



Draft

**Electricity transmission network service  
providers**

**Service target performance incentive  
scheme**

November 2007

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# Contents

<b>1. Nature and authority.....</b>	<b>1</b>
1.1 Introduction.....	1
1.2 Authority.....	1
1.3 Role of this scheme.....	1
1.4 AER objectives.....	1
1.5 Confidentiality.....	2
1.6 Definitions and interpretation.....	2
1.7 Processes for revision.....	2
1.8 Version history and effective date.....	2
<b>2. The service target performance incentive scheme.....</b>	<b>3</b>
2.1 General application of the scheme.....	3
2.2 Structure of the scheme.....	3
2.3 Addition, removal or variation of parameters.....	3
2.4 Timing of performance.....	5
2.5 Adjustments to maximum allowed revenue.....	5
<b>3. Service component.....</b>	<b>6</b>
3.1 Performance incentive scheme parameters.....	6
3.2 Other elements relating to parameters.....	6
3.3 Values for parameters.....	6
3.4 Adjustments to maximum allowed revenue.....	8
3.5 Weighting of parameters.....	8
<b>4. Market impact component.....</b>	<b>10</b>
4.1 Performance incentive scheme parameters.....	10
4.2 Values for parameters.....	10
4.3 Adjustments to maximum allowed revenue.....	11
<b>5. Information and reporting requirements.....</b>	<b>12</b>
5.1 Information for the transmission determination.....	12
5.2 Information for annual compliance.....	12
5.3 Annual review.....	12
5.4 Changes in data collection.....	12
<b>Glossary.....</b>	<b>14</b>
<b>Appendix A: Service target performance component—performance incentive scheme parameters—standard definitions.....</b>	<b>16</b>
<b>Appendix B: Service target performance component—performance incentive scheme parameters and definitions applicable to individual TNSPs.....</b>	<b>20</b>
Part 1—SP AusNet.....	20
Part 2—ElectraNet.....	22
Part 3—Transend.....	28
Part 4—TransGrid.....	32
Part 5—EnergyAustralia.....	36
Part 6—Murraylink.....	39
Part 7—Directlink.....	40

Part 8—Powerlink.....	43
Part 9—VENCorp.....	46
<b>Appendix C: Market impact performance component—performance incentive scheme parameter .....</b>	<b>47</b>
<b>Appendix D: Adjustments to allowed revenue.....</b>	<b>49</b>
Calculating allowed revenue.....	49
The financial incentive.....	49
The service standards factor.....	50
Worked example .....	50
Calculating the financial incentive.....	51
Calculating the allowed revenue.....	51
Adjustments to the financial incentive formula .....	51
Overlap between regulatory control periods.....	51
Where performance is measured over part of a calendar year.....	52
SP AusNet.....	52
<b>Appendix E: Definition of force majeure.....</b>	<b>53</b>

# 1. Nature and authority

## 1.1 Introduction

Consistent with the requirements of clause 6A.7.4 of the National Electricity Rules (NER), this publication sets out the Australian Energy Regulator's (AER) *service target performance incentive scheme*.

## 1.2 Authority

Clause 6A.7.4 of the NER requires the AER to develop, in accordance with the *transmission consultation procedures*, the *service target performance incentive scheme*.

## 1.3 Role of this scheme

- (a) This *scheme*:
- (1) defines the performance incentive scheme parameters that specify how a transmission network service provider's (TNSP) network reliability and market impact is measured
  - (2) sets out the requirements with which the values to be attributed to the *parameters* must comply
  - (3) will be used by the AER to decide the service target performance financial reward or penalty component of a *transmission determination*
  - (4) provides guidance about the approach the AER will take in reviewing a TNSP's service target performance and explain how this will affect a TNSP's *maximum allowed revenue*.
- (b) The obligation of a TNSP to comply with this *scheme*:
- (1) is additional to any obligation imposed under any other law applying to a TNSP, and
  - (2) does not derogate from such an obligation.

## 1.4 AER objectives

AER objectives for this *scheme* are that it:

- (a) contributes to the achievement of the *national electricity market objective*
- (b) is consistent with the principles in clause 6A.7.4(b) of the NER
- (c) promotes transparency in:
  - (1) the information provided by a TNSP to the AER, and

- (2) the decisions made by the AER
- (d) assists in the setting of efficient capital and operating expenditure allowances in its *transmission determinations* by balancing the incentive to reduce actual expenditure with the need to maintain and improve *reliability* for customers and reduce the market impact of transmission congestion.

## **1.5 Confidentiality**

The AER's obligations regarding confidentiality and the disclosure of information provided to it by a TNSP are governed by the *Trade Practices Act 1974*, the National Electricity Law and the NER.

## **1.6 Definitions and interpretation**

- (a) In this *scheme*, the words and phrases presented in italics have the meaning given to them in:
  - (1) the glossary, or
  - (2) if not defined in the glossary, the NER.
- (b) Explanations in this *scheme* about why certain information is required are provided for guidance only.

## **1.7 Processes for revision**

The AER may amend or replace this *scheme* from time to time in accordance with clause 6A.7.4(f) of the NER and the *transmission consultation procedures*.

## **1.8 Version history and effective date**

A version number and an effective date of issue will identify every version of this *scheme*.

## 2. The service target performance incentive scheme

### 2.1 General application of the scheme

- (a) The *parameters* for each TNSP and the maximum revenue increment or decrement that a TNSP can receive for a given level of performance are prescribed in this *scheme*.
- (b) In each *transmission determination* the AER will approve or set the values, *weightings* and *other elements* that will apply to the TNSP's *parameters* for the *regulatory control period*.
- (c) The *maximum allowed revenue* that a TNSP can earn in each *regulatory year* will be adjusted according to its performance against the values included in its *transmission determination*, as assessed by the AER in accordance with this *scheme*.

### 2.2 Structure of the scheme

- (a) This *scheme* comprises the following two components:
  - (1) the *service component*
  - (2) the *market impact component*.

The *service component* applies to each TNSP subject to the *scheme*. The *market impact component* applies to each TNSP subject to the *scheme* except VENCORP, Transend and EnergyAustralia.<sup>1</sup>

- (b) These components set out:
  - (1) the *parameters* that apply to each TNSP
  - (2) the requirements with which the values to be attributed to the *parameters* must comply, and
  - (3) the maximum revenue increment or decrement that a TNSP may receive under each component of the *scheme*.

### 2.3 Addition, removal or variation of parameters

- (a) In accordance with clause 6A.7.4 of the NER and the *transmission consultation procedures*, the AER may amend this *scheme* to include

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<sup>1</sup> The market impact component will apply to TransGrid at the regulatory control period commencing 1 July 2009, Powerlink at 1 July 2012, Murraylink and ElectraNet at 1 July 2013, SP AusNet at 1 April 2014 and Directlink at 1 July 2015.

additional *parameters*, remove *parameters*, or to vary the definitions in appendix A, appendix B or appendix C. The *parameters* and definitions can vary between TNSPs.

- (b) While this *scheme* can be amended at any time, an amendment cannot apply to a TNSP for a *regulatory control period* unless it is promulgated no less than 15 months before the commencement of that *regulatory control period* (the ‘cut off date’).
- (c) Amendments to this *scheme* can be initiated by the AER or proposed by a TNSP. However, a TNSP that wants the AER to amend this scheme for the TNSP’s next *regulatory control period* will need to submit proposed amendments to the AER in the timeframes and in the manner set out below. This will apply where, for example, a TNSP wishes to propose amendments to:
  - (1) add, remove or vary a *parameter*
  - (2) vary the definition of a *parameter*, or
  - (3) vary the maximum revenue increment or decrement that the TNSP may receive under the *service component* or the *market impact component*.
- (d) In order to ensure that the *transmission consultation procedures* can be completed before the cut off date, a TNSP must submit any proposed amendments to the AER at least 22 months before the commencement of the next *regulatory control period* (i.e. nine months before its *revenue proposal* is due to be lodged with the AER).
- (e) A proposal by a TNSP to amend this *scheme* to add or vary a *parameter* or vary the definition of an existing *parameter* must:
  - (1) demonstrate how the proposed amendment is consistent with the objectives in clause 1.4 of this *scheme*
  - (2) provide information and quantitative data on its performance history of at least the most recent three to five years as measured by its proposed *parameter*, and
  - (3) where this performance history information is not available, provide an appropriate benchmark or methodology to set values for the proposed *parameter*.
- (f) A proposal by a TNSP to amend this *scheme* to:
  - (1) remove a *parameter*, or
  - (2) vary the maximum revenue increment or decrement that a TNSP may receive under the *service component* or the *market impact component*

must demonstrate how the proposed amendment is consistent with the objectives in clause 1.4 of this *scheme*.



## 2.4 Timing of performance

- (a) TNSPs must measure their performance against the *parameters* and values applicable to the TNSP under this *scheme* on a calendar year basis within the *regulatory control period*. Unless stated otherwise in this *scheme*, the *calendar year* for each TNSP will run between 1 January and 31 December during a *regulatory control period*.
- (b) Where a TNSP's *regulatory control period*:
  - (1) commences after 1 January (the beginning of the *calendar year*), the TNSP must measure its performance for that *calendar year* from the commencement of the *regulatory control period* until 31 December of that year
  - (2) ceases before 31 December (the end of the *calendar year*), the TNSP must measure its performance for that *calendar year* from 1 January until the end of the *regulatory control period*.

## 2.5 Adjustments to maximum allowed revenue

- (a) The maximum revenue increment or decrement that a TNSP can receive for a given level of performance against its *parameters* and values is set out in clauses 3.4 and 4.3 of this *scheme*
- (b) The *s-factor* and *financial incentive* adjustment to the *maximum allowed revenue* for each TNSP will be calculated and approved annually by the AER in accordance with appendix D.
- (c) This *scheme* does not operate retrospectively. An adjustment to a TNSP's *maximum allowed revenue* can only be made as a result of its performance in a period where *parameters* and values have been established under the *scheme* for the TNSP in advance of the relevant period.

## 3. Service component

### 3.1 Performance incentive scheme parameters

- (a) Appendix A contains standard definitions of the following *parameters*:
  - (1) transmission circuit availability
  - (2) loss of supply event frequency
  - (3) average outage duration.
- (b) Appendix B prescribes and, subject to clause 3.2, defines the *parameters* applicable to individual TNSPs under this *service component*. Appendix B may specify that no *parameters* apply to a TNSP under this *service component*.
- (c) If a TNSP is not referred to in appendix B, the *parameters* and standard definitions in appendix A apply to that TNSP under this *service component*.

### 3.2 Other elements relating to parameters

Appendix B may provide that, with respect to a TNSP, elements relating to a *parameter* are to be established in the *transmission determination* for that TNSP (the *other elements*). These *other elements* may include the definition, unit of measure, source of data, exclusions and inclusions relating to the *parameter*. Where appendix B explicitly states that an element is to be established in the *transmission determination*:

- (a) the TNSP must, in its *revenue proposal*, propose the *other elements*, and
- (b) the AER will assess the proposed *other elements* against the objectives in clause 1.4 of this *scheme* and either:
  - (1) approve the *other elements* proposed by the TNSP, or
  - (2) substitute the *other elements* which, in the AER's opinion, best satisfy the objectives in clause 1.4 of this *scheme*.

### 3.3 Values for parameters

- (a) A TNSP must submit, in its *revenue proposal*, proposed values for the *parameters* applicable to the TNSP under this *service component*. The AER must accept these proposed values if they comply with the requirements specified in this clause 3.3 and this *scheme*.
- (b) For each *parameter* applying to the TNSP under this *service component*, the TNSP must propose the following values:
  - (1) a *performance target*
  - (2) a *collar*, and

- (3) a *cap*.
- (c) A proposed *performance target* may take the form of a *performance deadband*.
- (d) Data used to calculate proposed values must be accurate and reliable.
- (e) The proposed *caps* and *collars* must be calculated by reference to the proposed *performance targets* and using a sound methodology. Adjustments to the proposed *performance targets* may result in adjustments to the proposed *caps* and *collars*.
- (f) A proposed *cap* and *collar* may result in symmetric or asymmetric incentives for the TNSP.
- (g) Subject to clause 3.3(h) to 3.3(l) below, proposed *performance targets* must be equal to the TNSP's average performance history over the most recent five years. The data used to calculate the *performance target* must be consistently recorded based on the *parameter* definitions that apply to the TNSP under this *service component* of the *scheme*.
- (h) The AER may approve a *performance target* based on a different period if it is satisfied that the use of a different period is consistent with the objectives in clause 1.4 of this *scheme*.
- (i) If the performance history information described in clause 3.3(g) is not available, the AER may accept a *performance target* proposed by the TNSP if the AER is satisfied that the *performance target* is based on an appropriate benchmark or methodology.
- (j) Where the performance history described in clause 3.3(g) is available, the AER may approve a *performance target* based on an alternative methodology proposed by the TNSP if it is satisfied that:
- (1) the methodology is reasonable
  - (2) the TNSP's performance as measured by the relevant *parameter* has been consistently very high over at least every *calendar year* of the previous *regulatory control period*
  - (3) it is unlikely that the TNSP will be able to improve its performance during the next *regulatory control period* (or any potential improvement would be marginal), or any further improvements are likely to compromise the TNSP's other *regulatory obligations*
  - (4) where applicable, the TNSP's proposed *performance targets* (calculated using the proposed methodology) are not a lower threshold than the *performance targets* that applied to an identical *parameter* in the previous *regulatory control period* (regardless of whether those *performance targets* were calculated under the old Service standards guidelines or under this *scheme*), and

- (5) the proposed methodology is consistent with the objectives in clause 1.4 of the *scheme*.
- (k) Proposed *performance targets* may be subject to reasonable adjustment to allow for:
  - (1) statistical outliers
  - (2) the expected effects on the TNSP's performance from any increases or decreases in the volume of capital works planned during the *regulatory control period* (compared with the volume of capital works undertaken during the period used to calculate the *performance target*)
  - (3) the expected material effects on the TNSP's performance from any changes to the age and ratings of the assets comprising the TNSP's *transmission system* during the TNSP's next *regulatory control period* (compared to the age and ratings of the TNSP's assets comprising the TNSP's *transmission system* during the period used to calculate *performance targets*), and
  - (4) material changes to an applicable *regulatory obligation*.
- (l) Unless a *performance deadband* is applied, *performance targets*, *caps* and *collars* for loss of supply event frequency parameters must be rounded to the nearest integer number.
- (m) The AER may reject the proposed values where it forms the opinion that they are inconsistent with the objectives listed in clause 1.4 of this *scheme*.

### 3.4 Adjustments to maximum allowed revenue

The maximum revenue increment or decrement that a TNSP may earn against its *parameters* and values under this *service component* is 1 per cent of the TNSP's *maximum allowed revenue* for the relevant *calendar year*. That is, under this *service component* a TNSP will receive a *financial incentive* that falls within a range of plus or minus 1 per cent of the TNSP's *maximum allowed revenue*.

### 3.5 Weighting of parameters

- (a) A TNSP must, in its *revenue proposal*, propose *weightings* for each of the TNSP's *parameters* listed in appendix B and demonstrate how these proposed *weightings* are consistent with the objectives listed in clause 1.4.
- (b) The sum of the *weightings* for a TNSP's *parameters* must equal the maximum revenue increment or decrement specified in clause 3.4.
- (c) Subject to clause 3.5(d) and 3.5(e) below, the *weighting* for a *parameter* can be zero.
- (d) A TNSP must, where relevant, take the following factors into account when proposing *weightings* to apply to each *parameter*:

- (1) the extent to which each *parameter* applying to the TNSP under this *service component* provides the incentives described in clause 6A.7.4(b)(1) of the NER
  - (2) the availability of accurate and reliable data for determining the values for each *parameter* applying to the TNSP under this *service component*
  - (3) the scope that the TNSP has to improve its performance as measured by each of the *parameters* that apply to it under this *service component*, and
  - (4) the extent to which the *parameters* and sub-parameters applying to the TNSP under this *service component* overlap.
- (e) The AER may reject the proposed *weightings* where it forms the opinion that they are inconsistent with the objectives listed in clause 1.4 of this *scheme*.

## 4. Market impact component

### 4.1 Performance incentive scheme parameters

Appendix C contains the definition of the market impact parameter. This *parameter* is applicable to all TNSPs subject to this *market impact component*.

### 4.2 Values for parameters

(a) Each TNSP subject to this *market impact component* must submit, in its *revenue proposal*, the following proposed values for the market impact parameter:

- (1) a *performance target*, and
- (2) a *cap*.

The AER must accept these proposed values if they comply with the requirements specified in this clause 4.2 and this *scheme*.

- (b) Data used to calculate the proposed values must be accurate and reliable.
- (c) The proposed *cap* must equal zero *dispatch intervals*.
- (d) Subject to paragraphs (e) to (g) below, the proposed *performance target* must be equal to the TNSP's average performance history over the most recent five years. The data used to calculate the *performance target* must be consistently recorded based on the *parameter* definition in appendix C.
- (e) The AER may approve a *performance target* based on a different period if it is satisfied that the use of a different period is consistent with the objectives in clause 1.4 of this *scheme*.
- (f) If the performance history information described in clause 4.2(d) is not available, the AER may accept a *performance target* proposed by the TNSP if the AER is satisfied that the *performance target* is based on an appropriate benchmark or methodology.
- (g) The proposed *performance target* may be subject to reasonable adjustment to allow for:
  - (1) statistical outliers
  - (2) the expected material effects on the TNSP's performance from any changes to the age and ratings of the assets comprising the TNSP's *transmission system* during the TNSP's next *regulatory control period* (compared to the age and ratings of the TNSP's assets comprising the TNSP's *transmission system* during the period used to calculate *performance targets*), and
  - (3) material changes to an applicable *regulatory obligation*.

- (h) The AER may reject the proposed values where it forms the opinion that they are inconsistent with the objectives listed in clause 1.4 of this *scheme*.

### **4.3 Adjustments to maximum allowed revenue**

The maximum revenue increment that a TNSP may earn against its *parameters* and values under this *market impact component* is 2 per cent of the TNSP's *maximum allowed revenue* for the relevant *calendar year*. That is, under this *market impact component*, a TNSP will receive a *financial incentive* which falls within a range of 0 and 2 per cent of the TNSP's *maximum allowed revenue*.

## **5. Information and reporting requirements**

### **5.1 Information for the transmission determination**

A TNSP must include information on its proposed values, *weightings* and *other elements* in its *revenue proposal* in accordance with the *submission guidelines*.

### **5.2 Information for annual compliance**

A TNSP must report on its annual performance against the *parameters* applicable to it under this *scheme* in accordance with the *information guidelines*.

### **5.3 Annual review**

- (a) The AER will review the service performance information that a TNSP is required to provide annually under the *information guidelines*.
- (b) In undertaking the review referred to in clause 5.3(a), the AER may assess:
  - (1) the appropriateness and accuracy of the TNSP's data collection, reporting and recording processes and systems
  - (2) whether the performance data reported is consistent with the *parameter* definitions and *other elements* contained in appendix B, appendix C and the *transmission determination*, and
  - (3) whether the *financial incentive* proposed by the TNSP has been calculated in accordance with this *scheme*.
- (c) The AER will advise the TNSP of the outcome of any review conducted under clause 5.3(a).
- (d) The timetable for the review referred to in clause 5.3(a) will be decided on an annual basis by agreement between the AER and the relevant TNSP and will have due regard to this *scheme* and the TNSP's pricing obligations under the NER.

### **5.4 Changes in data collection**

- (a) A TNSP must notify the AER in writing as soon as it becomes aware of, or plans any *material changes* to data collection or recording methods used by the TNSP to record and report on the TNSP's performance against the TNSP's *parameters*.
- (b) Any notice provided to the AER under clause 5.4(a) must include an assessment of whether the changes to the data collection or recording methods no longer allow the TNSP to accurately record and report on the TNSP's performance against one of the *parameters* applicable to the TNSP.



- (c) The AER may amend this *scheme* as a result of the TNSP's new data collection methods.

# Glossary

This *scheme* uses the following definitions.

cap	the level of performance that results in a TNSP receiving the maximum financial reward attributed to a <i>parameter</i> .
calendar year	has the meaning set out in clause 2.4.
collar	the level of performance that results in a TNSP receiving the maximum financial penalty attributed to a <i>parameter</i> .
financial incentive	the dollar value of the revenue increment or decrement that the <i>maximum allowed revenue</i> is adjusted by in each <i>regulatory year</i> based on a TNSP's performance in the preceding <i>calendar year</i> .
force majeure event	has the meaning set out in Appendix E.
marginal value	has the meaning set out in Appendix C.
market impact component	section 4 of this <i>scheme</i> .
market systems	<i>NEMMCO</i> 's systems for operating the <i>national electricity market</i> , and for recording and publishing data relating to the operation of the <i>national electricity market</i> .
material change	a change that can influence the outcomes that may otherwise result.
national electricity market objective	has the meaning set out in the National Electricity Law.
National Electricity Rules or NER	the rules as defined in the National Electricity Law.
network outage constraint	has the meaning set out in Appendix C.
other elements	has the meaning set out in clause 3.2.
parameters	the <i>performance incentive scheme parameters</i> and includes the sub-parameters, where applicable.
performance deadbands	a <i>performance target</i> that is set over a range of values, within which a TNSP neither receives a financial penalty nor financial reward in the <i>regulatory year</i> .

performance target	the level of performance that results in a TNSP neither receiving a financial penalty nor financial reward in the <i>regulatory year</i> .
return period	the average period at which events of a specified size will occur.
service component	section 3 of this <i>scheme</i> .
service target performance incentive scheme or scheme	the <i>service target performance incentive</i> scheme defined in the NER.
s-factor or service standards factor	the percentage revenue increment or decrement that the <i>maximum allowed revenue</i> is adjusted by in each <i>regulatory year</i> based on a TNSP's performance in the previous <i>calendar year</i> .
TNSP	<i>transmission network service provider</i> as defined in the NER.
weightings	the proportion of the <i>financial incentive</i> under the <i>service component</i> allocated to each of <i>parameters</i> applying to the TNSP under the <i>service component</i> .

# Appendix A: Service target performance component—performance incentive scheme parameters—standard definitions

## Parameter 1 Transmission circuit availability

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Sub-parameters	<p>total circuit availability</p> <p>transmission circuit availability (critical circuits)</p> <p>transmission circuit availability (non-critical circuits)</p> <p>transmission circuit availability (peak periods)</p> <p>transmission circuit availability (intermediate periods)</p> <p>transmission lines</p> <p>transmission transformers</p> <p>transmission reactive</p>
Unit of measure	percentage of total possible hours available.
Source of data	<p>TNSP outage reports and system for circuit availability</p> <p>agreed schedule of critical circuits and plant</p> <p>nominated peak/off-peak hours</p> <p>currently peak- 7:00 am to 10:00 pm weekdays</p> <p>or as otherwise defined by the TNSP/<i>NEMMCO</i></p> <p>off peak all other times</p> <p>may include intermediate time periods and seasonal time periods</p>
Definition/formula	<p>formula:</p> $\frac{\text{No. of hours per annum defined (critical/non-critical) circuits are available} \times 100}{\text{Total possible no. of defined circuit hours}}$ <p>definition: the actual circuit hours available for defined (critical/non-critical) transmission circuits divided by the total possible defined circuit hours available.</p> <p>note that there shall be an annual review of the nominated list of critical circuits/system components</p>
Inclusions	<p>‘circuits’ includes overhead lines, underground cables, power transformers, phase shifting transformers, static var compensators, capacitor banks, and any other primary transmission equipment essential for the successful operation of the <i>transmission system</i> (TNSP to provide lists)</p>

circuit ‘unavailability’ to include outages from all causes including planned, forced and emergency events, including extreme events

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Exclusions

unregulated transmission assets

exclude from ‘circuit unavailability’ any outages shown to be caused by a fault or other event on a ‘third party system’—e.g. intertrip signal, generator outage, customer installation (TNSP to provide lists)

outages to control voltages within required limits, both as directed by *NEMMCO* and where *NEMMCO* does not have direct oversight of the network (in both cases only where the element is available for immediate energisation if required).

*force majeure events*

## **Parameter 2 Loss of supply event frequency**

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Unit of measure	number of events per annum.
Source of data	TNSP outage reports and system for circuit availability
Definition/formula	<p>number of events greater than x system minutes per annum</p> <p>number of events greater than y system minutes per annum</p> <p>such that:</p> <ul style="list-style-type: none"><li>▪ a x system minutes event has a return period of one year</li><li>▪ a y system minutes event has a return period of two years</li></ul>
Inclusions	<p>all unplanned outages exceeding the specified impact (that is, x minutes and y minutes)</p> <p>unplanned outages on all parts of the regulated transmission system</p> <p>extreme events</p> <p>forced outages where notification to affected customers is less than 24 hours (except where <i>NEMMCO</i> reschedules the outage after notification has been provided).</p>
Exclusions	<p>unregulated transmission assets (e.g. some connection assets)</p> <p>successful reclose events (less than one minute duration)</p> <p>any outages shown to be caused by a fault or other event on a ‘third party system’—e.g. intertrip signal, generator outage, customer installation</p> <p>planned outages</p> <p><i>force majeure events</i></p>

### **Parameter 3 Average outage duration**

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Sub-parameters	total average outage duration transmission lines transmission transformers/plant
Unit of measure	minutes
Source of data	TNSP outage reports and system
Definition/formula	formula: $\frac{\text{Aggregate minutes duration of all unplanned outages}}{\text{No. of events}}$ definition: the cumulative summation of the outage duration time for the period, divided by the number of outage events during the period
Inclusions	faults on all parts of the regulated <i>transmission system</i> (connection assets, interconnected system assets)  all forced and fault outages whether or not loss of supply occurs
Exclusions	planned outages  momentary interruptions (less than one minute)  <i>force majeure events</i>

# Appendix B: Service target performance component—performance incentive scheme parameters and definitions applicable to individual TNSPs

## Part 1—SP AusNet

Parameter 1	Transmission circuit availability
This definition applies instead of the standard definition	
Sub-parameters	total circuit availability transmission circuit availability (peak critical) transmission circuit availability (peak non-critical) transmission circuit availability (intermediate critical) transmission circuit availability (intermediate non-critical)
Unit of measure	percentage of total possible hours available.
Source of data	to be established in the <i>transmission determination</i> (including definitions of peak and intermediate periods, critical and non-critical circuits)
Definition/formula	<p>formula:</p> $\frac{\text{No. of hours per annum defined (critical/non-critical) circuits are available}}{\text{Total possible no. of defined circuit hours}} \times 100$ <p>definition: the actual circuit hours available for defined (critical/non-critical) transmission circuits divided by the total possible defined circuit hours available.</p> <p>note that there shall be an annual review of the nominated list of critical circuits/system components</p>
Inclusions	<p>‘circuits’ includes overhead lines, underground cables, power transformers, phase shifting transformers, static var compensators, capacitor banks, and any other primary transmission equipment essential for the successful operation of the transmission system (SP AusNet to provide lists)</p> <p>circuit ‘unavailability’ to include outages from all causes including planned, forced and emergency events, including extreme events</p>
Exclusions	<p>unregulated transmission assets.</p> <p>connection assets</p>



exclude from ‘circuit unavailability’ any outages shown to be caused by a fault or other event on a ‘third party system’—e.g. intertrip signal, generator outage, customer installation (TNSP to provide lists)

*force majeure events*

other events to be established in the *transmission determination*

---

**Parameter 2            Loss of supply event frequency**

---

The standard definition applies with the following modifications:

- (1) replace x with 0.05 wherever it occurs
- (2) replace y with 0.3 wherever it occurs
- (3) additional exclusion events may be established in the *transmission determination*.

---

**Parameter 3            Average outage duration**

---

The standard definition applies with the following modifications:

- (1) delete the following sub-parameters:

total average outage duration
- (2) additional exclusion events may be established in the *transmission determination*.

## Part 2—ElectraNet

### Parameter 1      Transmission circuit availability

This definition applies instead of the standard definition

Sub-parameters      transmission circuit availability  
                                     critical circuit availability peak  
                                     critical circuit availability non peak

Unit of measure      Percentage of total possible hours available

Source of data      to be established in *transmission determination* (including definitions of critical circuits and plant, peak, and non-peak periods)

Definition/formula      formula:

$$\frac{1 - \Sigma (\text{number of interrupted circuit hours})}{\text{total possible circuit hours available}}$$

where: number of interrupted circuit hours means in relation to each circuit, the number of hours during each reporting period in which that circuit was unavailable to provide transmission services

total possible circuit hours available is the number of circuits multiplied by 8760 hours

Inclusions      circuits include regulated overhead lines and underground cables (each with a designated ElectraNet transmission segment identification number). Transformers, reactive plant and other primary plant are excluded from the performance parameter

subject to the exclusions specified below, outages on all parts of the regulated transmission system from all causes including planned, forced and fault events

Exclusions      unregulated transmission assets

any outages shown to be caused by a ‘third party system’—eg intertrip signals, generator outage, customer installation, customer request or *NEMMCO* direction

outages to control voltages within required limits, both as directed by *NEMMCO* and where *NEMMCO* does not have direct oversight of the network (in both cases only where the element is available for immediate energisation if required)

the opening of only one end of a transmission line where the transmission line remains energised and available to carry power

the number of interrupted hours related to a single transmission line redevelopment project or substation redevelopment project is capped at 336 hours (14 days)

*force majeure events*

## Parameter 2      Loss of supply event frequency

---

This definition applies instead of the standard definition

---

Sub-parameters      frequency of events where loss of supply exceeds x system minutes

frequency of events where loss of supply exceeds y system minutes

---

Unit of measure      number of events per annum

---

Source of data      to be established in *transmission determination*

---

Definition/formula      number of events greater than x system minutes per annum

number of events greater than y system minutes per annum

the magnitude of x and y are to be established in the *transmission determination*

for the avoidance of doubt, y will be greater than x.

system minutes are calculated for each supply interruption by the 'load integration method' using the following formula:

$$\frac{\Sigma (\text{MWh unsupplied} \times 60)}{\text{MW peak demand}}$$

where:

MWh unsupplied is the energy not supplied as determined by using NEM metering and substation load data. This data is used to estimate the profile of the load over the period of the interruption by reference to historical load data

period of the interruption starts when a loss of supply occurs and ends when ElectraNet offers supply restoration to the customer

MW peak demand means the maximum amount of aggregated electricity demand recorded at entry points to the ElectraNet transmission network and interconnector connection points during the financial year in which the event occurs or at any time previously

the performance parameter applies to exit points only

an interruption >y system minute(s) also registers as a >x system minute(s) event

interruptions affecting multiple connection points at exactly the same time are aggregated (i.e. system minutes are calculated by events rather than connection point interruptions)

---

Inclusions	<p>subject to the exclusions specified below, all unplanned customer outages on all parts of the regulated transmission system</p> <p>forced outages where notification to affected customers is less than 24 hours (except where <i>NEMMCO</i> reschedules the outage after notification has been provided)</p>
Exclusions	<p>successful reclose events (less than one minute duration).</p> <p>unregulated transmission assets</p> <p>any outages shown to be caused by a ‘third party system’ e.g. intertrip signals, generator outage, customer installation, customer request or <i>NEMMCO</i> direction</p> <p>planned outages.</p> <p>for supply outages resulting from an interconnector outage, the period of the interruption is capped at half an hour. This is done to include the impact of automatic under-frequency load shedding, but to exclude the impact of any market failure to respond and restore load within required timeframes (i.e. excluding factors outside of ElectraNet’s control)</p> <p>pumping station supply interruptions (these interruptions were excluded from historical data used for target setting due to the highly irregular nature of these loads, which makes accurate estimation of load profiles unreliable)</p> <p><i>force majeure events</i></p> <p>where ElectraNet protection operates incorrectly ahead of third party protection, the portion of customer load that would have been lost had ElectraNet protection not operated is removed from the total lost load</p> <p>where ElectraNet protection operates correctly due to a fault on a third party system no lost load is recorded</p>

---

**Parameter 3      Average outage duration**

---

This definition applies instead of the standard definition

---

Unit of measure      minutes

---

Source of data      ElectraNet

---

Definition/formula

Aggregate minutes duration of all unplanned outages

Number of connection point events

the cumulative summation of the outage duration time for the period, divided by the number of connection point outage events during the period

where:

outage duration time for a connection point starts when a loss of supply occurs and ends when ElectraNet offers supply restoration to the customer

the performance parameter applies to exit points only

outage duration extends to the point at which supply restoration is offered to the customer

---

Inclusions      subject to the exclusions specified below, customers supply outages on all parts of the regulated transmission system

forced outages where notification to affected customers is less than 24 hours (except where *NEMMCO* reschedules the outage after notification has been provided)

---

Exclusions      successful reclose events (less than one minute duration)

unregulated transmission assets

any outages shown to be caused by a ‘third party system’—eg intertrip signals, generator outage, customer installation, customer request or *NEMMCO* direction

planned outages

for supply outages resulting from an interconnector outage, the duration is capped at half an hour. This is done to include the impact of automatic under-frequency load shedding, but to exclude the impact of any market failure to respond and restore load within required timeframes (i.e. excluding factors outside of ElectraNet’s control)

*force majeure events.*

where ElectraNet protection operates correctly due to a fault on a third party system no outage duration is recorded.

## Part 3—Transend

### Parameter 1      Transmission circuit availability

---

This definition applies instead of the standard definition

---

Sub-parameters      transmission line circuit availability (critical circuits)  
                                  transmission line circuit availability (non-critical circuits)  
                                  transformer availability

---

Unit of measure      percentage of total possible hours available.

---

Source of data      Transend

---

Definition/formula      formula:

$$\left( \frac{\text{No. hours per annum circuits are available}}{\text{Total possible no. of defined circuit hours}} \right) \times 100$$

definition: the actual circuit hours available divided by the total possible defined circuit hours available

critical circuits are those lines which are in areas under direct NEMMCO oversight (except radial portions on the transmission system)

non- critical circuits are lines in areas under indirect NEMMCO oversight and the radial portions of the transmission system that are under direct NEMMCO oversight

Inclusions      ‘circuits’ includes overhead lines, underground cables, power transformers

circuit outages from all causes including planned, forced and emergency events, including extreme events

---

Exclusions      unregulated transmission assets

dedicated connection assets that supply a customer who has negotiated a higher (or lower) level of service required by the code, where that customer has agreed to the cost (or discount) for that higher (or lower) level of service

circuit outages caused by a fault or other event on a third party system e.g. intertrip signal, generator outage (including coincident outages), fire services direction, customer installation (including a customer request), or by direction by fire services or *NEMMCO*.

*force majeure events*



---

**Parameter 2            Loss of supply event frequency**

---

This definition applies instead of the standard definition

---

Sub-parameters        frequency of events where loss of supply exceeds 0.1 minutes  
                                 frequency of events where loss of supply exceeds 1.0 minutes

---

Unit of measure        number of events per annum

---

Source of data         Transend transmission performance reporting system

---

Definition/formula    number of events greater than 0.1 system minutes per annum  
  
                                 number of events greater than 1.0 system minutes per annum  
  
                                 system minutes are calculated for each supply interruption by  
                                 the ‘load integration method’ using the following formula:

$$\frac{\Sigma (\text{MWh unsupplied} \times 60)}{\text{MW peak demand}}$$

where:

MWh unsupplied is the energy not supplied as determined by using NEM metering and substation load data. This data is used to estimate the profile of the load over the period of the interruption by reference to historical load data

period of the interruption starts when a loss of supply occurs and ends when Transend offers supply restoration to the customer

MW peak demand means the maximum amount of aggregated electricity demand recorded at entry points to the Transend transmission network and interconnector connection points during the financial year in which the event occurs or at any time previously

the performance parameter applies to exit points only

interruptions affecting multiple connection points at exactly the same time are aggregated (i.e. system minutes are calculated by events rather than connection point interruptions)

---

Inclusions              all unplanned outages exceeding the specified impact (that is, 0.1 minutes and 1.0 minutes)

unplanned outages on all parts of the regulated transmission system

---

extreme events

---

Exclusions

unregulated transmission assets

dedicated connection assets that supply a customer that has negotiated a higher (or lower) level of service required by the code, where that customer has agreed to the cost (or discount) for that higher (or lower) level of service

circuit outages caused by a fault or other event on a third party system e.g. intertrip signal, generator outage (including coincident outages), fire services direction, customer installation (including a customer request), or by direction by fire services or *NEMMCO*.

planned outages

*force majeure events*

**Parameter 3      Average outage duration**

---

This definition applies instead of the standard definition

---

Sub-parameters      transmission line circuits  
                                 transformer circuits

---

Unit of measure      minutes

---

Source of data      Transend transmission performance reporting system

---

Definition/formula

Aggregate minutes of all unplanned outages

Number of events

the cumulative summation of the outage duration time for the period, divided by the number of connection point outage events during the period

where:

outage duration time starts when a loss of supply occurs and ends when Transend offers supply restoration to the customer

---

Inclusions      forced outages where notification to affected customers is less than 24 hours (except where *NEMMCO* reschedules the outage after notification has been provided)

---

Exclusions      successful reclose events (less than one minute duration)

unregulated transmission assets

dedicated connection assets that supply a customer who has negotiated a higher (or lower) level of service required by the NER, where that customer has agreed to the cost (or discount) for that higher (or lower) level of service

circuit outages caused by a fault or other event on a third party system e.g. intertrip signal, generator outage (including coincident outages), fire services direction, customer installation (including a customer request), or by direction by fire services or *NEMMCO*

planned outages

*force majeure events*

for all outages the duration is capped at seven days

## Part 4—TransGrid

### Parameter 1 Transmission circuit availability

---

This definition applies instead of the standard definition

---

Sub-parameters	transmission line availability transmission line availability (peak periods critical circuits) transformers availability reactive plant availability
Unit of measure	percentage of total possible hours available.
Source of data	TNSP outage reports and system for circuit availability
Definition/formula	formula: $\frac{\text{No. of hours per annum defined circuits are available}}{\text{Total possible no. of defined circuit hours}} \times 100$ definition: the actual circuit hours available for defined (critical/non-critical) transmission circuits divided by the total possible defined circuit hours available.  peak periods and critical circuits to be established in the <i>transmission determination</i>
Inclusions	‘circuits’ includes overhead lines, underground cables, power transformers, phase shifting transformers, static var compensators, capacitor banks, and any other primary transmission equipment essential for the successful operation of the <i>transmission system</i> (TransGrid to provide lists)  circuit ‘unavailability’ to include outages from all causes including planned, forced and emergency events, including extreme events
Exclusions	For all sub-parameters:  unregulated transmission assets  any outages shown to be caused by a fault or other event on a ‘third party system’—e.g. intertrip signal, generator outage, customer installation (TNSP to provide lists).  <i>force majeure events</i>  transient interruptions less than one minute

outages for remedial repairs to an underground power cable damaged by an external party are capped at 14 days if the external party did not enquire with 'dial before you dig' or enquired and received accurate information

For the transmission line and transformer availability sub-parameters only:

outages to control voltages within required limits, both as directed by *NEMMCO* and where *NEMMCO* does not have direct oversight of the network (in both cases only where the element is available for immediate energisation if required)

For the transmission line availability sub-parameters only:

the opening of only one end of a transmission circuit (eg where the transmission circuit remains energised and available to carry power with immediate manual or automatic return to service)

For the transformer availability sub-parameters only:

auxiliary transformers

static var compensator transformers (which are counted as part of the SVC)

the opening of only one or both sides of a transformer for operational purposes, such as to control losses, fault levels, incompatibility of tapchanges etc but where the transformer remains available to carry power on immediate manual or automatic return to service

the period where a transformer is made available for service, but not switched in, at the end of each day of a multi-day planned outage

For the reactive plant availability sub-parameters only:

capacitor banks and reactors operating less than 66kV

reactive plant switched out by System Operations, or left out after repairs that make it available for service for operational purposes

## **Parameter 2 Loss of supply event frequency**

---

This definition applies instead of the standard definition

---

Unit of measure      number of events per annum.

---

Source of data      TNSP outage reports and system for circuit availability

---

Definition/formula      number of events greater than x system minutes per annum  
number of events greater than y system minutes per annum  
  
the magnitude of x and y are to be established in the  
*transmission determination*  
  
for the avoidance of doubt, y will be greater than x.

---

Inclusions      all unplanned outages exceeding the specified impact (that is, x  
minutes and y minutes)  
  
unplanned outages on all parts of the regulated transmission  
system  
  
extreme events  
  
forced outages where notification to affected customers is less  
than 1 hour (except where *NEMMCO* reschedules the outage  
after notification has been provided).

---

Exclusions      unregulated transmission assets (e.g. some connection assets)  
  
successful reclose events (less than one minute duration)  
  
any outages shown to be caused by a fault or other event on a  
'third party system'—e.g. intertrip signal, generator outage,  
customer installation  
  
planned outages  
  
*force majeure events*  
  
where TransGrid protection operates correctly due to a fault on  
a customer's or a third party system  
  
pumping station supply interruption  
  
outage caused by customer's own control system during a  
transient voltage fluctuation

---

### **Parameter 3 Average outage duration**

---

This definition applies instead of the standard definition

---

Sub-parameters      total average outage duration

---

Unit of measure      minutes

---

Source of data      TNSP outage reports and system

---

Definition/formula      formula:  
Aggregate minutes duration of all unplanned outages

No. of events

definition: the cumulative summation of the outage duration time for the period, divided by the number of outage events during the period

events will be capped at seven days

---

Inclusions      faults on all parts of the regulated *transmission system* (connection assets, interconnected system assets)

all forced and fault outages whether or not loss of supply occurs

---

Exclusions      planned outages

momentary interruptions (less than one minute)

*force majeure events*

any outages shown to be caused by a fault or event on a 'third party system' e.g. intertrip signal, generator outage, customer installation, customer request or *NEMMCO* direction.

outages for capacitor banks and reactors operating at 66kV

## Part 5—EnergyAustralia

### Parameter 1      Transmission circuit availability

---

This definition applies instead of the standard definition

---

Sub-parameters      transmission – total  
                                  transmission feeders – non-critical  
                                  transmission feeders – peak periods  
                                  transmission bulk supply transformers

---

Unit of measure      percentage of total possible hours available

---

Source of data      TNSP outage reports and system for circuit availability

---

Definition/formula      formula:

$$\frac{\text{No. of hours per annum defined (critical/non-critical) circuits are available} \times 100}{\text{Total possible no. of defined circuit hours}}$$

definition: the actual circuit hours available for defined (critical/non-critical) transmission circuits divided by the total possible defined circuit hours available

events will be capped at 14 days

transmission total - means all non-critical feeders, transmission transformers and reactive plant

transmission feeders non-critical – means all feeders (EnergyAustralia does not have any critical feeders)

peak periods are defined as weekdays from 7am to 10pm during the periods 1 December to 24 December, 2 January to 28 February, 1 June to 31 August inclusive, excluding public holidays

---

Inclusions      ‘circuits’ includes overhead lines, underground cables, power transformers, phase shifting transformers, static var compensators, capacitor banks, and any other primary transmission equipment essential for the successful operation of the transmission system (EnergyAustralia to provide lists)

outages from all causes including planned, forced and emergency events, including extreme events

---

Exclusions      unregulated transmission assets

exclude from ‘circuit unavailability’ any outages shown to be caused by a fault or other event on a ‘3<sup>rd</sup> party system’—e.g.

---



intertrip signal, generator outage, customer installation  
(EnergyAustralia to provide lists)

*force majeure events*

any outage not affecting the TNSP's primary transmission equipment

<b>Parameter 2</b>	<b>Loss of supply event frequency</b>
This definition applies instead of the standard definition	
Sub-parameters	<p>number of events greater than x system minutes per annum</p> <p>number of events greater than y system minutes per annum</p>
Unit of measure	number of events per annum.
Source of data	TNSP outage reports and system for circuit availability
Definition/formula	<p>a count of the number of events in a year that have an impact more than x or y system minutes as appropriate.</p> <p>x and y are to be established in the <i>transmission determination</i> and are set such that:</p> <ul style="list-style-type: none"> <li>▪ a x system minutes event has a return period of one year</li> <li>▪ a y system minutes event has a return period of two years</li> </ul> <p>a system minute for an event for an event is the customer outage duration (in minutes) times the load lost (in megawatts) that has occurred prior to the time of the event. The load lost is to be a reasonable estimate considering the time of day and season.</p> <p>system minute formula:</p> $\text{system minute} = \frac{\text{customer outage duration (minutes)} \times \text{load lost (MW)}}{\text{system maximum demand (MW)}}$
Inclusions	<p>all unplanned outages exceeding the specified impact (that is, x minutes and y minutes)</p> <p>unplanned outages on all parts of the regulated transmission system</p> <p>extreme events</p>
Exclusions	unregulated transmission assets (e.g. some connection assets)

outages shown to be caused by a fault or other event on a ‘third party system’—e.g. intertrip signal, generator outage, customer installation

planned outages

*force majeure events*

**Parameter 3      Average outage duration**

---

This parameter does not apply to EnergyAustralia.

## **Part 6—Murraylink**

### **Parameter 1            Transmission circuit availability**

---

The standard definition applies with the following modifications:

- (1) Replace the sub-parameters in the standard definition with the following sub-parameters:
  - planned circuit availability
  - forced peak circuit availability
  - forced off-peak circuit availability
- (2) Exclude outages needed to replace transformers where:
  - (a) the replacement of the transformer was needed
  - (b) the time taken to replace the transformer was needed, and
  - (c) the AER is satisfied that the replacement was the best alternative and all reasonable preventative measures have been taken.

### **Parameter 2            Loss of supply event frequency**

---

This parameter does not apply to Murraylink.

### **Parameter 3            Average outage duration**

---

This parameter does not apply to Murraylink.

## Part 7—Directlink

### Parameter 1      **Transmission circuit availability**

---

This definition applies instead of the standard definition.

---

Sub-parameters      scheduled availability  
                                  forced peak availability  
                                  forced off-peak availability

---

Unit of measure      percentage of total possible hours (capacity weighted) available

---

Source of data      Directlink outage register and disturbance and outage report

---

Definition      forced outage event means the urgent and unplanned reduction in the real power transfer capability of Directlink that occurs as a necessary consequence of the actual or imminent occurrence of an event that poses, or has the potential to pose, an immediate threat to the safety of persons, hazard to any equipment or property or a threat to power system security

                                 scheduled outage event means the actual planned reduction in the real power transfer capability of Directlink that does not occur as a result of a forced outage event

                                 peak time is from 7.00 am to 10.00 pm weekdays (excluding public holidays in NSW)

                                 off- peak all other times

---

Formula       $100\% - \left( \frac{\text{Hours of total capacity unavailable per year}}{\text{Total possible no. of defined circuit hours per year}} \right) \times 100$

---

Inclusions      ‘circuits’ includes overhead lines, underground cables, power transformers, phase shifting transformers, static var compensators, capacitor banks, and any other primary transmission equipment essential for the successful operation of the transmission system

                                 circuit ‘unavailability’ to include outages from all causes including planned, forces and emergency events, including extreme events

                                 for the avoidance of doubt, ‘circuits’ include all regulated transmission assets on the Directlink network

---

Exclusions      unregulated transmission assets.

                                 exclude from ‘circuit unavailability’ any outages shown to be caused by a fault or other event on a ‘third party system’—e.g. intertrip signal, generator outage, customer installation (Directlink to provide lists)

---

force majeure events (see varied definition below)

---

Definition of force majeure

- (a) ‘force majeure events’ means any event, act or circumstance or combination of events, acts and circumstances that (despite the observance of good electricity industry practice) is beyond the reasonable control of the party affected by any such event, which may include, without limitation, the following:
- (i) fire, lightning, explosion, flood, earthquake, storm, cyclone, action of the elements, riots, civil commotion, malicious damage, natural disaster, sabotage, act of a public enemy, act of God, war (declared or undeclared), blockage, revolution, radioactive contamination, toxic or dangerous chemical contamination or force of nature
  - (ii) action or inaction by a court, *NEMMCO* or government agency (including denial, refusal or failure to grant any authorisation, despite timely best endeavour to obtain same)
  - (iii) strikes, lockouts, industrial and/or labour disputes and/or difficulties, work bans, blockades or picketing
  - (iv) acts or omissions (other than a failure to pay money) of a party other than DJV which party either is connected to or uses the high voltage grid or is directly connected to or uses a system for the supply of electricity which in turn is connected to the high voltage grid
- where those acts or omissions affect the ability of DJV to perform its obligations under the service standard by virtue of that direct or indirect connection to, or use of, the high voltage grid.
- (b) to avoid doubt, the following may be ‘force majeure events’ depending on the circumstances at the time:
- (i) the loss of, or damage to, 11 or more control or secondary cables
  - (ii) the loss of, or damage to, two or more transformers and capacitor banks, either single or three phase, connected to a bus
  - (iii) the loss of, or damage to, a transformer, capacitor bank or reactor where the loss or damage is not repairable on site according to normal practice.
- (c) words appearing in italics have the meaning assigned to them from time to time by the *National Electricity Rules*

**Parameter 2            Loss of supply event frequency**

---

This parameter does not apply to Directlink.

**Parameter 3            Average outage duration**

---

This parameter does not apply to Directlink.

## Part 8—Powerlink

<b>Parameter 1</b>	<b>Transmission circuit availability</b>
Sub-parameters	<p>transmission circuit availability (critical circuit elements)</p> <p>transmission circuit availability (non-critical circuit elements)</p> <p>transmission circuit availability (peak periods)</p>
Unit of measure	percentage of total possible hours available
Source of data	<p>TNSP outage reports and system for circuit availability</p> <p>agreed schedule of critical circuits and plant</p> <p>peak period —7:00 am to 10:00 pm weekdays excluding public holidays</p> <p>off-peak all other times</p>
Definition/formula	<p>formula:</p> $\frac{\text{No. of hours per annum defined (critical/non-critical/peak) circuits are available} \times 100}{\text{Total possible no. of defined circuit hours}}$ <p>definition: the actual circuit hours available for defined (critical/non-critical/peak) transmission circuits divided by the total possible defined circuit hours available</p> <p>a critical circuit element is an element of the 330 kV network, the 275 kV interconnected network that forms the backbone of the transmission system and interconnections to other jurisdictions. All other circuits are non-critical</p> <p>Powerlink should submit a list of critical circuits/system components annually as part of the AER's compliance review</p>
Inclusions	<p>'circuits' includes overhead lines, underground cables, power transformers, phase shifting transformers, static var compensators, capacitor banks, and any other primary transmission equipment essential for the successful operation of the transmission system but does not include individual circuit breakers and isolators or secondary systems</p> <p>outages from all causes including planned, forced and emergency events, including extreme events</p>
Exclusions	unregulated transmission assets (e.g. some connection assets).

any outages shown to be caused by a fault or other event on a ‘third party system’ (e.g. intertrip signal, generator outage, customer installation)

*force majeure events*

any outage not affecting Powerlink’s primary transmission equipment

faults originating from Powerlink owned equipment that affect primary plant or equipment owned by a distributor, connected customer or a generator

<b>Parameter 2</b>	<b>Loss of supply event frequency</b>
Sub-parameters	<p>number of events greater than 0.2 system minutes per annum</p> <p>number of events greater than 1.0 system minutes per annum</p>
Unit of measure	number of significant events per annum.
Source of data	TNSP outage reporting system
Definition/formula	<p>number of events greater than 0.2 system minutes or 1.0 system minutes where:</p> $\text{System minute} = \frac{\text{Customer outage duration (minutes)} \times \text{load lost (MW)}}{\text{System maximum demand (MW)}}$ <p>definition of system minute: the customer outage duration (in minutes) times the load lost (in megawatts) divided by the highest system maximum demand (in megawatts) that has occurred prior to the time of the event.</p>
Inclusions	<p>all unplanned outages exceeding the specified impact (that is, 0.2 system minutes and 1.0 system minutes)</p> <p>all parts of the regulated transmission system</p> <p>extreme events</p>
Exclusions	<p>unregulated transmission assets (e.g. some connection assets)</p> <p>any outages shown to be caused by a fault or other event on a ‘third party system’ (e.g. intertrip signal, generator outage, customer installation)</p> <p>planned outages</p> <p><i>force majeure events</i></p>



<b>Parameter 3</b>	<b>Average outage duration</b>
Unit of measure	minutes
Source of data	TNSP outage reporting system
Definition/formula	<p>formula:</p> $\frac{\text{Aggregate minutes duration of all unplanned outages}}{\text{Number of events}}$ <p>definition: the cumulative summation of the outage duration time for the period, divided by the number of outage events during the period</p> <p>the start of each outage event is the time of the interruption of the first circuit element. The end of each outage event is the time that the last circuit element was restored to service</p> <p>the impact of each event is capped at seven days</p>
Inclusions	<p>faults on all parts of the transmission system (connection assets, interconnected system assets)</p> <p>all forced and fault outages whether or not loss of supply occurs</p>
Exclusions	<p>planned outages</p> <p>momentary interruptions (duration of less than one minute)</p> <p><i>force majeure events</i></p>

## **Part 9—VENCorp**

No parameters apply to VENCorp

# Appendix C: Market impact performance component—performance incentive scheme parameter

## Market impact parameter

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Unit of measure      Number of *dispatch intervals*

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Definition      The market impact parameter is the number of *dispatch intervals* where an outage on a TNSP's network results in a *network outage constraint* with a *marginal value* greater than \$10/MWh.

Where:

*dispatch interval* has the meaning set out in the NER.

*network outage constraint* is the change to the physical capability of the transmission network following the outage of transmission network equipment from service as identified by and recorded in the *market systems*.

the *marginal value* is published in the *market systems* and is an indication of the change, at the margin, in the cost of producing electricity sufficient to meet demand brought about by a particular *network outage constraint*.

Where there is more than one *network outage constraint* with a *marginal value* greater than \$10/MWh in one *dispatch interval*, the market impact parameter counts the *dispatch interval* for each *network outage constraint* (that is, the same *dispatch interval* may be counted more than once).

To measure a TNSP's performance against this market impact parameter, the AER will allocate each *network outage constraint* to the TNSP responsible for the constraint using:

1. the Market Information on Planned Network Outages, which is published every month by *NEMMCO* based on information provided by the TNSPs as required under clause 3.7A of the NER, or
2. the Network Outage Schedule, which is published by *NEMMCO* on its website based on information provided by the TNSPs or
3. the description in the constraint set published by *NEMMCO* of why the constraint was invoked or

4. where it is not clear from (1), (2) or (3), the published market management system data or other information provided by NEMMCO.

Where the information described in (1), (2), (3) or (4) indicates that more than one TNSP is responsible for a single *network outage constraint* (for example an outage affecting an interconnector), the number of *dispatch intervals* is apportioned equally between the TNSPs.

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Exclusions    *force majeure events*

network constraints that are invoked to manage the reclassification of *non-credible contingency events* to *credible contingency events* as per clause 4.2.3(f) of the NER

## Appendix D: Adjustments to allowed revenue

### Calculating allowed revenue

The *maximum allowed revenue* (MAR) for each *regulatory year* of a *regulatory control period* is calculated in accordance with the NER and the TNSP's *transmission determination*. The MAR includes any *financial incentive* adjustments resulting from the *service target performance incentive scheme* in the previous *calendar year*.

The MAR is calculated as follows:

$$\text{MAR}_t = \text{AR}_t + \text{financial incentive}_{ct} + \text{other adjustments}$$

where: AR = allowed revenue

$$\text{AR}_t = \text{AR}_{t-1} \times (1 + \Delta\text{CPI}) \times (1 - X_t)$$

$\Delta\text{CPI}$  is the annual percentage change in the most recently published "Consumer Price Index All Groups, Weighted Average of Eight Capital Cities" as specified in the TNSP's *transmission determination*

$X_t$  is the X factor specified in the TNSP's *transmission determination*.

A TNSP's *financial incentive* (see below) within a *calendar year* of a *regulatory control period* will impact upon the TNSP's MAR in the immediately following financial year. As such, a six month lag<sup>2</sup> exists between when a TNSP's performance is measured, and when the *financial incentive* adjustment is made to the TNSP's MAR.

### The financial incentive

The *financial incentive* is calculated as follows:

$$\text{financial incentive}_{ct} = \left( \frac{(\text{AR}_{t-1} + \text{AR}_{t-2})}{2} \times S_{ct} \right)$$

AR = allowed revenue (above)

S = total s-factor (below)

t = regulatory year

ct = calendar year (below)

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<sup>2</sup> SP AusNet is only subject to a three month lag

The MAR values used to establish transmission charges each relevant financial year will be used to determine the *financial incentive*.

## The service standards factor

The *s-factor* for each *parameter* is calculated by comparing a TNSP's performance against its *parameters* and the values included in the TNSP's *transmission determination* within a *calendar year*.

The maximum *s-factor* possible for each *parameter* applying the TNSP under the *service component* of this *scheme* is the *weighting* of that *parameter*. The maximum *s-factor* possible for the *parameter* applying to a TNSP under the *market impact component* of this *scheme* is the maximum revenue increment specified in clause 4.3.

The total *s-factor* is the sum of the *s-factors* for each *parameter*. The total *s-factor* result cannot exceed the sum of the maximum revenue increment or decrement that the TNSP may earn under the *service component* and *market impact component*.

Where performance against the market impact parameter is measured for a period less than twelve months (for example at the commencement of a *regulatory control period*), to calculate the *s-factor* there will be a pro rata adjustment to the TNSP's *performance target* for this parameter. For example, where performance is measured over a six month period, the TNSP's *performance target* for the market impact parameter over this period will be halved.

## Worked example

Assume that based on its performance between 1 January and 31 December 2007 a TNSP achieved an *s-factor* of -0.1 per cent under the *service component* and 0.9 per cent under the *market impact component*. The total *s-factor* achieved by the TNSP is 0.80 per cent.

Year	Total s-factor	AR
1 July 2006		\$100m
1 January 2007	0.80%	
1 July 2007		
1 January 2008		\$110m

## Calculating the financial incentive

The *financial incentive* for a total s-factor of 0.80 per cent is \$0.84 million as shown below.

$$\begin{aligned}\text{financial incentive}_{2007} &= \left( \frac{(AR_{2007-08} + AR_{2006-07})}{2} \times S_{2007} \right) \\ &= \left( \frac{(110 + 100)}{2} \times 0.8\% \right) \\ &= \$0.84\text{m}\end{aligned}$$

## Calculating the allowed revenue

The *financial incentive* of \$0.84 million for the 2007 *calendar year* would not affect the AR until the preceding financial year beginning 1 July 2008. Assuming no other adjustments were made in accordance with clause 6A.3.1 and 6A.3.2 of the NER and the AR for the 2008–09 period is \$120 million, the MAR for the 2008 *regulatory year* would be:

$$\begin{aligned}\text{MAR}_{2008-09} &= \text{AR}_{2008-09} + \text{financial incentive}_{2007} \\ &= \$120\text{m} + \$0.84\text{m} \\ &= \$120.84\text{m}\end{aligned}$$

## Adjustments to the financial incentive formula

The *financial incentive* formula will be adjusted by the AER in the following circumstances.

### Overlap between regulatory control periods

As noted above, a TNSP's performance in a calendar year will not affect the MAR until the financial year commencing on 1 July in the following year. This means that a TNSP's performance in the last year of its *regulatory control period* will affect its MAR in the following *regulatory control period*.

If, for example, a TNSP has a *regulatory control period* of five years, which runs between 1 July 2007 and 30 June 2012, its performance in the 2011 *calendar year* will affect its MAR in the first financial year of the next *regulatory control period* (that is, 2012–13).

The TNSP's MAR in the second financial year of the next *regulatory control period* (that is 2013–14) will be affected by its performance in the final six months of the last *regulatory control period* and the first six months of the next *regulatory control period*. The MAR in this financial year will be calculated by applying the following formula:

$$\text{MAR}_{2013-14} = \text{AR}_{2013-14} + \text{financial incentive}_{2012}$$

Where:

$$\text{financial incentive}_{2012} = \left( \frac{\text{AR}_{2011-12}}{2} \times S_{1\text{Jan}2012-30\text{Jun}2012} \right) + \left( \frac{\text{AR}_{2012-13}}{2} \times S_{1\text{Jul}2012-31\text{Dec}2012} \right)$$

### Where performance is measured over part of a calendar year

Where a TNSP's performance has not been measured under the *scheme* for a full *calendar year*, the AER will make a pro-rata adjustment to the AR to apply to the *s-factor* to calculate the *financial incentive*. For example this adjustment may be made where a new TNSP becomes subject to the *scheme* at the commencement of a financial year.

### SP AusNet

SP AusNet's *regulatory year* runs from 1 April to 31 March in the following year to correspond with the Singapore financial year. To account for this anomaly there will be a three-month lag between when SP AusNet's performance is measured, and when the *financial incentive* adjustment is made to SP AusNet's MAR.

The *financial incentive* for SP AusNet is calculated as follows:

$$\text{Financial incentive}_{ct} = \left( \left( \text{AR}_{t-2} \times \frac{3}{12} \right) + \left( \text{AR}_{t-1} \times \frac{9}{12} \right) \right) \times S_{ct}$$



## Appendix E: Definition of force majeure

For the purpose of applying the *service target performance incentive scheme*, force majeure event means any event, act or circumstance or combination of events, acts and circumstances which (despite the observance of good electricity industry practice) is beyond the reasonable control of the part affected by any such event, which may include, without limitation, the following:

- fire, lightning, explosion, flood, earthquake, storm, cyclone, action of the elements, riots, civil commotion, malicious damage, natural disaster, sabotage, act of a public enemy, act of God, war (declared or undeclared), blockage, revolution, radioactive contamination, toxic or dangerous chemical contamination or force of nature
- action or inaction by a court, government agency (including denial, refusal or failure to grant any authorisation, despite timely best endeavour to obtain same)
- strikes, lockouts, industrial and/or labour disputes and/or difficulties, work bans, blockades or picketing
- acts or omissions (other than failure to pay money) of a party other than the TNSP, which party either is connected to or uses the high voltage grid or is directly connected to or uses a system for the supply of electricity that in turn is connected to the high voltage grid
- where those acts or omissions affect the ability of the TNSP to perform its obligations under the service standard by virtue of that direct or indirect connection to or use of the high voltage grid.

In determining what force majeure events should be excluded the AER will consider the following:

- was the event unforeseeable and its impact extraordinary, uncontrollable and not manageable?
- does the event occur frequently? If so, how did the impact of the particular event differ?
- could the TNSP, in practice, have prevented the impact (not necessarily the event itself)?
- could the TNSP have effectively reduced the impact of the event by adopting better practices?