



Explanatory statement

Proposed amendment

Electricity transmission network service providers

Service target performance incentive scheme

November 2010

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Request for submissions

Interested parties are invited to make written submissions to the Australian Energy Regulator (AER) on the amendments proposed in this explanatory statement by the close of business 21 January 2011.

Submissions can be sent electronically to: aer inquiry@ aer.gov.au

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The AER prefers that all submissions be publicly available to facilitate an informed and transparent consultative process. Submissions will be treated as public documents unless otherwise requested. Parties wishing to submit confidential information are requested to:

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- provide a non-confidential version of the submission in a form suitable for publication.

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Enquiries about this explanatory statement, or about lodging submissions, should be directed to the Network Regulation North Branch of the AER on (02) 6243 1233.

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Shortened forms

AER	Australian Energy Regulator
LOS	Loss of Supply
MITC	Market Impact of Transmission Congestion
NER	National Electricity Rules
Scheme	Service target performance incentive scheme
TNSP	transmission network service provider

1 Introduction

The Australian Energy Regulator (AER) is responsible for the economic regulation of prescribed transmission services provided by transmission network service providers (TNSPs) in the National Electricity Market. The AER regulates TNSPs in accordance with the National Electricity Rules (NER). Clause 6A.7.4(e) of the NER required the AER to develop and publish the first service target performance incentive scheme by 28 September 2007. Clause 6A.7.4(e) further requires that a service target performance incentive scheme must be in force at all times after that date.

The Australian Competition and Consumer Commission (ACCC) released the first Service Standards guidelines in November 2003. In 2005 the AER adopted these guidelines as part of its compendium of regulatory guidelines. The Australian Energy Market Commission (AEMC) reviewed the framework for regulating electricity transmission services in 2006 and required the AER to publish a service target performance incentive scheme. On 31 August 2007 the AER published its first service target performance incentive scheme (version 1.0). In March 2008 the AER published version 2.0. The major difference between the versions 1.0 and 2.0 was that version 2.0 included the Market Impact of Transmission Congestion (MITC) parameter.

In August 2010 the AER received a proposal from Powerlink¹ to amend the service target performance incentive scheme. Powerlink's proposed amendments relate mainly to parameters and definitions specifically applicable to Powerlink. The relevant parameters and definitions are in appendix B of version 2.0 of the service target performance incentive scheme (the current scheme). The proposed amendments include:

- Changing the sub-parameters of the Transmission Circuit Availability parameter;
- Lowering the thresholds of the Loss of Supply Event Frequency parameter;
- Altering the definition of the Average Outage Duration parameter to use an interval mean.

Powerlink also proposed a refinement to the definition of the MITC parameter.

As required by clause 6A.20(b)(2) of the NER, this explanatory statement accompanies the proposed scheme. It sets out the NER requirements, the purpose and objectives of the proposed scheme, the nature and reasons for the proposed scheme and the consultation process to be undertaken. It also invites written submissions on the proposed scheme as required by clause 6A.20(b)(3) of the NER.

1.1 NER requirements

Amending a service target performance incentive scheme

Clause 6A.7.4(f) allows the AER to amend or replace a service target performance incentive scheme from time to time. However for an amendment or replacement to

¹ Powerlink, *Powerlink Service Target Performance Incentive Scheme Proposal 1 July 2012 to 30 June 2017 Regulatory Period*, 31 August 2010

apply to a TNSP, the final scheme must be published at least 15 months before the TNSP's next regulatory control period. Clause 6A.7.4(g) provides that the AER may from time to time amend or replace the values attributed to the performance incentive scheme parameters.

Paragraphs (f) and (g) of clause 6A.7.4 provide that any amendment or replacement of a service target performance incentive scheme or the values attributed to the parameters of the scheme must be in accordance with the transmission consultation procedures.

The transmission consultation procedures contained in part H of chapter 6A of the NER outline the process to be followed by the AER in developing the final service target performance incentive scheme. The transmission consultation procedures require the AER to publish the proposed scheme with an explanatory statement and invite written submissions on the proposed scheme. Within 80 business days of publishing the proposed scheme, the AER must publish the final scheme.

Requirements for a service target performance incentive scheme

Clause 6A.7.4(a) of the NER provides that a service target performance incentive scheme must comply with the principles set out in paragraph (b) of clause 6A.7.4. These principles are that a service target performance incentive scheme should:

- (1) *provide incentives for each Transmission Network Service Provider to:
 - (i) *provide greater reliability of the transmission system that is owned, controlled or operated by it at all times when Transmission Network Users place greatest value on the reliability of the transmission system; and*
 - (ii) *improve and maintain the reliability of those elements of the transmission system that are most important to determining spot prices;**
- (2) *result in a potential adjustment to the revenue that the Transmission Network Service Provider may earn, from the provision of prescribed transmission services, in each regulatory year in respect of which the service target performance incentive scheme applies;*
- (3) *ensure that the maximum revenue increment or decrement as a result of the operation of the service target performance incentive scheme will fall within a range that is between 1% and 5% of the maximum allowed revenue for the relevant regulatory year;*
- (4) *take into account the regulatory obligations or requirements with which Transmission Network Service Providers must comply;*
- (5) *take into account any other incentives provided for in the Rules that Transmission Network Service Providers have to minimise capital or operating expenditure; and*
- (6) *take into account the age and ratings of the assets comprising the relevant transmission system.*

1.2 Structure of this document

This document is structured as follows:

- Section 2 sets out the purpose and objectives of the proposed scheme.
- Section 3 outlines Powerlink's proposed amendments, the AER's consideration of those amendments and its reasons for the proposed scheme.
- Section 4 outlines the AER's proposed amendments.
- Section 5 contains the proposed scheme.

2 Purpose and objectives of the proposed scheme

The proposed scheme outlines the approach to setting a service target performance incentive within the transmission determination framework. The objectives of the proposed scheme, which are identical to those outlined in clause 1.4 of the current scheme, are to:

- contribute to the NEM objective (that is, promote efficient investment in, and efficient operation and use of electricity services for the long-term interests of consumers of electricity)
- be consistent with the principles in clause 6A.7.4(b) the NER (as set out in section 1.1 of this document)
- promote transparency in the information provided by a TNSP and AER decisions
- promote efficient TNSP capital and operating expenditure by balancing the incentive to reduce actual expenditure with the need to maintain and improve reliability for customers and minimise the market impact of transmission congestion.

2.1 Overview of the scheme

The scheme consists of two components, the service component and the market impact component. The service component has three parameters, with each parameter having two or more sub-parameters. The three parameters for the service component of the scheme are:

- Transmission circuit availability—

This system security parameter ensures the TNSP keeps the transmission circuits available to be energised and transport energy for as much of the period as possible. This parameter is generally disaggregated into two or more sub-parameters. The purpose of this parameter is to act as a lead indicator of reliability. If availability is low then reliability may be affected in future periods. This parameter incentivises TNSP performance around a target to maintain and improve availability of assets including transmission lines, transformers and reactive plant.

- Loss of supply event frequency—

The reliability of supply parameter uses system minutes to measure the size of an unplanned outage against the entire energy the network supplies. This parameter is generally disaggregated into a moderate (x) loss of supply sub-parameter and a large (y) loss of supply sub-parameter. The purpose of this parameter is to ensure that few loss of supply events will occur to the detriment of system users. This parameter is based on system minutes which represent the number of MWh of each unplanned outage as a proportion of the TNSPs peak system usage. The aim of this parameter is to minimise the number of events at each threshold.

- Average outage duration—

The operational response parameter measures the average length of an unplanned outage in minutes as a proxy for the time a TNSP takes to return a circuit to operation. This parameter incentivises the TNSP to minimise the average length of all unplanned outages to the benefit of system users. All unplanned outages greater than 1 minute are included in the calculation for this parameter, however, large duration outages are capped at 7 days.

The scheme operates for each regulatory control period and uses targets, caps and collars based on the previous 5 years performance data to assess a TNSPs performance in the following regulatory control period. Each TNSP's service performance on each sub-parameter is compared to its individual sub-parameter target during the relevant regulatory control period. Service performance improvements result in a financial bonus to the TNSP, while declines in service performance result in a financial penalty to the TNSP. The financial incentive or penalty is calculated using the formula set out in the scheme. This formula applies a weighting to each performance parameter. To date the financial incentive (or penalty) has been limited to 1 per cent of each TNSPs maximum allowed revenue (MAR) for the relevant calendar year. A TNSP's revenue in the following regulatory control year is then adjusted by the financial bonus or penalty accrued under the scheme.

Exclusions are used under each parameter to remove events which are outside the TNSPs control, for example the following events are excluded: successful auto reclose events (those outages resolved in less than 1 minute), force majeure events (bush fires, acts of war, government intervention, etc) and third party events (faults on a third party system that cause an outage on the transmission system) that are beyond the reasonable control of the TNSP.

The market impact component of the scheme includes the Market Impact of Transmission Congestion (MITC) parameter which incentivises the TNSP to operate to minimise transmission outages that can affect the National Electricity Market (NEM) spot price. This parameter is separate to the service component parameters and operates as a bonus only with up to 2 per cent of maximum allowed revenue at risk.

3 Amendments to existing parameters under the current scheme

The AER has reviewed the parameter and definition amendments proposed by Powerlink. This part of the explanatory statement sets out the AER considerations and the reasons for the proposed scheme.

3.1 Transmission Circuit Availability sub-parameter amendment

Powerlink proposal

Powerlink currently has three transmission circuit availability sub-parameters:

- critical circuits
- non-critical circuits
- peak circuits.

Critical and non-critical circuit parameters track transmission equipment availability at all hours of the year. Peak circuit parameters track transmission equipment availability at ‘peak’ times (that is 7 am–10 pm on weekdays excluding public holidays). Powerlink² proposes to change the sub-parameters of critical, non-critical and peak circuits to three individual availability sub-parameters of transmission lines, transformers and reactive plant. These sub-parameters track availability on these types of equipment at all hours of the year. Table 1 lists Powerlink’s existing and proposed sub-parameters for transmission circuit availability.

² Powerlink, *Powerlink Service Target Performance Incentive Scheme Proposal 1 July 2012 to 30 June 2017 regulatory period*, pp. 3-5.

Table 1: Powerlink’s existing and proposed sub-parameters for transmission circuit availability

Existing sub-parameters	Proposed sub-parameters
Peak circuits	Transmission lines
Critical circuits	Transformers
Non-critical circuits	Reactive plant

Source: Powerlink Service Target Performance Incentive Scheme Proposal

Powerlink stated that a shift away from the existing critical, non-critical and peak sub-parameters removes the overlap between the service component and market component of the scheme.³ With the introduction of the market impact parameter Powerlink stated it is now incentivised to minimise outages of critical elements at all times. Whereas, the current service component parameters (peak and critical) focus attention on ensuring the most important circuit elements are available during peak periods. As a result outages of network elements for routine maintenance and construction work are being scheduled in off-peak periods where resource costs are higher. Powerlink stated that if an outage can be managed during peak periods with no or minimal impact on users and the market it would be a more efficient course of action. Powerlink considered that the proposed sub-parameters, in conjunction with the market impact parameter, will change its incentives. Outages for routine maintenance and construction work on critical and non-critical plant would be able to be scheduled at any time provided there is no or minimal impact on users and the market, thus resulting in a more efficient use of resources.

Powerlink also proposed an amendment to the definition of circuits. It proposed to add in the words ‘*and reactors*’ and remove the words ‘*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.*’ Powerlink stated that the amendment would align the physical equipment with the proposed sub-parameters of transmission line, transformers and reactive plant.

AER considerations and conclusion

Sub-parameters

Clause 1.4(d) of the proposed scheme provides that an objective of the scheme is that it assists in setting efficient capex and opex allowances. This is done by balancing the incentive to reduce actual expenditure with the need to maintain and improve reliability and reduce the market impact of transmission congestion.

The AER accepts that the introduction of the market impact parameter creates an incentive for Powerlink to minimise the market impact of outages at all times. This assists in meeting the objective in clause 1.4 (d) of the scheme.

³ Powerlink commenced under the market impact component of the scheme on 18 July 2010.

The AER notes its decision⁴ for TransGrid which accepted that the application of the market impact parameter to TransGrid would allow for the peak/critical availability sub-parameters to be removed from applying to TransGrid. Likewise, now that the market impact parameter applies to Powerlink, the AER considers that changing Powerlink's transmission availability sub-parameters to plant categories of transmission lines, transformers and reactive plant is not inconsistent with the objective in clause 1.4(d) of the scheme.

While the AER in its development of the scheme did not explicitly consider the scenario where a TNSP may change sub-parameters it does not consider there is any reason why changing sub-parameters would be contrary to the objectives of the scheme. Powerlink's current sub-parameters are categorised into critical, non-critical and peak and its proposed sub-parameters are based on plant categories of transmission lines, transformers and reactive plant. Both categories are listed in Appendix A⁵ of the current scheme as applicable sub-parameters.

While the AER acknowledges there is a precedent to accept the removal of peak and critical circuit availability sub-parameters, the AER notes there are differences between TransGrid's meshed network (with multiple lines supplying various areas of the network) and Powerlink's "long and stringy" network (with single lines supplying most areas). One such difference is that due to weather conditions, demand can be fairly constant across traditional 'peak' periods (Monday – Friday 7am -10pm) and non-peak periods during summer for Powerlink, while demand on TransGrid's network across these periods is subject to greater variation. Therefore an outage in a 'peak' period in summer could have greater impact on customers on Powerlink's network than TransGrid's network. A seasonal peak period may therefore be appropriate for Powerlink.

The AER notes Powerlink's arguments for changing the sub-parameters, however it considers there is a risk that eliminating the 'peak' availability parameter and relying solely on the market impact parameter may have the following impacts:

- (1) Reduce the incentives to maintain availability and reduce the risk of loss of supply on key pieces of equipment connecting to loads (this is, assets whose outage would not result in a penalty under the market impact parameter) at peak times;
- (2) Reduce the incentive to shift outages that will have a material market impact to off-peak times.

The AER considers Powerlink's arguments would be reasonable if the market impact incentive fully and accurately reflected the true market impact of transmission unavailability. However, it only captures the effects of transmission outages on the dispatch of generators (and scheduled loads); it does not capture the impact on ordinary customers or unscheduled generators and loads. An outage on a transmission

⁴ AER, *Final decision: Electricity transmission network service providers – Service target performance incentive scheme (incorporating incentives based on the market impact of transmission congestion)* March 2008, p. 9.

⁵ AER, *Final, Electricity transmission network service providers–Service target performance incentive scheme*, March 2008, appendix A.

line which only affects customers could have a very substantial “market impact” but that impact would not be picked up in the market impact parameter. In addition, the market impact parameter does not distinguish effectively between events of the same duration but of different severity – the market impact parameter essentially only counts the duration of events with a market impact.

For these reasons the AER does not consider it appropriate to amend the scheme to remove the transmission network availability ‘peak periods’ sub-parameter unless Powerlink provides an alternative definition of a peak availability sub-parameter. For example, Powerlink may elect to retain the proposed sub-parameters (transmission lines/transformers/reactive plant) but further divide those parameters into peak/off-peak sub-components. The AER considers some form of peak incentive should remain.

The AER also considers there is a risk of dilution of incentives due to a switch from “ex ante” to “ex post” incentives. It may be that taking an outage at peak times does not directly cause a market impact, but merely increases the risk of a substantial market impact (if, say, a second outage occurs). While a substantial market impact would probably give rise to a penalty under the other parameters of the scheme, exclusive reliance on “ex post” measures would mean those penalties would need to be very large to prevent the TNSP from taking undue risks. A way of doing this would be to adjust the weightings assigned to the various parameters. The transmission availability parameters should be assigned a lesser weighting while the loss of supply parameter could be assigned a greater weighting.

For the reasons outlined above, the AER is not satisfied that the proposed amendments to the availability sub-parameters are appropriate. However, if Powerlink proposes a change to the sub-parameters that adequately addresses the AER’s concerns surrounding peak periods, the AER would accept the amendment. In drawing this conclusion the AER has had regard to the principles in 6A.7.4(b) of the NER and the objectives in clause 1.4 of the scheme.

A change in the peak sub-parameters should be made in conjunction with an increase in the weighting of the loss of supply parameters. As required by clause 4.3.6(a)(1) of the AER’s Submission Guidelines, Powerlink must propose the weightings for the parameters as part of its revenue proposal and explain how the weightings comply with the requirements of the scheme. In assessing the weightings proposed by Powerlink in its revenue proposal, the AER will have regard to the extent to which the transmission availability parameter captures peak periods in determining whether the proposed weightings will achieve the objectives of the scheme.

Circuit definition

The AER considers that the inclusion of ‘*and reactors*’ and the deletion of ‘*but does not include individual circuit breakers and isolators or secondary systems*’ is consequential to a change of sub-parameters based on plant categories. This is appropriate if changes are made to the sub-parameters based on plant categories.

The AER does not consider that the removal of ‘*and any other primary transmission equipment essential for the successful operation of the transmission system*’ is consequential to the proposed change in sub-parameters. This part of the definition is designed to ensure that any relevant parts of the transmission system not specifically

listed in the definition are included in the meaning. The AER notes that the definition of circuit for TransGrid – which applies the same sub-parameters as proposed by Powerlink – includes ‘*and any other primary transmission equipment essential for the successful operation of the transmission system*’. For consistency the AER considers the same definition should apply to both TNSPs. Therefore a change to the sub-parameters based on plant categories should be accompanied by the following definitional amendment:

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

If Powerlink does not propose appropriate plant categories, the current sub-parameters will remain unchanged and the existing circuit definition in the scheme will continue to apply.

3.2 Loss of Supply Frequency – threshold amendment

Powerlink proposal

The loss of supply event frequency parameter counts the number of loss of supply events with a duration longer than a certain threshold. Powerlink⁶ proposes to change the x and y thresholds of 0.2 and 1.0 system minutes respectively to 0.15 and 0.75 system minutes respectively. Powerlink stated that its loss of supply (LOS) performance has improved significantly over the last nine years. To provide an adequate incentive Powerlink considered the LOS thresholds need to reflect the design topology and load composition of its network. The proposed lower thresholds represent a balance between the inherent vulnerability of Powerlink’s long, skinny grid to larger loss of supply events and the improved performance over the last nine years.

Powerlink also proposed the following refinements to the LOS parameter definition:

1. the period of the interruption starts when a loss of supply event occurs and ends when Powerlink offers supply restoration to the customer
2. an interruption >0.75 system minute(s) also registers as a >0.15 system minute(s) event

AER considerations and conclusion

x and y system minute thresholds

The AER has reviewed Powerlink’s current x and y system minute thresholds for the LOS event frequency parameters and agrees that they are no longer appropriate. Powerlink currently has an x (moderate loss) and y (large loss) thresholds of 0.2 and 1.0 system minutes respectively. Powerlink, along with Transend, has much higher thresholds than the other TNSPs. Table 2 ranks all the TNSPs according to the

⁶ Powerlink, *Powerlink Service Target Performance Incentive Scheme Proposal*, pp. 6-7.

parameter settings. Powerlink’s higher thresholds can be partly justified on the grounds that it has a long and skinny network.

Table 2: Current TNSP LOS frequency event threshold

TNSP	“Moderate (x) loss” parameter	Target for x parameter	“Large loss” (y) parameter	Target for y parameter	Revenue at risk (total)(%MAR)
ElectraNet	0.05	8	0.2	4	0.30%
TransGrid	0.05	4	0.25	1	0.35%
SP AusNet	0.05	6	0.3	1	0.25%
Transend	0.10	15	1.0	2	0.55%
Powerlink	0.20	5	1.0	1	0.45%

Powerlink acknowledges its performance has significantly improved over the past nine years and to continue to provide an incentive to reduce LOS frequency and duration it would be appropriate that the current thresholds be lowered. Table 3 shows Powerlink’s performance for the past 4 years against current targets. It demonstrates that Powerlink has performed well compared to its targets.

Table 3: Powerlink’s performance against current targets

Performance Summary	2006	2007	2008	2009	Target
< 1.0 system minutes	0	1	0	1	1
< 0.20 system minutes	2	2	2	2	5

Source: STPIS reporting data

Given Powerlink’s performance, the AER agrees it is now appropriate to update the LOS event frequency thresholds. This will result in a meaningful incentive with a real opportunity for improved performance.

When assessing future LOS event frequency it is necessary to account for Powerlink’s historical performance and the likely targets, caps and collars that would result in the next regulatory control period. Targets for the scheme are generally set by the AER in the regulatory determination on the basis of performance over the previous 5 year period. However, the AER’s assessment of LOS event frequency thresholds has been made using the 4 years of available data from the current regulatory control period. Table 4 and 5 shows Powerlink’s 2006-2009 (calendar year) performance when measured against various LOS event frequency thresholds.

Table 4: Powerlink's historic performance with exclusions from 2006 to 2009 against various thresholds for the large (y) LOS event threshold

	Performance Summary	2006	2007	2008	2009	Average
1	< 1.0 System Minutes	0	1	0	1	1
2	< 0.75 System Minutes	1	1	0	1	1
3	< 0.60 System Minutes	1	1	1	1	1
4	< 0.50 System Minutes	1	1	1	1	1
5	< 0.40 System Minutes	1	1	2	1	1
6	< 0.30 System Minutes	2	1	2	1	2
7	< 0.25 System Minutes	2	2	2	2	2
8	< 0.20 System Minutes	2	2	2	2	2
9	< 0.15 System Minutes	2	4	4	3	3
10	< 0.10 System Minutes	3	4	5	3	4

Table 5: Powerlink's historic performance with exclusions from 2006 to 2009 against various thresholds for the moderate (x) LOS event threshold

	Performance Summary	2006	2007	2008	2009	Average
11	< 0.20 System Minutes	2	2	2	2	2
12	< 0.15 System Minutes	2	4	4	3	3
13	< 0.10 System Minutes	3	4	5	3	4
14	< 0.09 System Minutes	3	4	5	3	4
15	< 0.08 System Minutes	4	4	5	4	4
16	< 0.07 System Minutes	5	4	5	4	5
17	< 0.06 System Minutes	6	4	5	4	5
18	< 0.05 System Minutes	6	4	6	5	5
19	< 0.04 System Minutes	7	6	9	5	7
20	< 0.03 System Minutes	8	7	12	5	8
21	< 0.02 System Minutes	9	8	13	7	9
22	< 0.01 System Minutes	9	9	21	8	12

Source: AER calculations using Powerlink data

Although there is some year-to-year variation in actual performance when measured against the strictest thresholds (0.05 (line 18) and 0.20 (line 11)) currently applying to ElectraNet it is not clear that this variation is so large as to mask efforts by Powerlink to improve performance against these parameters over time.

There is no information to suggest that Powerlink's thresholds cannot be set in line with the thresholds used by other TNSPs except for its argument of having a long and skinny network. Lowering the thresholds does not imply higher performance standards on Powerlink or a reduction in the revenue Powerlink would expect to earn. A reduction in the thresholds only implies that certain events which could previously be ignored by Powerlink must now be taken into account if Powerlink wishes to respond to this component of the scheme.

Changing the thresholds will expand the range of events relevant to Powerlink when seeking to improve its service performance. The threshold should be set at a level to exclude events over which Powerlink has very little control.

The AER accepts that very short interruptions to supply in which power is restored automatically within a few seconds can legitimately be excluded from consideration under the LOS event parameter. However, longer LOS events are at least partially under the control of Powerlink and therefore should be included when assessing performance.

Having analysed the data, the AER considers that setting Powerlink's x and y thresholds at 0.05 and 0.30 system minutes will provide Powerlink an opportunity to improve its performance and allow suitable targets, cap and collars to be determined.

In determining the appropriate threshold the AER has reviewed Powerlink's historic performance. It notes that performance against a LOS event frequency parameter with a threshold of 0.75 (as proposed by Powerlink (line 2)) would result in the same potential target that has applied under the 1.0 system minute threshold (line 1) for the past 4 years. The historic data shows that against a 0.75 system minute threshold, Powerlink has consistently reported a small number of events for each of the past 4 years resulting in an average of 1 event (when rounded to the nearest integer number). This is the same average number of events as under the 1.0 system minute event threshold. The AER does not consider adopting a 0.75 system minute threshold with a likely performance target of 1 event would be appropriate as it leaves little room for improvement in performance.

The AER therefore assessed Powerlink's performance against lower LOS event thresholds. In the range of 0.30 (line 6) and 0.20 (line 8) the likely target would be 2 events for the large (y) loss threshold. At this level it is possible for the AER to more appropriately incentivise performance as a potential cap of 0 events and potential collar of 4 events could be applied. This would allow Powerlink to improve its LOS performance. The AER notes that performance at the 0.30 system minute threshold level has been an average of 2 events per year for the last 4 years.

Arguably the AER could propose a 0.20 (line 8) system minute event threshold as it also would likely result in a target of 2 and also would provide the same room for improvement. The AER notes that Powerlink's performance over recent years is sufficient to suggest it should have a threshold of 0.20 system minutes as its performance at this level is lower than ElectraNet's target. However noting Powerlink's current large and moderate threshold (1.0 and 0.2 system minutes respectively) the AER considers it is not appropriate to apply the 0.20 system minute threshold to Powerlink. In addition the AER notes Powerlink's transmission system is the longest and skinniest in the NEM meaning it lacks the redundancy other meshed networks may use to achieve high performance against a lower threshold. In the AER's opinion Powerlink's long and skinny network design is offset by Powerlink's performance against this parameter. The AER will continue to assess Powerlink's performance to ensure it is adequately incentivised to maintain and further improve against this parameter.

When assessing the moderate (x) loss threshold the AER reviewed the performance of Powerlink over the previous 4 years (during which time it had no incentive to control

outages below the 0.2 system minute event threshold). Powerlink's performance against its current threshold of 0.2 system minutes was 2 events. Powerlink's performance against a 0.15 system minute (line 12) threshold shows an average of 3 events. The AER considers a movement in the average number of events from 2 to 3 would provide limited room for improvement. Therefore Powerlink's proposed moderate (x) loss of supply event threshold of 0.15 system minutes would result in an incentive to improve reliability that is weak.

As such the AER considers that a moderate (x) loss of supply event threshold should be set equivalent to the other TNSPs at the 0.05 system minutes. As Powerlink was previously not incentivised to control loss of supply events less than 0.20 system minutes, setting the moderate (x) loss of supply threshold at 0.05 system minutes with a potential target of 5 events should allow Powerlink to improve its performance over the next regulatory control period.

The AER considers setting Powerlink's x and y thresholds at 0.05 and 0.30 system minutes respectively will provide Powerlink with an opportunity to improve its performance and allow suitable performance caps, collars and targets to be determined. In drawing this conclusion the AER has had regard to the principles in 6A.7.4(b) of the NER and the objectives in clause 1.4 of the scheme.

Period of the interruption

The AER considers that Powerlink's amendment to the scheme that would allow it to exclude the proportion of an outage where a customer does not accept having their power re-connected is appropriate. This amendment was made in the scheme to ElectraNet,

SP AusNet, TransGrid and Transend and will be applied to Powerlink to ensure a consistent scheme is applied across all TNSPs.

Events greater than y system minutes registering as greater than x system minutes

The AER considers that Powerlink's proposal that an interruption >0.75 system minute also registers as a >0.15 system minute event is appropriate. This amendment was made in the scheme to ElectraNet, SP AusNet, and TransGrid and will be applied to Powerlink to ensure a consistent scheme is applied across TNSPs.

3.3 Average Outage Duration – definitional amendment

Powerlink proposal

Average outage duration is defined as the average time taken to restore an unplanned network outage. The current average outage duration parameter is simply the average of all unplanned outages with a duration of more than one minute. Outages with a duration of longer than seven days are capped at seven days (10080 minutes). Powerlink⁷ proposed to use a similar average outage duration definition, with a refinement to the outage duration data set. To calculate the interval mean the data set will include only the outage duration events that fall between the 5th and 95th percentile. Outage duration events that fall outside the 5th and 95th percentile will be excluded from the calculation of the mean.

⁷ Powerlink, *Powerlink Service Target Performance Incentive Scheme Proposal*, pp. 8-10.

Powerlink also proposed to add the following exclusion from the average outage duration parameter:

any outages shown to be caused by a fault or other event on a 'third party system'

Other exclusions proposed by Powerlink are discussed in section 3.5 of this document.

AER considerations and conclusion

Calculation of the interval mean

Powerlink's proposed approach would exclude entire events from the data set used to calculate the interval mean. Consequently, in determining performance using the proposed 95th percentile events with an outage duration longer than 10583 minutes would be excluded from the performance assessment. Currently, events greater than 10080 minutes (7 days) are capped at 7 days and included in the calculation of the interval mean.

The AER does not consider that longer outage duration events should be excluded from the measurement of performance. The exclusion of events longer than 10583 minutes is likely to bring down the interval mean. When based on a smaller sample of observations, the analysis of mean performance is more sensitive to exclusions. The AER is concerned that given the number of transmission outages a statistical approach will increase this sensitivity. There are already exclusions allowed for under the scheme for the average outage duration parameter and Powerlink proposes an additional exclusion related to capacitor banks in the winter period, as discussed below. To allow blanket exclusions above the threshold of the 95th percentile suggests all such events are uncontrollable. However, the AER does not consider that all such events are uncontrollable. In this regard, serious failures by a TNSP in restoring an outage can result in the threshold being breached. Such events should not be exempted from the operation of the scheme. The AER also does not wish to create a perverse incentive for a TNSP to not return a line to service for an outage that nears the threshold, so as to have that event excluded from the calculation of the interval mean.

A statistical approach to determining exclusions is more relevant where outages are more frequent and it is difficult to separate controllable and uncontrollable events by reviewing each outage (that is, where there is a lot of noise in the data). The AER notes that the 2.5 beta method used by electricity distributors in the calculation of SAIDI reflects the greater frequency of outage events and arguably greater noise surrounding those events. For example, it is difficult to judge how severe a storm must be before a distributor loses its ability to manage the effect of that storm on its network. Despite the potential for greater noise, the 2.5 beta method uses a higher threshold than that proposed by Powerlink, effectively excluding events greater than the 99th percentile.

The AER does not consider a valid argument has been put forward as to why the 5th percentile should be used to exclude shorter duration events. Based on the data provided by Powerlink, the use of the 5th percentile would set a threshold that excludes events less than about 4-5 minutes. The current threshold of less than one

minute already excludes “automatic reclose” events, which are primarily due to transient issues such as weather, and was presented by Powerlink as a reason for adopting its proposed approach. The AER considers that outages of between one and 4-5 minutes are, to an extent, within the control of Powerlink. The exclusion of the shorter duration events has an opposite effect to the exclusion of longer duration events in that this approach is likely to increase the interval mean.

On balance, the AER considers that the scheme’s current settings provide for outcomes more consistent with the National Electricity Objective and clause 6A.7.4(b) of the NER than Powerlink’s proposal. This is because the incentives to provide reliability of service under the current scheme are greater than those proposed by Powerlink. It is unclear whether the two groups of exclusions (that is, those above the 95th percentile threshold and those below the 5th percentile threshold) will be offsetting in their effect. The AER also notes that the thresholds will necessarily ‘move around’, being based on percentiles in a distribution that will only take shape as the year progresses. The AER considers that specifically identifying uncontrollable events is preferable for TNSPs, rather than relying on a broad statistical approach. The AER therefore considers that Powerlink’s proposed amendment to use a statistical approach to determine exclusion events under the average outage duration parameter is not appropriate. In drawing this conclusion the AER has had regard to the principles in 6A.7.4(b) of the NER and the objectives in clause 1.4 of the scheme.

Exclusion for outages caused by third party systems

The AER notes that an exclusion for outages caused by third party systems applies to the average outage duration parameter for TransGrid, Transend and ElectraNet. To ensure consistency across TNSPs, the AER considers that Powerlink’s proposal that this exclusion should apply to Powerlink’s average outage duration parameter is appropriate.

This exclusion also applies to Powerlink for the other two parameters of the scheme. As discussed in section 3.5, the AER considers that the wording of Powerlink’s proposed amendment to the exclusion is not appropriate. Therefore the exclusion will apply as currently worded for the other two parameters for Powerlink, i.e. it will include the examples currently included.

3.4 Market Impact of Transmission Congestion – exclusion amendment

Powerlink proposal

The market impact parameter is a simple count of the number of dispatch intervals in which the constraint marginal value of an outage constraint exceeds \$10/MWh. Powerlink propose that in the event that a distribution network service provider (DNSP) can be shown to be partly responsible for the binding outage constraint (e.g., because it has also take an outage at the same time) then the TNSP should share the affected dispatch intervals equally with the DNSP. Powerlink’s argument is that this will give it an incentive to coordinate outages with the distribution businesses.

AER considerations and conclusion

Appendix C ⁸ of the current scheme includes a clause which is designed to encourage co-operation between TNSPs when planning outages. Specifically, the scheme includes the following text:

“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”.

Changing the definition to allow for co-operation between TNSPs and DNSPs appears plausible. For example, it could be that the best time for the TNSP to take an outage is at time X, but it could also take the outage at very little disadvantage at time Y. On the other hand, a DNSP wishing to take a complementary outage might find that its costs are significantly higher if the outage is taken at time Y rather than time X. In the absence of any reward for cooperation, the TNSP will take the outage at a time which is in its own interests, ignoring the consequences for others.

However, co-operation only benefits the market as a whole if it reduces the total number or duration of outages to which market participants are exposed. Suppose, for example, that the incentives on DNSPs to not take outages are very weak. In this case, a mechanism of the kind proposed by Powerlink could have the effect of inducing the TNSP and the DNSP to co-operate by agreeing that the DNSP will take an outage when requested to do so by the TNSP. This may increase the total number or duration of outages to which market participants are exposed.

At present the current service target performance incentive scheme for DNSPs focuses primarily on SAIDI and SAIFI measures. It does not focus at all on the market impact on any embedded generation in the DNSP’s network. As a result there is a concern that encouraging co-operation between TNSPs and DNSPs in the manner proposed by Powerlink will increase (or, at best, not decrease) the number of outages affecting these generators.

The incentive for TNSPs to enter into agreements with DNSPs could be strong. For Powerlink, each additional hour that an outage contributes to the market impact parameter has the potential to reduce the bonus received by Powerlink under the market impact component of the scheme by around \$100,000. Obtaining an agreement with a DNSP could cut that figure in half.

The AER considers that unless Powerlink can demonstrate that the resulting co-operation would result in a reduction in the total number or duration of outages the proposed amendment is not consistent with the objectives of the scheme and therefore not appropriate.

⁸ AER, *Final, Electricity transmission network service providers–Service target performance incentive scheme*, March 2008, appendix C

3.5 Other exclusion amendments

Powerlink proposal

Powerlink has also proposed the following changes to the parameter definitions of the scheme:

- removal of the examples listed in the exclusion for outages shown to be caused by third party systems. The examples currently listed are intertrip signal, generator outage, and customer installation. This exclusion applies to the circuit availability, loss of supply, and average outage duration parameters;
- the addition of the words ‘under frequency load shedding caused by third party events’ to the exclusions from the circuit availability, loss of supply, and average outage duration parameters;
- the addition of the words ‘capacitor banks in the off-peak seasonal periods’ to the exclusions from the circuit availability and average outage duration parameters.

AER considerations and conclusion

Third party events

The AER does not consider that Powerlink’s proposal to alter the definition of third party event to remove the examples (that is the text “*eg. intertrip signal, generator outage, customer installation*”) is appropriate. The AER considers it important to maintain consistent definitions between TNSPs. Appendix B of the scheme currently includes the examples in the definitions applicable to individual TNSPs. The examples that Powerlink proposes to remove currently apply to all TNSPs. The AER does not consider a valid reason for removing the examples has been made given that the removal would lead to greater inconsistency across TNSPs.

The AER notes that a comprehensive review of the scheme is likely to be undertaken in late 2011 in preparation for the next round of TNSP reviews. The AER would welcome submissions on elements of the scheme such as the definition of third party event at that time.

Under frequency load shedding caused by third party events

When considering Powerlink’s proposed under frequency load shedding caused by third party events exclusion the AER has assessed the current third party exclusion that would capture this event.

As a hypothetical example, in an energy market in which one large generator causes under frequency load shedding due to a fault in its equipment, the TNSP on whose network the under load shedding had occurred would be able to claim a third party outage. That is the exclusion under the current scheme includes ‘*any outages shown to be caused by a fault or other event on a “third party system”*’ (p.42 of the scheme). This is because the primary cause of the under load shedding event was shown to be caused primarily by the third party event on the generator equipment and therefore beyond the control of the TNSP.

As the under frequency load shedding caused by a third party event would be captured by the existing third party exclusions, the AER considers that the proposed amendment to the scheme is not appropriate.

Capacitor banks in off-peak seasonal periods

In considering Powerlink's proposal to exclude the capacitor banks in the winter off-peak season the AER requested further information from Powerlink. The information relates to the utilisation of capacitor banks in an average 12 month period based on utilisation data for the last 4 years. The information provided by Powerlink shows a significant drop in capacitor bank utilisation between April and October. Based on historical data it appears Powerlink would be able to take an outage on its largest capacitor bank and maintain its network during the winter months.

Therefore the AER considers that capacitor banks can be excluded in the off-peak season, 1 April to 31 October, from the reactive plant availability and average outage duration parameter. The AER considers that the return to service of these capacitor banks in this period should not be a priority for Powerlink as they don't appear to be required. The AER notes that this will only slightly increase Powerlink's risk of a LOS event provided sufficient capacitor banks remain available and therefore will not contradict the objectives of the scheme. The AER further notes adjustments to Powerlink's reactive plant availability and average outage duration parameter data will be necessary when setting the targets to account for this exclusion. The AER will monitor this exclusion in future regulatory control periods to ensure it remains valid as Powerlink's network grows and its operational requirements change.

4 AER proposed amendments

The AER is proposing the following amendments to the scheme.

4.1 Minor amendments

AER proposal

The scheme contains various pieces of legacy text that need to be updated. Examples include changing references to the National Energy Market Management Company (NEMMCO) to the Australian Energy Market Operator (AEMO), and removing references to VenCorp in the scheme as VenCorp is no longer a TNSP and accordingly the scheme does not apply to it. As such the AER has performed a house-keeping review of the scheme to make the required changes to the text.

As part of this review, the AER has updated the scheme to include any amendments made in the most recent transmission determinations for SP AusNet⁹, ElectraNet¹⁰, TransGrid¹¹ and Transend¹².

Other minor amendments the AER proposes are:

- remove the quotation marks in ‘third party system’ where they appear throughout the scheme. As some references to a third party system appear without quotation marks, there is inconsistency in the text. Given that third party system is not defined in the scheme, quotation marks are unnecessary.
- change references from ‘3rd’ to ‘third’ for consistency
- include the values for x and y for each TNSP in the definition/formula section of parameter 2 in Appendix B, and replace references to the specific values in parameter 2 in Appendix B with references to x and y. This will ensure consistency in wording across TNSPs.
- insert an exclusion for SP AusNet for the average outage duration parameter for outages caused by third party systems. This exclusion currently applies for this parameter to TransGrid, Transend and ElectraNet, and it is proposed that it also applies to Powerlink (see section 3.3). During the 2007 compliance review, it became apparent that SP AusNet’s targets were calculated using historical data that excluded third party outages. It appears that the absence of this exclusion for this parameter was an oversight, and it should be corrected by inserting it into the scheme.
- remove all instances in Appendix B of exclusions requiring ‘*TNSP to provide lists*’, and insert a note under each exclusion explaining that TNSPs are required to provide details to the AER on an annual basis under the AER’s Information

⁹ AER, *Final Decision: SP AusNet Transmission Determination 2008-09 to 2013-14*, Appendix B.

¹⁰ AER, *Final Decision: ElectraNet Transmission Determination 2008-09 to 2012-13*, Appendix C.

¹¹ AER, *Final Decision: TransGrid Transmission Determination 2009-10 to 2013-14*, Appendix F.

¹² AER, *Final Decision: Transend Transmission Determination 2009-10 to 2013-14*, Appendix F.

Guidelines of any events the TNSP proposes as exclusions and how they meet the exclusion definition.

- clarify that where TNSPs are required to provide lists of the circuits that meet the definition under the circuit availability parameter, that these lists are to be provided on an annual basis.

5 AER proposed position

The AER has published the amended Service Target Performance Incentive Scheme at appendix A in accordance with the consultation procedures in clause 6A.20(e) of the NER.

Appendix A: Service Target Performance Incentive Scheme