

## Indicative changes to the National Electricity Rules

Indicative mark up of changes made by Schedules 1 and 2 of the *National Electricity Amendment (Calculation of system strength quantity) Rule 2024*

**Note:**

This is an indicative version of the changes to the National Electricity Rules to be made by Schedules 1 and 2 of the *National Electricity Amendment (Calculation of system strength quantity) Rule 2024*. It comprises extracts from chapters 4, 5 and 6A from version 203 of the National Electricity Rules and the new transitional provisions.

This document is provided for information purposes only. The actual amendments are set out in the *National Electricity Amendment (Calculation of system strength quantity) Rule 2024*.

The Australian Energy Market Commission does not guarantee the accuracy, reliability or completeness of this indicative mark-up of the National Electricity Rules.

## CHAPTER 4

## 4. Power System Security

### 4.6 Protection of Power System Equipment

#### 4.6.6 System strength impact assessment guidelines

- (a) AEMO must make, publish and may amend *system strength impact assessment guidelines* that:
- ~~(1) in accordance with paragraph (b), set out the methodology to be used by Network Service Providers when undertaking system strength impact assessments under clause 5.3.4B and calculating a system strength locational factor;~~
  - (1) in accordance with paragraphs (b) and (b1), set out the methodology to be used by Network Service Providers when:
    - (i) undertaking system strength impact assessments under clause 5.3.4B; and
    - (ii) calculating a system strength locational factor and system strength quantity;
  - (2) define, and provide guidance on the calculation of, *available fault levels at system strength nodes* including for the purposes of forecasts under clause 5.20C.3(f)(3) and for the calculation of the *system strength locational factor* for a *connection point*;
  - (3) prescribe, for clauses S5.2.5.15(b), S5.3.11(b) and S5.3a.7(b), the methodology for assessing the *short circuit ratio*;
  - (4) provide guidance on the information that must be provided to demonstrate compliance with the *minimum access standard* in clause S5.2.5.15(b), clause S5.3.11(b) or clause S5.3a.7(b) (as applicable), or if the procedures in clause 5.3.4A have been followed, the relevant *negotiated access standard*;
  - (5) prescribe, for the purposes of the definition of *inverter based load* in Chapter 10, the criteria for classification of a *load* as an *inverter based load*;
  - (6) prescribe, for the purposes of the definition of *large inverter based resource* in Chapter 10, the criteria for classification of an *inverter based resource* as a *large inverter based resource* which must take into account *plant* type and size and other matters AEMO considers relevant to identifying *inverter based resources* that may have a *general system strength impact* above the threshold referred to in subparagraph (b)(7);
  - (7) describe how AEMO assesses *adverse system strength impacts*; and
  - (8) provide guidance on the methodology to be used by *Network Service Providers* when undertaking modelling to verify the stability of *plant* in accordance with clause 5.3.4B(a2)(4).
- (b) For ~~subparagraph (a)(1)(i)~~subparagraph (a)(1), the *system strength impact assessment guidelines* must:
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- (1) provide for a two-stage assessment process comprising:
  - ~~(i) a preliminary assessment to screen for the need for a full assessment and calculate the applicable system strength locational factor; and~~
  - (i) a first stage in which a preliminary assessment is undertaken to screen for the need for a full assessment; and
  - ~~(ii) a full assessment to be used in the circumstances described in clause 5.3.4B(a2)(3), a second stage in which a full system strength impact assessment is undertaken;~~
- (1A) require the preliminary assessment to be carried out using a simple isolated model such as a single machine infinite bus model;
- (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 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 the *general 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 *general system strength impacts* for the purposes of clause 5.3.4B;
- (6) provide guidance about the matters that must be considered when determining whether a *connection* or alteration will result in a *general system strength impact*;
- (7) include if applicable any thresholds below which an impact may be disregarded for the purposes of clause 5.3.4B(f)(3); and
- (8) provide general guidance about options for *system strength remediation schemes* and *system strength connection works*;

(b1) For subparagraph (a)(1)(ii), the *system strength impact assessment guidelines* must:

- ~~(1)(9)~~ specify a methodology for calculation of the *system strength locational factor* for a *connection point*, which must be representative of the impedance between the *connection point* and the applicable *system strength node* and must use *available fault level* as the basis for the methodology; ~~and~~
- ~~(2)(10)~~ provide guidance about the circumstances in which a *system strength locational factor* is not reasonably able to be determined or would be manifestly excessive;

#### **Example**

Where the *system strength locational factor* tends to infinity, or where it would result in a *system strength charge* that could not reasonably be expected to be paid in

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preference to *system strength connection works* or a *system strength remediation scheme*.

(3) specify a methodology for calculation of the *system strength quantity* for a *connection point*, which must:

(i) include the use of:

(A) the *short circuit ratio* for the *connection point*; and

(B) the *rated active power*, the *rated power transfer capability* or the *maximum demand* (as applicable) for the *connection point*,

each as agreed in accordance with clause S5.2.5.15, clause S5.3.11 or clause S5.3a.7 (as applicable) and as recorded in the *relevant performance standards* for the *plant connected* at the *connection point*; and

(ii) reflect the *adverse system strength impact* of a new *connection* or *alteration* to a *connected plant* as well as any additional amount by which it reduces the *available fault level* at the *connection point* for the new *connection* or *connected plant*,

so as to produce a result that is an approximation of the level of impact that would be required to be remedied or avoided by a *system strength remediation scheme* for that *connection point*, as assessed by AEMO having regard to the need to avoid a full *system strength impact assessment*; and

(4) provide guidance on the inputs and assumptions that may be used by a *Network Service Provider* when calculating an indicative *system strength quantity* in accordance with clause 5.3.4B(a2)(2A).

- (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 person seeking a *connection* or proposing to alter *connected plant* referred to in clause 5.3.4B(a) who requests the model in connection with a *system strength impact assessment*.
- (f) If AEMO receives a request under paragraph (e) from a person seeking a *connection* or proposing to alter *connected plant* referred to in clause 5.3.4B(a):
- (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(l)(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).

**CHAPTER 5**

## 5. Network Connection Access, Planning and Expansion

### Part B Network Connection and Access

#### 5.3 Establishing or Modifying Connection

##### 5.3.4B System strength mitigation requirement

- (a) This clause applies in relation to:
- (1) a proposed new *connection* of a *generating system* or *market network service facility* to which rule 5.3 or 5.3A applies;
  - (2) a proposed new *connection* for a *Network User* to whom schedule 5.3 applies where the *facility* to be *connected* includes an *inverter based resource*; and
  - (3) a proposed alteration to a *generating system* where clause 5.3.9 applies or to other *connected plant* where clause 5.3.12 applies.
- (a1) In this clause, a reference to a *Connection Applicant* includes a reference to a *Generator* to whom clause 5.3.9 applies and a *Network User* or *Market Network Service Provider* to whom clause 5.3.12 applies.
- (a2) For each proposed new *connection* or proposed alteration to a *generating system* or other *connected plant* to which this clause applies, a *Network Service Provider* must:
- (1) undertake a preliminary *system strength impact assessment* in accordance with the *system strength impact assessment guidelines*;
  - (2) subject to paragraph (a3), calculate the *system strength locational factor* for the new *connection* or proposed alteration in accordance with the *system strength impact assessment guidelines*;
  - (2A) subject to paragraph (a3), calculate, in accordance with the system strength impact assessment guidelines, the indicative system strength quantity;
  - (3) undertake a full *system strength impact assessment* following the preliminary assessment, unless:
    - (i) the preliminary assessment indicates there will be no *general system strength impact* or the impact is below any threshold specified in the *system strength impact assessment guidelines* for the purposes of paragraph (f)(3); or
    - (ii) where applicable, the *Connection Applicant* has elected in accordance with paragraph (b1) to pay the *system strength charge* in relation to the *connection*; and
  - (4) where the *Connection Applicant* has elected in accordance with paragraph (b1) to pay the *system strength charge* in relation to the *connection* or proposed alteration, undertake modelling in accordance
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with the *system strength impact assessment guidelines* to verify the stability of the *plant*.

**Note**

This paragraph is classified as a tier 2 civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (a3) A *Network Service Provider*:
- (1) is not required to calculate the *system strength locational factor* where it determines in accordance with the *system strength impact assessment guidelines* that a *system strength locational factor* cannot reasonably be calculated or would be manifestly excessive; and
  - (2) is not required to calculate an indicative *system strength quantity* if, in accordance with subparagraph (1), it is not required to calculate the *system strength locational factor*.
- (a4) A *Connection Applicant* ~~in receipt of the *Network Service Provider's* calculation of the *system strength locational factor*~~ may request the *Network Service Provider* to undertake a further preliminary *system strength impact assessment* in accordance with the *system strength impact assessment guidelines* and provide a revised *system strength locational factor* and a revised indicative *system strength quantity* for a new *connection* or proposed alteration to a *generating system* or other *connected plant*. ~~The *Network Service Provider* may require payment of a fee to meet the reasonable costs anticipated to be incurred by the *Network Service Provider* in undertaking any further preliminary assessment.~~

**Note**

This paragraph is classified as a tier 2 civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (a5) A *Network Service Provider* may require payment of a fee to meet the reasonable costs anticipated to be incurred by the *Network Service Provider* in undertaking any further preliminary assessment or providing a revised *system strength locational factor* or a revised indicative *system strength quantity* requested under paragraph (a4).
- (b) The *Network Service Provider* must give the results of the preliminary assessment and where applicable the full assessment to the *Connection Applicant* concerned following consultation with *AEMO*.
- (b1) A *Connection Applicant* must elect in its *application to connect*, its submission under clause 5.3.9(b) or its submission under clause 5.3.12(b) (as applicable) whether the *system strength charge* will be payable in relation to the new *connection* or alteration to the *generating system* or other *connected plant* (as applicable). The election cannot be revoked.
- (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 (a2)(3);
- (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 (a2)(3); and
- (5) a *Network User* or *Market Network Service Provider* who proposes an alteration to *connected plant* to which clause 5.3.12 applies and for which a full assessment is required under paragraph (a2)(3),

may be determined under rule 8.2.

- (d) Paragraph (c) applies to any dispute relating to the assessment of the *general 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* if the full assessment undertaken in accordance with the *system strength impact assessment guidelines* indicates that the *Connection Applicant's* proposed new *connection* or proposed alteration will have a *general system strength impact*.

**Note**

This paragraph is classified as a tier 2 civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (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 *general 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 *Connection Applicant* in accordance with its *connection agreement*;
    - (3) to the extent that the impact is below any threshold specified in the *system strength impact assessment guidelines* for this purpose; or
    - (4) the *Connection Applicant* has elected for the *system strength charge* to be payable in relation to the new *connection* or proposed alteration.
  - (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) or under clause 5.3.12(b)(4).
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- (h) A *Connection Applicant* proposing to install *plant* as part of a *system strength remediation scheme* must include a description of the *plant* 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.

**Note**

This paragraph is classified as a tier 2 civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (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.

**Note**

This paragraph is classified as a tier 2 civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (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):
  - (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.
- (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).

**Note**

This paragraph is classified as a tier 2 civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

**5.3.4C Information about system strength connection points**

- (a) A *Network Service Provider* for a *system strength connection point* who is not also the *System Strength Service Provider* for the *system strength connection point* must notify the information in paragraph (b) to the relevant *System Strength Service Provider* within 10 *business days* of either of the following occurring:
  - (1) an election being made under clause 5.3.4B(b1) for the *system strength charge* to be payable in relation to a new *connection* or proposed alteration; or
  - (2) agreement being reached under clause 5.3.9 or clause 5.3.12 to vary the performance of *plant* at a *system strength connection point*, relative to the technical requirements in clause S5.2.5.15, clause S5.3.11 or clause S5.3a.7 (as applicable).
- (b) The *Network Service Provider* must notify ~~the~~:
  - (1) the system strength locational factor;
  - (2) its calculation of the indicative system strength quantity; short-circuit ratio and rated active power, rated power transfer capability or maximum demand for the system strength connection point agreed in accordance with clause S5.2.5.15, clause S5.3.11 or clause S5.3a.7 (as applicable);
  - (3) the expected date from which the *system strength charge* for the *connection* will commence or the amendment take effect; and
  - (4) information reasonably required by the *System Strength Service Provider* to identify the relevant *connection*.
- (b1) A *Network Service Provider* for a *system strength connection point* who is not also the *System Strength Service Provider* for the *system strength connection point* must notify to the relevant *System Strength Service Provider*, within 20 *business days* of execution of the *connection agreement* for the *connection point*, the *short circuit ratio* and *rated active power*, *rated power transfer capability* or *maximum demand* for the *system strength*

[connection point agreed in accordance with clause S5.2.5.15, clause S5.3.11 or clause S5.3a.7 \(as applicable\).](#)

- (c) A *Network Service Provider* for a *system strength connection point* must, within 20 *business days* of a request of the relevant *System Strength Service Provider*:
  - (1) calculate in accordance with the *system strength impact assessment guidelines* and notify to the *System Strength Service Provider*, the *system strength locational factor* applicable to the *system strength connection point* for each year of the *system strength charging period* specified by the *System Strength Service Provider*; and
  - (2) provide any other information reasonably required by the *System Strength Service Provider* for the purposes of calculating and billing *system strength charges* for the *system strength connection point*.
- (d) A *System Strength Service Provider* must establish and maintain arrangements to enable other *Network Service Providers* to provide information to the *System Strength Service Provider* in accordance with this clause 5.3.4C.
- (e) A *System Strength Service Provider* must establish and maintain a record of all *connections* subject to the *system strength charge* and for which it is the *System Strength Service Provider* and must include in the record all information reasonably required by the *System Strength Service Provider* to identify the relevant *connection* for the purposes of calculating and billing *system strength charges*.

### **5.3.9 Procedure to be followed by a Generator proposing to alter a generating system**

- (a) Subject to paragraph (a1), 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 the *Network Service Provider* and *AEMO* (in relation to *AEMO advisory matters*) 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 a *general system strength impact*; or
    - (3) will, in *AEMO's* reasonable opinion, adversely affect *network capability, power system security, quality or reliability of supply, inter-regional power transfer capability* or the use of a *network* by another *Network User*.
  - (a1) This clause 5.3.9 does not apply in relation to any modifications made to a *generating system* by a *Scheduled Generator* or *Semi-Scheduled Generator* in order to comply with the *Primary Frequency Response Requirements* as applicable to that *generating system*.
  - (b) A *Generator* to which this clause applies, must submit to the *Network Service Provider* with a copy to *AEMO*:
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- (1) a description of the nature of the alteration and the timetable for implementation;
- (2) in respect of the proposed alteration to the *generating system*, details of the *generating unit* design data and *generating unit* setting data in accordance with the *Power System Model Guidelines*, *Power System Design Data Sheet* and *Power System Setting Data Sheet*;

**Note**

This subparagraph is classified as a tier 2 civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (3) in relation to each relevant technical requirement for which the proposed alteration to the equipment will affect the performance of the *generating system*, the proposed amendments to the *plant's* existing corresponding *performance standard* for that technical requirement; and
  - (4) where relevant, the *Generator's* proposed *system strength remediation scheme* or its election for the *system strength charge* to be payable in relation to the alteration.
- (c) Clause 5.3.4A applies to a submission by a *Generator* under subparagraph (b)(3).
- (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 and (subject to clause 5.3.4B(a3)) calculate the *system strength locational factor* and *indicative system strength quantity* in accordance with clause 5.3.4B(a2) in accordance with the *system strength impact assessment guidelines* before making a submission under paragraph (b).
- (d) Without limiting paragraph (a), a proposed alteration to the equipment specified in column 1 of the table set out below is deemed to affect the performance of the *generating system* relative to technical requirements specified in column 2, thereby necessitating a submission under subparagraph (b)(3), unless *AEMO* and the *Network Service Provider* otherwise agree.

| Column 1 (altered equipment)     | Column 2 (clause)  |
|----------------------------------|--|
| machine windings                 | S5.2.5.1, S5.2.5.2, S5.2.8   |
| power converter                  | S5.2.5.1, S5.2.5.2, S5.2.5.5, S5.2.5.12, S5.2.5.13, S5.2.8, 5.2.5.15 |
| reactive compensation plant      | S5.2.5.1, S5.2.5.2, S5.2.5.5, S5.2.5.12, S5.2.5.13                   |
| <i>excitation control system</i> | S5.2.5.5, S5.2.5.7, S5.2.5.12, S5.2.5.13                             |

| Column 1 (altered equipment)                | Column 2 (clause)   |
|---|---|
| <i>voltage control system</i>               | S5.2.5.5, S5.2.5.7, S5.2.5.12, S5.2.5.13  |
| <i>governor control system</i>              | S5.2.5.7, S5.2.5.11, S5.2.5.14  |
| <i>power control system</i>                 | S5.2.5.11, S5.2.5.14  |
| <i>protection system</i>                    | S5.2.5.3, S5.2.5.4, S5.2.5.5, S5.2.5.7, S5.2.5.8, S5.2.5.9, S5.2.5.10, 5.2.5.16 |
| <i>auxiliary supplies</i>                   | S5.2.5.1, S5.2.5.2, S5.2.7  |
| <i>remote control and monitoring system</i> | S5.2.5.14, S5.2.6.1, S5.2.6.2   |

- (e) The *Network Service Provider* may as a condition of considering a submission made under paragraph (b), require payment of a fee to meet the reasonable costs anticipated to be incurred by the *Network Service Provider*, other *Network Service Providers* and *AEMO*, in the assessment of the submission.
- (f) The *Network Service Provider* must require payment of a fee under paragraph (e) if so requested by *AEMO*.
- (g) On payment of the required fee referred to in paragraph (e), the *Network Service Provider* must pay such amounts as are on account of the costs anticipated to be incurred by the other *Network Service Providers* and *AEMO*, as appropriate.
- (h) If the application of this clause 5.3.9 leads to a variation to an existing *connection agreement* the *Network Service Provider* and the *Generator* must immediately jointly advise *AEMO*, including the details of any *performance standards* amended pursuant to this clause 5.3.9.

**Note**

This paragraph is classified as a tier 2 civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

**5.3.12 Procedure to be followed for alterations to other connected plant**

- (a) This clause 5.3.12 applies where a *Network User* specified in clause S5.3.11(a) or a *Market Network Service Provider* specified in clause S5.3a.1a proposes to alter *connected plant* and that alteration will affect the performance of the *plant* relative to the technical requirements in clause S5.3.11 or clause S5.3a.7 (as applicable).
  - (b) A *Network User* or *Market Network Service Provider* to whom this clause applies, must submit to the *Network Service Provider* with a copy to *AEMO*:
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- (1) a description of the nature of the alteration and the timetable for implementation;
  - (2) in respect of the proposed alteration to the *plant*, details of the design setting data in accordance with the *Power System Model Guidelines*, *Power System Design Data Sheet* and *Power System Setting Data Sheet*;
  - (3) in relation to the technical requirements in clause S5.3.11 or clause S5.3a.7 (as applicable), the proposed amendments to the *plant's* existing corresponding *performance standard* for that technical requirement; and
  - (4) the *Network User's* or *Market Network Service Provider's* proposed *system strength remediation scheme* or its election for the *system strength charge* to be payable in relation to the alteration.
- (c) Clause 5.3.4A applies to a submission under subparagraph (b)(3).
- (d) Clause 5.3.4B applies to a submission under subparagraph (b)(4). A *Network User* or *Market Network Service Provider* (as applicable) may request the *Network Service Provider* to undertake a preliminary assessment and (subject to clause 5.3.4B(a3)) calculate the *system strength locational factor* and *indicative system strength quantity* in accordance with clause 5.3.4B(a2) ~~in accordance with the *system strength impact assessment guidelines*~~ before making a submission under paragraph (b).
- (e) The *Network Service Provider* may as a condition of considering a submission made under paragraph (b), require payment of a fee to meet the reasonable costs anticipated to be incurred by the *Network Service Provider*, other *Network Service Providers* and *AEMO*, in the assessment of the submission.
- (f) The *Network Service Provider* must require payment of a fee under paragraph (e) if so requested by *AEMO*.
- (g) On payment of the required fee referred to in paragraph (d), the *Network Service Provider* must pay such amounts as are on account of the costs anticipated to be incurred by the other *Network Service Providers* and *AEMO*, as appropriate.
- (h) If the application of this clause 5.3.12 leads to a variation to the agreed technical requirements in clause S5.3.11 or clause S5.3a.7 (as applicable) in an existing *connection agreement*, the *Network Service Provider* and the *Network User* or *Market Network Service Provider* (as applicable) must immediately jointly advise *AEMO*, including the details of any *performance standards* amended pursuant to this clause 5.3.12.

## **5.3A Establishing or modifying connection - embedded generation**

### **5.3A.3 Publication of Information**

- (a) A *Distribution Network Service Provider* must *publish* the following in the same location on its website:
- (1) an enquiry form for *connection* of an *embedded generating unit*;
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- (2) a register of completed embedded generation projects under rule 5.18B; and
  - (3) an *information pack*.
- (b) An *information pack* must include:
- (1) a description of the process for lodging an *application to connect* for an *embedded generating unit*, including:
    - (i) the purpose of each stage of the *connection* enquiry and application processes;
    - (ii) the steps a *Connection Applicant* will need to follow at each stage of the *connection* enquiry and application processes;
    - (iii) the information that is to be included by the *Connection Applicant* with a *connection* enquiry and the information that will be made available to the *Connection Applicant* by the *Distribution Network Service Provider* at each stage of the *connection* enquiry;
    - (iv) the information that is to be included with an *application to connect* and the type of information that will be made available to the *Connection Applicant* by the *Distribution Network Service Provider* after lodgement of the application;
    - (v) the factors taken into account by the *Distribution Network Service Provider*, at each stage of the *connection* enquiry and application, when assessing an *application to connect* for an *embedded generating unit*;
    - (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 where applicable, in determining the *system strength locational factor* and the indicative system strength quantity; and
    - (vii) a list of services, if any, relevant to the *connection* that are *contestable* in the relevant *participating jurisdiction*;
  - (2) single line diagrams of the *Distribution Network Service Provider's* preferred *connection* arrangements, and a range of other possible *connection* arrangements for integration of an *embedded generating unit*, showing the *connection point*, the point of common coupling, the *embedded generating unit(s)*, *load(s)*, *meter(s)*, circuit breaker(s) and isolator(s);
  - (3) a sample schematic diagram of the *protection system* and *control system* relevant to the *connection* of an *embedded generating unit* to the *distribution network*, showing the *protection system* and *control system*, including all relevant current circuits, relay potential circuits, alarm and monitoring circuits, back-up systems and parameters of protection and *control system* elements;
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- (4) worked examples of *connection service* charges, enquiry and application fees for the *connection* of *embedded generating units*, based on the preferred and possible *connection* arrangements set out in paragraph (b)(2);
  - (5) details of any *minimum access standards* or *plant standards* the *Distribution Network Service Provider* considers are applicable to *embedded generating units* and *generating plant*;
  - (6) technical requirements relevant to the processing of a *connection* enquiry or an *application to connect*, including information of the type, but not limited to:
    - (i) *protection systems* and protection schemes;
    - (ii) fault level management principles;
    - (iii) *reactive power capability* and *power factor* correction;
    - (iv) power quality and how limits are allocated;
    - (v) responses to *frequency* and *voltage* disturbances;
    - (vi) *voltage* control and regulation;
    - (vii) *remote monitoring equipment*, control and communication requirements;
    - (viii) earthing requirements and other relevant safety requirements;
    - (ix) circumstances in which *augmentation* may be required to facilitate integration of an *embedded generating unit* into the *network*;
    - (x) commissioning and testing requirements; and
    - (xi) circumstances in which a *system strength remediation scheme* or *system strength connection works* will be required as a condition of *connection*; and
  - (7) model *connection agreements* used by that *Distribution Network Service Provider*.
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**CHAPTER 6A**

## 6A. Economic Regulation of Transmission Services

### Part J Prescribed Transmission Services - Regulation of Pricing

#### 6A.23 Pricing Principles for Prescribed Transmission Services

##### 6A.23.5 System strength charge

- (a) This clause applies to a *Transmission Network Service Provider* who is a *System Strength Service Provider*.
- (b) In this clause:  

**system strength charging period** means, for a *System Strength Service Provider*, each period running from the start of the second *regulatory year* in a *regulatory control period* of the *System Strength Service Provider* to the end of the first *regulatory year* in its next *regulatory control period*.
- (c) The *pricing methodology* of a *Transmission Network Service Provider* who is a *System Strength Service Provider* must provide for the *System Strength Transmission Service User* for a *system strength connection point* to pay an *annual system strength charge* for the *system strength connection point* determined in accordance with this rule, in equal monthly instalments from the time determined in accordance with the *pricing methodology guidelines*.
- (d) If the obligation to pay the *system strength charge* in relation to a *system strength connection point* commences part way through a *regulatory year*, the *System Strength Service Provider* must calculate the monthly instalments of the *annual system strength charge* for the remaining months of the *regulatory year* on a pro rata basis.
- (e) The *annual system strength charge* for a *system strength connection point* for a *regulatory year* must be calculated in accordance with the following formula:

$$SSC = SSUP \times SSL \times SSQ$$

where:

SSC is the *annual system strength charge* for the *regulatory year* (in \$);

SSUP is the *system strength unit price* of the *System Strength Service Provider* for the *system strength charging period* in which the *regulatory year* falls (in \$/MVA) and for the *system strength node* used to determine the *system strength locational factor* for the *system strength connection point*;

SSL is the *system strength locational factor* applicable to the *system strength connection point* for the *system strength charging period* in which the *regulatory year* falls, determined in accordance with paragraph (h); and

SSQ is the *system strength quantity* for the *system strength connection point*, determined in accordance with paragraph (j) (in MVA).

- (f) The *system strength unit price* of a *System Strength Service Provider* for a *system strength node* must be the same for each *regulatory year* in a *system strength charging period* except to the extent the *pricing methodology guidelines* permit indexation.
- (g) A *System Strength Service Provider* must determine the *system strength node* used to determine the *system strength locational factor* for a *system strength connection point* in accordance with the *system strength impact assessment guidelines*.
- (h) The *system strength locational factor* applicable to a *system strength connection point* is determined by the *Network Service Provider* for the *system strength connection point*. Where:
  - (1) the *System Strength Service Provider* is also the *Network Service Provider* for the *system strength connection point*, the *System Strength Service Provider* must calculate the *system strength locational factor* applicable to each *system strength connection point* for which it is the *Network Service Provider* for each year of a *system strength charging period* in accordance with the *system strength impact assessment guidelines*; and
  - (2) the *System Strength Service Provider* is not the *Network Service Provider* for the *system strength connection point*, the *System Strength Service Provider* must request the relevant *Network Service Provider* under clause 5.3.4C(c) to calculate and notify to the *System Strength Service Provider* the *system strength locational factor*.
- (i) A *System Strength Service Provider* must not change the *system strength locational factor* used to calculate the *system strength charge* for a *system strength connection point* during a *system strength charging period*.
- (j) Subject to paragraph (k), the *system strength quantity* for a *system strength connection point* ~~is the product of:~~ must be calculated by the *System Strength Service Provider* for the *system strength connection point* in accordance with the methodology in the applicable version of the *system strength impact assessment guidelines* as determined under paragraph (j1)-using:
  - (1) the *short circuit ratio*; and
  - (2) the *rated active power*, *rated power transfer capability* or *maximum demand* for the *system strength connection point*,each as agreed in accordance with clause S5.2.5.15, clause S5.3.11 or clause S5.3a.7 (as applicable) and recorded in the relevant *performance standards* for the *plant connected* at the *system strength connection point*.
- (j1) The applicable version of the *system strength impact assessment guidelines* for a *system strength connection point* is the version that was in effect:

- (1) subject to subparagraph (2), at the time the election to pay the *system strength charge* was notified under clause 5.3.4B(b1) in respect of the *system strength connection point*; or
  - (2) where the *connected plant* has been altered and clause 5.3.9 or 5.3.12 applied in respect of that alteration, at the time the latest election to pay the *system strength charge* was notified under clause 5.3.4B(b1) in respect of the *system strength connection point*.
- (k) If a change to the *short circuit ratio, rated active power, rated power transfer capability or maximum demand* (as applicable) the *system strength quantity* for a *system strength connection point* (as recorded in the *performance standards applicable to the plant connected at the system strength connection point*) comes into effect part way through a *regulatory year*, the *System Strength Service Provider* must calculate the monthly instalments of the *annual system strength charge* for the remaining months of the *regulatory year* using the new *system strength quantity*.
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**CHAPTER 11**

## 11. Savings and Transitional Rules

### Part ZZZZZI 2024 Savings and Transitional Rules

#### **11.163 Rules consequential on the making of the National Electricity Amendment (Calculation of system strength quantity) Rule 2024**

##### **11.163.1 Definitions**

In this rule 11.163:

**Amending Rule** means the *National Electricity Amendment (Calculation of system strength quantity) Rule 2024*.

**effective date** means 1 July 2024, being the date of commencement of Schedule 1 of the Amending Rule.

**existing application to connect** has the meaning given in clause 11.163.5(a)(1).

**existing connection enquiry** has the meaning given in clause 11.163.4(a)(1).

**existing payment election** has the meaning given in clause 11.163.6(a).

**new clause 6A.23.5(j)** means clause 6A.23.5(j) as in effect on and from the effective date.

**new clause 6A.23.5(j1)** means clause 6A.23.5(j1) as in effect on and from the effective date.

**new system strength impact assessment guidelines** means the *system strength impact assessment guidelines* published by AEMO in accordance with rule 11.163.2.

**old clause 6A.23.5(j)** means clause 6A.23.5(j) as in effect prior to the effective date.

##### **11.163.2 Amendments to the system strength impact assessment guidelines**

(a) By 30 June 2024, AEMO must update and publish the *system strength impact assessment guidelines* to take into account the Amending Rule.

(b) Changes to the *system strength impact assessment guidelines* made in accordance with paragraph (a) must come into effect on the effective date.

##### **11.163.3 Saving of previous connection milestones**

The Amending Rule does not affect the validity of a *connection enquiry, application to connect, offer to connect* or other matter under Chapter 5.

##### **11.163.4 Indicative system strength quantity for existing connection enquiries**

(a) This clause applies where, before the effective date, a *Connection Applicant* has:

(1) made a *connection enquiry* to a *Network Service Provider* in accordance with clause 5.3.2 or 5.3A.5 (**existing connection enquiry**); and

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(2) not made an application to connect to the Network Service Provider.

- (b) If a response to the existing connection enquiry was provided before the effective date, the Network Service Provider must as soon as practicable after that date notify to the Connection Applicant the indicative system strength quantity for the plant the subject of the existing connection enquiry calculated using the new system strength impact assessment guidelines.

### **11.163.5 Where a Connection Applicant elected not to pay the system strength charge**

- (a) This clause applies where, in respect of plant that a Connection Applicant proposes to connect:

(1) before the effective date, the Connection Applicant made an application to connect to a Network Service Provider (existing application to connect);

(2) the Connection Applicant has not entered into a connection agreement with the relevant Network Service Provider in respect of the existing application to connect;

(3) the existing application to connect is not one where, under clause 5.3.4B(a3), the Network Service Provider is not required to calculate the system strength locational factor; and

(4) in the existing application to connect, the Connection Applicant made an election under clause 5.3.4B(b1) that the system strength charge will not be payable in relation to the new connection or alteration to the generating system or other connected plant (as applicable).

- (b) Despite anything to the contrary in clause 5.3.4B(b1), the Connection Applicant may change its election under that clause by notice to the Network Service Provider under this clause within 20 business days after the effective date. The new election cannot be revoked.

- (c) The Network Service Provider must within 10 business days after the effective date, notify the Connection Applicant for the existing application to connect of the opportunity to change its election by giving a notice in accordance with paragraph (b).

- (d) If a Connection Applicant gives a notice in accordance with paragraph (b) changing its election, the election has effect as if it had been made as part of its existing application to connect except that for clause 5.3.4C(a), the time for notifying the election to the System Strength Service Provider is 10 business days after the election being made under paragraph (b).

### **11.163.6 Existing payment election**

- (a) This clause applies where, before the effective date, a Connection Applicant made an election under clause 5.3.4B(b1) that the system strength charge will be payable in relation to a connection or alteration to the generating system or other connected plant (as applicable) (existing payment election).

- (b) Despite new clause 6A.23.5(j), the *system strength quantity* for the *system strength connection point* in respect of which the existing payment election was made:
  - (1) for any period prior to the effective date, must be determined in accordance with old clause 6A.23.5(j); and
  - (2) for any period after that, must be determined in accordance with new clause 6A.23.5(j).
- (c) For paragraph (b)(2) and new clause 6A.23.5(j1), the new system strength impact assessment guidelines will be taken to have been in effect at the time the existing payment election was notified under clause 5.3.4B(b1).