

**Final**

**Electricity transmission network service providers**

**Service target performance incentive scheme**

**August 2007**



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# 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* 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 standards 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 standards 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 the *scheme*:

- (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.

## **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* and the *revenue at risk* for each TNSP 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 *performance targets*, *caps* and *collars* included in its *transmission determination*, as assessed by the AER in accordance with this *scheme*.

### 2.2 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 2.3, defines the *parameters* applicable to individual TNSPs. appendix B may specify that no *parameters* apply to a TNSP.
- (c) If a TNSP is not referred to in appendix B, the *parameters* and standard definitions in appendix A apply to that TNSP.

### 2.3 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 so provides:

- (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*.

## 2.4 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 additional *parameters*, remove *parameters*, or to vary the definitions in appendix A or appendix B. 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 *revenue at risk* applicable to the TNSP for the next *regulatory control period*.
- (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 *performance targets, caps, and collars* for the proposed *parameter*.
- (f) A proposal by a TNSP to amend this *scheme* to remove a *parameter* or vary the *revenue at risk* applicable to the TNSP for the next *regulatory control period* must demonstrate how the proposed amendment is consistent with the objectives in clause 1.4 of this *scheme*.

## 2.5 Values for parameters

- (a) A TNSP must submit, in its *revenue proposal*, proposed values for the *parameters* applicable to the TNSP under this *scheme*. The AER must accept these proposed values if they comply with the requirements specified in this clause 2.5 and this *scheme*.
- (b) For each *parameter*, 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 paragraphs (h) to (j) 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 *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 2.5(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 2.5(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.

## 2.6 Revenue at risk

The level of *revenue at risk* attached to a TNSP's performance against its *parameters* and values is 1 per cent of the *maximum allowed revenue* for the relevant *calendar year*.

## 2.7 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 level of *revenue at risk* prescribed in clause 2.6.
- (c) Subject to clause 2.7(d) and 2.7(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 *scheme* 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 *scheme*
  - (3) the scope that the TNSP has to improve its performance as measured by each of the *parameters* that apply to it under this *scheme*, and
  - (4) the extent to which the *parameters* and sub-parameters applying to the TNSP under the *scheme* 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.

## **2.8 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*.

## **2.9 Adjustments to maximum allowed revenue**

- (a) 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 C.
- (b) 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 Information and reporting requirements

### 3.1 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*.

### 3.2 Information for annual compliance

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

### 3.3 Annual review

- (a) The AER will review the service standards information that a TNSP is required to provide annually under the *information guidelines*.
- (b) In undertaking the review referred to in clause 3.3(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 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 3.3(a).
- (d) The timetable for the review referred to in clause 3.3(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.

### 3.4 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 3.4(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 2.8.
collars	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 D.
material change	a change that can influence the outcomes that may otherwise result.
national electricity market	has the meaning set out in the <i>National Electricity Law</i> .
National Electricity Rules or NER	the rules as defined in the <i>National Electricity Law</i> .
other elements	has the meaning set out in clause 2.3.
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.
revenue at risk	the maximum revenue increment or decrement that a TNSP can receive for a given level of performance against the <i>parameters</i> .
service target performance incentive scheme or scheme	the <i>service target performance incentive scheme</i> 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 total <i>financial incentive</i> allocated to each of a TNSP's <i>parameters</i> .

## Appendix A: Performance incentive scheme parameters—standard definitions

Parameter 1	Transmission circuit availability
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 transmission system (TNSP 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>exclude from ‘circuit unavailability’ any outages shown to be caused by a fault or other event on a ‘third party system’—e.g.</p>

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*

<b>Parameter 2</b>	<b>Loss of supply event frequency</b>
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 <i>return period</i> of one year</li> <li>▪ a y system minutes event has a <i>return period</i> 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>

<b>Parameter 3</b>	<b>Average outage duration</b>
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 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) <i>force majeure events</i>

## Appendix B: 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> $\frac{\text{No. of hours per annum defined (critical/non-critical) circuits are available} \times 100}{\text{Total possible no. of defined circuit hours}}$ <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 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> <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)</p> <p><i>force majeure events</i> Other events to be established in the <i>transmission determination</i></p>

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

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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**

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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:

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

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	<p>frequency of events where loss of supply exceeds x system minutes</p> <p>frequency of events where loss of supply exceeds y system minutes</p>
Unit of measure	number of events per annum
Source of data	to be established in <i>transmission determination</i>
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>the magnitude of x and y are to be established in the <i>transmission determination</i></p> <p>for the avoidance of doubt, y will be greater than x.</p> <p>system minutes are calculated for each supply interruption by the ‘load integration method’ using the following formula:</p> $\frac{\Sigma (\text{MWh unsupplied} \times 60)}{\text{MW peak demand}}$ <p>where:</p> <p>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</p> <p>period of the interruption starts when a loss of supply occurs and ends when ElectraNet offers supply restoration to the customer</p> <p>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</p> <p>the performance parameter applies to exit points only</p> <p>an interruption &gt;Y system minute(s) also registers as a &gt;X system minute(s) event</p> <p>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)</p>

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

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Unit of measure      minutes

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Source of data      ElectraNet

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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	circuit availability transformer availability
Unit of measure	percentage of total possible hours available.
Source of data	Transend
Definition/formula	<p>formula:</p> $\left( \frac{\text{No. hours per annum circuits are available}}{\text{Total possible no. of defined circuit hours}} \right) \times 100$ <p>definition: the actual circuit hours available divided by the total possible defined circuit hours available</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 (Transend to provide lists)</p> <p>circuit ‘unavailability’ will include outages from all causes including planned, forced and emergency events, including extreme events</p>
Exclusions	<p>unregulated transmission assets</p> <p>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</p> <p>exclude from ‘circuit unavailability’ any outages shown to be caused by a fault or other event on a ‘thirdparty system’ e.g. intertrip signal, generator outage, customer installation (Transend to provide lists)</p> <p><i>force majeure events</i></p>

---

**Parameter 2            Loss of supply event frequency**

---

This definition applies instead of the standard definition

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Sub-parameters        frequency of events where loss of supply exceeds 0.1 minutes  
                                 frequency of events where loss of supply exceeds 2.0 minutes

---

Unit of measure        number of events per annum

---

Source of data         Transend

---

Definition/formula    number of events greater than 0.1 system minutes per annum  
                                 number of events greater than 2.0 system minutes per annum

---

Inclusions             all unplanned outages exceeding the specified impact (that is, 0.1 minutes and 2 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  
  
                                 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 (where notification to affected parties is greater than 7 days)  
  
                                 *force majeure events*

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**Parameter 3            Average outage duration**

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This parameter does not apply to Transend.

## **Part 4—TransGrid**

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

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The standard definition applies with the following modifications:

- (1) replace the sub-parameters in the standard definition with the following sub-parameters:

transmission line availability

transformer availability

reactive plant availability.

### **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 “0.4” wherever it occurs.

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

---

The standard definition applies with the following modifications:

- (1) delete the sub-parameters:

transmission lines

transmission transformer/plant

- (2) apply a seven-day cap per event on outage restoration time.

## Part 5—EnergyAustralia

### Parameter 1 Transmission circuit availability

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This definition applies instead of the standard definition

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Sub-parameters tTransmission circuit (feeder) availability

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Unit of measure percentage of total possible hours available

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Source of data TNSP outage reports and system for circuit availability

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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

---

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)

circuit ‘unavailability’ will include 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*

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### Parameter 2 Loss of supply event frequency

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This parameter does not apply to EnergyAustralia.

### Parameter 3 Average outage duration

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This parameter does not apply to EnergyAustralia.

## **Part 6—Murraylink**

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

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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**

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This parameter does not apply to Murraylink.

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

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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	<p>scheduled availability</p> <p>forced peak availability</p> <p>forced off-peak availability</p>
Unit of measure	percentage of total possible hours (capacity weighted) available
Source of data	Directlink outage register and disturbance and outage report
Definition	<p>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</p> <p>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</p> <p>peak time is from 7.00 am to 10.00 pm weekdays (excluding public holidays in NSW)</p> <p>off- peak all other times</p>
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	<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</p> <p>circuit ‘unavailability’ to include outages from all causes including planned, forces and emergency events, including extreme events</p> <p>for the avoidance of doubt, ‘circuits’ include all regulated transmission assets on the Directlink network</p>
Exclusions	<p>unregulated transmission assets.</p> <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 (Directlink to provide lists)</p> <p>force majeure events (see varied definition below)</p>

#### 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**

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This parameter does not apply to Directlink.

**Parameter 3            Average outage duration**

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This parameter does not apply to Directlink.

## Part 8—Powerlink

Parameter 1	Transmission circuit availability
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	<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><i>force majeure events</i></p> <p>any outage not affecting Powerlink's primary transmission equipment</p>

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	number of events greater than 0.2 system minutes per annum number of events greater than 1.0 system minutes per annum
Unit of measure	number of significant events per annum.
Source of data	TNSP outage reporting system
Definition/formula	number of events greater than 0.2 system minutes or 1.0 system minutes where: $\text{System minute} = \frac{\text{Customer outage duration (minutes)} \times \text{load lost (MW)}}{\text{System maximum demand (MW)}}$ <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	all unplanned outages exceeding the specified impact (that is, 0.2 system minutes and 1.0 system minutes) all parts of the regulated transmission system extreme events
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) planned outages <i>force majeure events</i>

<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: 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:

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

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<sup>1</sup> lag 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:

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

AR = allowed revenue (above)

S = total s-factor (below)

t = regulatory year

ct = calendar year (below)

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

---

<sup>1</sup> SP AusNet is only subject to a three month lag



## The service standards factor

The *s-factor* for each measure is calculated by comparing a TNSP's performance against its *parameters* and the performance *targets, caps and collars* included in the TNSP's *transmission determination* within a *calendar year*. The maximum *s-factor* possible for each *parameter* is the *weighting* of that *parameter*.

The total *s-factor* is the sum of the *s-factors* for each parameter. The total *s-factor* result cannot exceed the percentage of *revenue at risk* specified in clause 2.6 of this *scheme*.

## Worked example

Assume that based on its performance between 1 January and 31 December 2007 a TNSP achieved a total *s-factor* of 0.80 per cent.

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

### 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, the MAR for the 2008 regulatory year would be:

$$\begin{aligned}
 \text{MAR}_{2008-09} &= \text{AR}_{2008-09} + \text{financial incentive}_{2007} \\
 &= \$120\text{m}^2 + \$0.84\text{m} \\
 &= \$120.84\text{m}
 \end{aligned}$$

<sup>2</sup> It is assumed that the MAR for the 2008–09 period will be \$120 million.

## 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 D: 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?