1) in the case of a *connection* to a *transmission system* other than the *declared transmission system* of an *adoptive jurisdiction*, the matter may be dealt with as a dispute under rule 5.5 (but not rule 8.2); or
  - (2) otherwise, may be dealt with under rule 8.2 or as a *distribution service access dispute* as applicable.

### [3] Clause 5.10.1      Content of Part D

After clause 5.10.1(m1), insert:

- (m2) Clause 5.20C sets out the process for identifying and providing the *system strength requirements* for each *region*.

### [4] Clause 5.12.2      Transmission Annual Planning Report

Omit clause 5.12.2(c)(8)(ii), substitute:

- (ii) clauses 5.20B.4(h) and (i) and clauses 5.20C.3(f) and (g) in relation to *network* investment and other activities to provide *inertia network services*, *inertia support activities* or *system strength services*.

### [5] Clause 5.15.2      Identification of a credible option

In clause 5.15.2(b), omit "5.16.3(a)(1)-(7)," and substitute "5.16.3(a)(1)-(8),".

### [6] Clause 5.15.2      Identification of a credible option

In clause 5.15.2(c), omit "5.17.3(a)(1)-(6)," and substitute "5.17.3(a)(1)-(7),".

### [7] Clause 5.16.1      Principles

In clause 5.16.1(b), after "required under clause 5.20B.4", insert "or the provision of *system strength services* required under clause 5.20C.3".

**[8] Clause 5.16.3 Investments subject to the regulatory investment test for transmission**

In clause 5.16.3(a)(9), after "*inertia service payment*" insert "or a *system strength service payment*".

**[9] Clause 5.16.3 Investments subject to the regulatory investment test for transmission**

After clause 5.16.3(a)(10), insert:

(11) the proposed expenditure is for *network* investment undertaken by the *Transmission Network Service Provider* to satisfy its obligation as a *System Strength Service Provider* under clause 5.20C.3 to make available *system strength services* in relation to a *fault level shortfall* for a *fault level node* and:

- (i) immediately prior to the notice of the *fault level shortfall* being given by *AEMO* under clause 5.20C.2(c), the *System Strength Service Provider* is not under an obligation to provide *system strength services* for that *fault level node* (including under rule 11.101); and
- (ii) the time by which the *System Strength Service Provider* must make the *system strength services* available is less than 18 months after the notice is given by *AEMO* under clause 5.20C.2(c).

**[10] Clause 5.20.1 Preliminary consultation**

In clause 5.20.1(a)(3) after "*inertia requirements methodology*", insert "and the *system strength requirements methodology*".

**[11] Clause 5.20.1 Preliminary consultation**

In clause 5.20.1(b)(4) after "*inertia requirements methodology*", insert "and the *system strength requirements methodology*".

**[12] Clause 5.20.1 Preliminary consultation**

In clause 5.20.1(c) after "*inertia requirements methodology*", insert ", the *system strength requirements methodology*".

**[13] Clause 5.20.2 Publication of NTNDP**

In clause 5.20.2(c)(13), omit "." and substitute "; and".

### **[14] Clause 5.20.2 Publication of NTNDP**

After clause 5.20.2(c)(13), insert:

- (14) describe the *system strength requirements* determined by *AEMO* under rule 5.20C since the last *NTNDP* and details of *AEMO's* assessment of any *fault level shortfall* and *AEMO's* forecast of any *fault level shortfall* arising at any time within a planning horizon of at least 5 years.

### **[15] Clause 5.20.6 NTP Functions**

In clause 5.20.6(c) after "*inertia shortfalls*", insert "or the *system strength requirements* or the assessment of any *fault level shortfalls*".

### **[16] Clause 5.20.7 Inertia requirements methodology**

In the heading in clause 5.20.7, omit "Inertia requirements methodology" and substitute "Inertia and system strength requirements methodologies".

### **[17] Clause 5.20.7 Inertia and system strength requirements methodologies**

After clause 5.20.7(a), insert:

- (b) The *system strength requirements methodology* determined by *AEMO* must provide for *AEMO* to take the following matters into account in determining the *fault level nodes* and the minimum *three phase fault level*:
  - (1) the combination of *three phase fault levels* at each *fault level node* in the *region* that could reasonably be considered to be sufficient for the *power system* to be in a *secure operating state*;
  - (2) the maximum *load shedding* or *generation shedding* expected to occur on the occurrence of any *credible contingency event* or *protected event* affecting the *region*;
  - (3) the stability of the *region* following any *credible contingency event* or *protected event*;
  - (4) the risk of *cascading outages* as a result of any *load shedding* or *generating system* or *market network service facility* tripping as a result of a *credible contingency event* or *protected event* in the *region*;
  - (5) additional contribution to the *three phase fault level* needed to account for the possibility of a reduction in the *three phase fault level* at a *fault level node* if the *contingency event* that occurs is the loss or unavailability of a *synchronous generating unit* or any other *facility* or service that is material

- in determining the *three phase fault level* at the *fault level node*;
- (6) the stability of any equipment that is materially contributing to the *three phase fault level* or *inertia* within the *region*; and
  - (7) any other matters as *AEMO* considers appropriate.

## **[18] New rule 5.20C System strength requirements**

After rule 5.20B, insert:

### **5.20C System strength requirements**

#### **5.20C.1 System strength requirements**

- (a) *AEMO* must from time to time determine the *system strength requirements* for each *region* applying the *system strength requirements methodology*. *AEMO* must make a determination under this paragraph:
  - (1) subject to subparagraph (2) and any other requirements under the *Rules*, for any *region*, no more than once in every 12 month period; and
  - (2) for each affected *region*, as soon as reasonably practical after becoming aware of a material change to the *power system* likely to affect the *system strength requirements* for the *region* where the timing, occurrence or impact of the change was unforeseen.
- (b) The *system strength requirements* to be determined for each *region* are:
  - (1) the *fault level nodes* in the *region*, being the location on the *transmission network* for which the *three phase fault level* must be maintained at or above a minimum *three phase fault level* determined by *AEMO*; and
  - (2) for each *fault level node*, the minimum *three phase fault level*.
- (c) *AEMO* must publish the *system strength requirements* determined for each *region* together with the results of its assessment under clause 5.20C.2 in the *NTNDP*.

#### **5.20C.2 Fault level shortfalls**

- (a) *AEMO* must as soon as practicable following its determination of the *system strength requirements* for a *region* under clause 5.20C.1 assess:

- (1) the *three phase fault level* typically provided at each *fault level node* in the *region* having regard to typical patterns of *dispatched generation in central dispatch*;
  - (2) whether in *AEMO's* reasonable opinion, there is or is likely to be a *fault level shortfall* in the *region* and *AEMO's* forecast of the period over which the *fault level shortfall* will exist; and
  - (3) where *AEMO* has previously assessed that there was or was likely to be a *fault level shortfall*, whether in *AEMO's* reasonable opinion that *fault level shortfall* has been or will be remedied.
- (b) In making its assessment under paragraph (a) for a *region*, *AEMO* must take into account:
- (1) over what time period and to what extent the *three phase fault levels* at *fault level nodes* that are typically observed in the *region* are likely to be insufficient to maintain the *power system* in a *secure operating state*; and
  - (2) any other matters that *AEMO* reasonably considers to be relevant in making its assessment.
- (c) If *AEMO* assesses that there is or is likely to be a *fault level shortfall* in a *region*, *AEMO* must *publish* and give to the *System Strength Service Provider* for the *region* a notice of that assessment that includes *AEMO's* specification of:
- (1) the extent of the *fault level shortfall*; and
  - (2) the date by which the *System Strength Service Provider* must ensure the availability of *system strength services* in accordance with clause 5.20C.3(b), which must not be earlier than 12 months after the notice is *published* unless an earlier date is agreed with the *System Strength Service Provider*.
- (d) If *AEMO* assesses that a *fault level shortfall* in a *region* has been or will be remedied, *AEMO* must *publish* and give to the *System Strength Service Provider* for the *region* a notice of that assessment that includes *AEMO's* specification of the date from which the obligation of the *System Strength Service Provider* under clause 5.20C.3(b) ceases, which must not be earlier than 12 months after the notice is *published* unless an earlier date is agreed with the *System Strength Service Provider*.

### **5.20C.3 System Strength Service Provider to make available system strength services**

- (a) The *System Strength Service Provider* for a *region* is:

- (1) the *Transmission Network Service Provider* for the *region*; or
  - (2) if there is more than one *Transmission Network Service Provider* for a *region*, the *jurisdictional planning body* for the *participating jurisdiction* in which the *region* is located.
- (b) If *AEMO* gives a notice under clause 5.20C.2(c) that *AEMO* has assessed that there is or is likely to be a *fault level shortfall* at a *fault level node* in a *region*, the *System Strength Service Provider* for the *region* must make *system strength services* available in accordance with paragraph (c) that when *enabled* will address the *fault level shortfall* at the relevant *fault level node*.
- (c) For the purposes of paragraph (b), a *System Strength Service Provider* for a *region* must:
- (1) use reasonable endeavours to make the *system strength services* available by the date specified by *AEMO* in the notice under clause 5.20C.2(c);
  - (2) make a range and level of *system strength services* available such that it is reasonably likely that *system strength services* that address the *fault level shortfall* when *enabled* are continuously available, taking into account planned *outages*, the risk of unplanned *outages* and the potential for the *system strength services* to impact typical patterns of *dispatched generation in central dispatch*; and
  - (3) maintain the availability of those *system strength services* until the date the *System Strength Service Provider's* obligation ceases, as specified by *AEMO* under clause 5.20C.2(d).
- (d) A *System Strength Service Provider* required to make *system strength services* available under paragraph (b) must make available the least cost option or combination of options that will satisfy its obligation within the time referred to in subparagraph (c)(1) and for so long as the obligation to make the *system strength services* available continues.
- (e) A *System Strength Service Provider* required to make *system strength services* available under paragraph (b) must prepare and *publish* information to enable potential providers of *system strength services* to develop *non-network options* for consideration by the *System Strength Service Provider* including:
- (1) a description of the requirement for *system strength services* including timing;
  - (2) the technical characteristics that a non-network option would be required to deliver, such as the contribution to the *three*

- phase fault level*, location, availability, response time and operating profile;
- (3) a summary of potential options to make the *system strength services* available identified by the *System Strength Service Provider*, including *network options* and *non-network options*; and
  - (4) information to assist providers of *non-network options* wishing to present proposals to the *System Strength Service Provider* including details of how to submit a proposal for consideration.
- (f) A *System Strength Service Provider* must provide information in its *Transmission Annual Planning Report* about the activities undertaken to satisfy its obligation to make *system strength services* available under paragraph (b).
- (g) If the *System Strength Service Provider* proposes *network* investment for the purpose specified in paragraph (f), the *System Strength Service Provider* must provide the following information in its next *Transmission Annual Planning Report*:
- (1) the date when the proposed relevant *network* investment became or will become operational;
  - (2) the purpose of the proposed relevant *network* investment;
  - (3) the total cost of the proposed relevant *network* investment;
  - (4) the indicative total costs of any *non-network options* considered.
- (h) A *System Strength Service Provider* may include the cost of *system strength service payments* in the calculation of *network support payments* in accordance with Chapter 6A.

#### **5.20C.4 System strength services information and approvals**

- (a) A *System Strength Service Provider* required to make *system strength services* available under clause 5.20C.3(b) must prepare and give to *AEMO* and keep up to date, a schedule setting out:
- (1) the *system strength services* available to contribute to the *three phase fault level* at each *fault level node* in the *region* for which there is a *fault level shortfall*; and
  - (2) the *System Strength Service Provider's* proposed order of priority for the *system strength services* to be *enabled*.
- (b) Where the *System Strength Service Provider* procures *system strength services* from a *Generator* provided by means of a

*generating unit* under a *system strength services agreement*, the *System Strength Service Provider* must register the *generating unit* with AEMO as a *system strength generating unit* and specify that the *generating unit* may be periodically used to provide *system strength services* and will not be eligible to set *spot prices* when *constrained on* to provide *system strength services* in accordance with clause 3.9.7(c).

- (c) A *System Strength Service Provider* required to make *system strength services* available under clause 5.20C.3(b) must give to AEMO and keep up to date the following details for each *system strength service*:
- (1) a description of the *system strength service*, including:
    - (i) the nature of the *system strength service*;
    - (ii) the *generating unit* or other *facilities* used to provide the *system strength service*;
    - (iii) the purpose for which the *system strength service* is being provided;
    - (iv) the location in the *transmission network* or *distribution network* of the *facilities* used to provide the *system strength service*;
    - (v) the contribution to the *three phase fault level* at each relevant *fault level node* and the *facility's connection point* when the *system strength service* is *enabled*; and
    - (vi) any other information (including models) requested by AEMO to assess the contribution of the *system strength service* referred to in subparagraph (v).
  - (2) information about the availability of the *system strength service*, including:
    - (i) the times when, and the period over which, the *system strength service* will be available to contribute to the *three phase fault level* at each relevant *fault level node*; and
    - (ii) any possible restrictions on the availability of the *system strength service*.
- (d) A *System Strength Service Provider* required to make *system strength services* available under clause 5.20C.3(b) must prepare and submit to AEMO for approval under paragraph (e) the following details for each *system strength service*:

- (1) the technical specification and performance standards for the *system strength service*; and
  - (2) the arrangements necessary for *AEMO* to give instructions to *enable* or cease the provision of the *system strength service* including:
    - (i) the period of any notice that has to be given to the provider of the *system strength service* for it to be *enabled*;
    - (ii) the response time to any instruction for the *system strength service* to be *enabled* or to cease being provided; and
    - (iii) communication protocols between it, *AEMO* and the *Registered Participants* that provide *system strength services*.
- (e) The technical specification, performance standards and arrangements necessary for *AEMO* to give the instructions referred to in paragraph (d) and any change to them must be consistent with the *Rules* and approved by *AEMO*.
- (f) A *System Strength Service Provider* must ensure that *AEMO*'s approval is obtained under paragraph (e) before the *system strength service* is first made available and in the case of a change, before the change comes into effect.
- (g) *AEMO* must use reasonable endeavours to respond to the *System Strength Service Provider* within 20 *business days* following the receipt of a request for approval under paragraph (e) stating whether it gives its approval.
- (h) If *AEMO* does not approve the matters in a request for approval under paragraph (e):
- (1) *AEMO* must tell the *System Strength Service Provider* its reasons for withholding approval and may advise the *System Strength Service Provider* of the changes *AEMO* requires to be made; and
  - (2) the *System Strength Service Provider* must amend its request to address the matters identified by *AEMO* and submit to *AEMO* a new request for approval.

**Schedule 7          Amendment to the National Electricity Rules**

(Clause 9)

**[1] Clause 6A.7.3      Pass through events**

In clause 6A.7.3(a1)(5), omit "and".

**[2] Clause 6A.7.3      Pass through events**

In clause 6A.7.3(a1)(6), omit "." and substitute "; and".

**[3] Clause 6A.7.3      Pass through events**

After clause 6A.7.3(a1)(6), insert:

(7)    *a fault level shortfall event.*



## Schedule 9      Amendment to the National Electricity Rules

(Clause 11)

### [1] Chapter 10      New Definitions

In Chapter 10, insert the following definitions in alphabetical order:

#### *fault level node*

A location on a *transmission network* that *AEMO* determines is a *fault level node* in its determination of *system strength requirements* under clause 5.20C.1(a).

#### *fault level shortfall*

A shortfall in the *three phase fault level* typically provided at a *fault level node* in a *region* (having regard to typical patterns of *dispatched generation* in *central dispatch*) compared to the minimum *three phase fault level* most recently determined by *AEMO* for the *fault level node*.

#### *fault level shortfall event*

A *Transmission Network Service Provider* is required to make *system strength services* available under clause 5.20C.3 as a consequence of an assessment by *AEMO* under clause 5.20C.2(c) that there is a *fault level shortfall* at a *fault level node* in a *region* for which the *Transmission Network Service Provider* is the *System Strength Service Provider* or to cease making *system strength services* available under clause 5.20C.3 as a consequence of an assessment by *AEMO* under clause 5.20C.2(d) that a *fault level shortfall* at a *fault level node* has ceased and:

- (a) the *Transmission Network Service Provider* is required to provide, or cease providing, *system strength services* during the course of a *regulatory control period*; and
- (b) making *system strength services* available or ceasing to make *system strength services* available *materially* increases or *materially* decreases the *Transmission Network Service Provider's* costs of providing *prescribed transmission services*.

#### *system strength generating unit*

A *generating unit* registered with *AEMO* under clause 5.20C.4(b).

#### *system strength requirements*

The matters determined by *AEMO* for a *region* under clause 5.20C.1(a).

#### *system strength requirements methodology*

The process *AEMO* uses to determine the *system strength requirements* for each *region* published by *AEMO* under clause 5.20.1(a)(3).

***system strength service***

A service for the provision of a contribution to the *three phase fault level* at a *fault level node*.

***System Strength Service Provider***

The *System Strength Service Provider* for a *region* as specified under clause 5.20C.3(a).

***system strength services agreement***

An agreement under which a person agrees to provide one or more *system strength services* to a *System Strength Service Provider*.

***system strength service payment***

A payment by a *Transmission Network Service Provider* made under a *system strength services agreement* where:

- (a) the payment is made for *system strength services* to be made available or provided as a service to the *Transmission Network Service Provider* in its capacity as a *System Strength Service Provider* to satisfy an obligation under clause 5.20C.3; and
- (b) the *system strength services* are made available or provided in accordance with applicable technical specifications and performance standards approved by *AEMO*.

**[2] Chapter 10      Substituted Definitions**

In Chapter 10, substitute the following definitions:

***constrained on***

In respect of a *generating unit*, the state where, due to a *constraint* on a *network* or in order to provide *inertia network services* under an *inertia services agreement* or *system strength services* under a *system strength services agreement*, the output of that *generating unit* is limited above the level to which it would otherwise have been *dispatched* by *AEMO* on the basis of its *dispatch offer*.

***dispatch***

The act of initiating or enabling all or part of the response specified in a *dispatch bid*, *dispatch offer* or *market ancillary service offer* in respect of a *scheduled generating unit*, *semi-scheduled generating unit*, a *scheduled load*, a *scheduled network service*, an *ancillary service generating unit* or an *ancillary service load* in accordance with rule 3.8, or a *direction* or operation of capacity the subject of a *reserve contract* or an instruction under an *ancillary services agreement* or to *enable* an *inertia network service* or *system strength service* as appropriate.

***enabled, enable***

A *market ancillary service* is enabled when *AEMO* has selected the relevant *generating unit* or *load* for the provision of the *market ancillary service* and has notified the relevant *Market Participant* accordingly.

An *inertia network service* is enabled when *AEMO* has selected the relevant *inertia network service* and the service is providing *inertia* to an *inertia sub-network*.

An activity approved by *AEMO* under clause 5.20B.5(a) is enabled when *AEMO* has selected the relevant activity and the activity is performing and available in accordance with any conditions of that approval.

A *system strength service* is enabled when *AEMO* has selected the relevant *system strength service* and the service is contributing to the *three phase fault level* at the relevant *fault level node*.

***negotiated transmission service***

Any of the following services:

- (a) a *shared transmission service* that:
  - (1) exceeds the *network* performance requirements (whether as to quality or quantity) (if any) as that *shared transmission service* is required to meet under any *jurisdictional electricity legislation*; or
  - (2) except to the extent that the *network* performance requirements which that *shared transmission service* is required to meet are prescribed under any *jurisdictional electricity legislation*, exceeds or does not meet the *network* performance requirements (whether as to quality or quantity) as are set out in schedule 5.1a or 5.1;
- (b) *connection services* that are provided to serve a *Transmission Network User*, or group of *Transmission Network Users*, at a *single transmission network connection point*, other than *connection services* that are provided by one *Network Service Provider* to another *Network Service Provider* to connect their *networks* where neither of the *Network Service Providers* is a *Market Network Service Provider*;
- (c) services specified to be *negotiated transmission services* under rule 5.2A.4; or
- (d) undertaking *system strength connection works*,

but does not include an *above-standard system shared transmission service* or a *market network service*.

***network support and control ancillary service or NSCAS***

A service (excluding an *inertia network service* or *system strength service*) with the capability to control the *active power* or *reactive power* flow into or out of a *transmission network* to address an *NSCAS need*.

***network support event***

- (a) If, at the end of a *regulatory year* of a *regulatory control period*, the amount of *network support payments* made by a *Transmission Network Service Provider* for that previous *regulatory year* is higher or lower than the amount of the *network support payment allowance* (if any) for the *Transmission Network Service Provider* for that previous *regulatory year*, this constitutes a *network support event*.
- (b) In calculating the amount for the purposes of a *network support event* referred to in paragraph (a), the amount of *network support payments* made by a *Transmission Network Service Provider* must not include an amount of *network support payments* that are a substitute for a *network augmentation* where an allowance for capital expenditure in relation to that *network augmentation* has been provided for in the *revenue determination* or an *approved pass through amount* arising from an *inertia shortfall event* or a *fault level shortfall event*.

***network support payment***

Any of the following payments:

- (a) a payment by a *Transmission Network Service Provider* to:
  - (1) any *Generator* providing *network support services* in accordance with rule 5.3A.12; or
  - (2) any other person providing a *network support service* that is an alternative to *network augmentation*;
- (b) an *inertia service payment*; and
- (c) a *system strength service payment*.

***network support payment allowance***

The amount of *network support payments* (if any) that is provided for a *Transmission Network Service Provider* for a *regulatory year* in:

- (a) the *annual building block revenue requirement* for the *Transmission Network Service Provider* for that *regulatory year*; or
- (b) any *approved pass through amount* for the *Transmission Network Service Provider* for that *regulatory year* arising from an *inertia shortfall event* or a *fault level shortfall event*,

less the amount (expressed as a positive) of avoided *network support payments* (if any) that is provided for in any *required pass through amount* for the *Transmission Network Service Provider* for that *regulatory year* arising from an *inertia shortfall event* or a *fault level shortfall event*.

***Non-market ancillary service or NMAS***

Any of the following services:

- (a) *network support and control ancillary services* and other services acquired by *Transmission Network Service Providers* under *connection agreements* or *network support agreements* to meet the service standards linked to the technical requirements of schedule 5.1 or in *applicable regulatory instruments* (but to avoid doubt, excluding *inertia network services* and *system strength services*); and
- (b) *system restart ancillary services* and *network support and control ancillary services* acquired by AEMO under *ancillary services agreements*.

***NSCAS need***

- (a) Subject to paragraphs (b) and (c), *network support and control ancillary service* required to:
  - (1) maintain *power system security* and reliability of *supply* of the *transmission network* in accordance with the *power system security standards* and the *reliability standard*; and
  - (2) maintain or increase the *power transfer capability* of that *transmission network* so as to maximise the present value of net economic benefit to all those who produce, consume or transport electricity in the *market*.
- (b) Any requirement for a service that satisfies paragraph (a) and is also capable of being made available as an *inertia network service* to address an *inertia shortfall* through the arrangements in rule 5.20B must be treated as an *inertia shortfall* and is not an *NSCAS need*.
- (c) Any requirement for a service that satisfies paragraph (a) and is also capable of being made available as a *system strength service* to address a *fault level shortfall* through the arrangements in rule 5.20C must be treated as a *fault level shortfall* and is not an *NSCAS need*.

## Schedule 10 Savings and Transitional Amendments to the National Electricity Rules

(Clause 12)

### [1] Chapter 11 New Part ZZZC

In chapter 11, after Part ZZZB, insert:

#### Part ZZZC Managing power system fault levels

##### 11.101 Rules consequential on the making of the National Electricity Amendment (Managing power system fault levels) Rule 2017

###### 11.101.1 Definitions

(a) In this rule 11.101:

**Amending Rule** means the *National Electricity Amendment (Managing power system fault levels) Rule 2017*.

**commencement date** means the date of commencement of Schedules 4, 5, 6, 7, 8 and 9 of the Amending Rule.

**new Chapter 10** means Chapter 10 as amended by the Amending Rule.

**new clause 3.9.7** means clause 3.9.7 of the *Rules* as will be in force immediately after the commencement date.

**new clause 4.4.4** means clause 4.4.4 of the *Rules* as will be in force immediately after the commencement date.

**new clause 4.4.9C** means clause 4.4.9C of the *Rules* as will be in force immediately after the commencement date.

**new clause 4.6.6** means clause 4.6.6 of the *Rules* as will be in force immediately after the Schedule 1 to 3 commencement date.

**new clause 5.16.3** means clause 5.16.3 of the *Rules* as will be in force immediately after the commencement date.

**new clause 5.20.1(a)(3)** means clause 5.20.1(a)(3) of the *Rules* as will be in force immediately after the commencement date.

**new clause 5.20.7(b)** means clause 5.20.7(b) of the *Rules* as will be in force immediately after the commencement date.

**new clause 5.20C.1(a)** means clause 5.20C.1(a) of the *Rules* as will be in force immediately after the commencement date.

**new clause 5.20C.2(a)** means clause 5.20C.2(a) of the *Rules* as will be in force immediately after the commencement date.

**new clause 5.20C.2(c)** means clause 5.20C.2(c) of the *Rules* as will be in force immediately after the commencement date.

**new clause 5.20C.3(b)** means clause 5.20C.3(b) of the *Rules* as will be in force immediately after the commencement date.

**new clause 5.20C.3(f)** means clause 5.20C.3(f) of the *Rules* as will be in force immediately after the commencement date

**new clause 5.20C.3(g)** means clause 5.20C.3(g) of the *Rules* as will be in force immediately after the commencement date

**new clause 6A.7.3(a1)** means clause 6A.7.3(a1) of the *Rules* as will be in force immediately after the commencement date.

**new rule 5.20C** means rule 5.20C of the *Rules* as will be in force immediately after the commencement date.

**Schedule 1 to 3 commencement date** means the date of commencement of Schedules 1 to 3 of the Amending Rule.

**system strength-related NSCAS gap** means an *NSCAS gap* that is a shortfall in the *three phase fault level* typically provided at a *fault level node* in a *region* (having regard to typical patterns of *dispatched generation in central dispatch*) compared to the minimum *three phase fault level* that *AEMO* reasonably considers is required to maintain the *power system* in a *secure operating state*.

**NSCAS transition period** means the period after the date this schedule commences and before the commencement date.

- (b) Italicised terms used in this rule 11.101 (other than *NSCAS gap* and *NSCAS need*) have the same meaning as in new Chapter 10.

#### **11.101.2 System strength impact assessment guidelines**

- (a) *AEMO* must make and *publish* interim *system strength impact assessment guidelines* by 17 November 2017 to apply until the *system strength impact assessment guidelines* are made and published under paragraph (b).
- (b) *AEMO* is not required to comply with the *Rules consultation procedure* when making the interim guidelines under paragraph (a).
- (c) *AEMO* must make and *publish* *system strength impact assessment guidelines* under new clause 4.6.6 by 1 July 2018 and in doing so must comply with the *Rules consultation procedures*.

### 11.101.3 System strength requirements methodology

- (a) By 30 June 2018, *AEMO* must determine and *publish* a methodology setting out the process *AEMO* will use to determine the *system strength requirements* for each *region*. The methodology must provide for *AEMO* to take into account the matters listed in new clause 5.20.7(b) in determining the *system strength requirements*.
- (b) *AEMO* must include an explanation of the differences between the methodology determined under paragraph (a) and the first *system strength requirements methodology* published in accordance with new clause 5.20.1(a)(3).

### 11.101.4 System strength requirements

- (a) *AEMO* must make a determination of the *system strength requirements* for each *region* under new clause 5.20C.1(a) and make the assessments required under new clause 5.20C.2(a) by 30 June 2018 applying the methodology determined under clause 11.101.3(a) as if it were a *system strength requirements methodology*.
- (b) If *AEMO* assesses that there is or is likely to be a *fault level shortfall* in a *region* in its assessment carried out in accordance with paragraph (a), *AEMO* must as soon as practicable after making that assessment *publish* and give to the *System Strength Service Provider* for the *region* a notice of that assessment that includes *AEMO's* specification of:
  - (1) the extent of the *fault level shortfall*; and
  - (2) the date by which the *System Strength Service Provider* must ensure the availability of *system strength services* in accordance with new clause 5.20C.3(b), which must not be earlier than 1 July 2019 unless an earlier date is agreed with the *System Strength Service Provider*.
- (c) A *System Strength Service Provider* given a notice under paragraph (b) must make *system strength services* available in accordance with new clause 5.20C.3(b) and otherwise comply with new rule 5.20C as if the notice had been given under new clause 5.20C.2(c).
- (d) If a *System Strength Service Provider* is given a notice under paragraph (b) later than 30 April 2017, it is not required to include the information referred to in new clauses 5.20C.3(f) and (g) in its *Transmission Annual Planning Report* due to be published by 30 June 2018, but the information must be included in its next *Transmission Annual Planning Report*.

- (e) Where a *System Strength Service Provider* is given a notice under paragraph (b), clause 5.16.3 regarding the *regulatory investment test for transmission*, clause 6A.7.3(a1) regarding *pass through events* and the related definitions apply in relation to *system strength services* made available in response to the notice as if they were new clause 5.16.3, new clause 6A.7.3(a1) and the related definitions in new Chapter 10.

**11.101.5 NSCAS not to be used to meet a fault level shortfall after 1 July 2019**

- (a) Paragraphs (b) and (c) do not apply in respect of a system strength-related NSCAS gap declared on or before 19 September 2017.
- (b) In the NSCAS transition period, *AEMO* must not, in respect of any period after 1 July 2019, acquire *NSCAS* to meet an *NSCAS gap* in relation to a requirement for a service that is both an *NSCAS need* and is also capable of being made available as a *system strength service* to address a *fault level shortfall* through the arrangements in new rule 5.20C.
- (c) In the NSCAS transition period, a *Transmission Network Service Provider* must not, in respect of any period after 1 July 2019, put in place arrangements referred to in rule 3.11.3(b) to meet an *NSCAS gap* referred to in paragraph (a).

**11.101.6 System strength services may be used to meet an NSCAS gap declared in the NSCAS transition period**

- (a) If, in the NSCAS transition period, *AEMO* declares a system strength-related NSCAS gap in respect of a period starting within 12 months of the declaration being made, a *Transmission Network Service Provider* given a request under clause 3.11.3 in relation to the system strength-related NSCAS gap may by notice to *AEMO* elect to treat the declaration of that system strength-related NSCAS gap as if it were a notice of a *fault level shortfall* under new clause 5.20C.2(c).
- (b) If, in the NSCAS transition period, *AEMO* declares a system strength-related NSCAS gap in respect of a period starting 12 months or more after the declaration is made, a *Transmission Network Service Provider* given a request under clause 3.11.3 in relation to the system strength-related NSCAS gap must treat the declaration of that system strength-related NSCAS gap as if it were a notice of a *fault level shortfall* under new clause 5.20C.2(c).
- (c) Where in accordance with paragraph (a) or (b) a *Transmission Network Service Provider* elects or is required to treat a declaration of a system strength-related NSCAS gap as if it were notice of a *fault level shortfall* under new clause 5.20C.2(c):

- (1) subject to paragraph (d), the *Transmission Network Service Provider* must make *system strength services* available in accordance with new clause 5.20C.3(b);
- (2) *AEMO* and *Transmission Network Service Provider* must otherwise comply with new rule 5.20C as if the notice had been given under new clause 5.20C.2(c); and
- (3) clause 5.16.3 regarding the *regulatory investment test for transmission*, clause 6A.7.3(a1) regarding *pass through events* and the related definitions apply in relation to *system strength services* made available in response to the notice as if they were new clause 5.16.3, new clause 6A.7.3(a1) and the related definitions in new Chapter 10.

**11.101.7 Withdrawal of a system strength-related NSCAS gap already declared**

- (a) This clause applies if, on or before 19 September 2017, *AEMO* has declared a system strength-related NSCAS gap.
- (b) If this clause applies, *AEMO* may by notice *published* under this clause withdraw the declaration of the system strength-related NSCAS gap referred to in paragraph (a).
- (c) If *AEMO* withdraws a declaration under paragraph (b), *AEMO* may make a new declaration of the system strength-related NSCAS gap by notice *published* under this clause and clause 11.101.6 will apply to that new declaration.

**11.101.8 System strength services made available before the commencement date**

If a *Transmission Network Service Provider* makes *system strength services* available under this rule 11.101 in the NSCAS transition period, new clause 3.9.7, new clause 4.4.4, new clause 4.4.9C and the related definitions in new Chapter 10 apply in respect of those *system strength services* as if those provisions had commenced on the date the *system strength services* were first made available and (in the case of *system strength services* provided under clause 11.101.6) as if *AEMO* had determined a *fault level shortfall* in the system strength-related NSCAS gap.

---

[END OF RULE AS MADE]

---