Issues Paper

Electricity transmission

Service Target Performance Incentive Scheme

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AUSTRALIAN ENERGY REGULATOR

Contents

1 Introduction

The Australian Energy Regulator (AER) is responsible for regulating the revenues of transmission network service providers (TNSPs) in the national electricity market (NEM) in accordance with the National Electricity Rules (Electricity Rules).

Under clause 6A.7.4 of the Electricity Rules, the AER is responsible for establishing a service target performance incentive scheme (STPIS). This scheme is designed to provide incentives for each TNSP to maintain or improve the reliability of transmission network services.

The AER is reviewing the current STPIS to determine whether the scheme should be amended. This issues paper has been prepared as the first step in this review. This issues paper identifies a number of issues and outlines the scope of the AER's proposed review.

1.1 The development of the current scheme

The STPIS was based on the service standards guidelines developed by the Australian Competition and Consumer Commission (ACCC) in 2003.[1] The ACCC service standards guidelines aimed to address the incentives provided to TNSPs under an ex ante revenue cap to reduce operating costs below forecast levels at the expense of service quality. The guidelines attempted to address this incentive by linking TNSPs' performance against defined service level measures to their regulated revenues.

In 2006 the Australian Energy Market Commission (AEMC) reviewed the framework for regulating electricity transmission networks. The new arrangements required the AER to release guidelines on its approach to regulation including a new service target performance incentive scheme.

In accordance with the Electricity Rules, the AER published the STPIS (version one) in August 2007.[2] The AER incorporated the service measures (referred to as parameters) that were previously used under the ACCC's service standards guidelines. These parameters included:

- circuit availability
- loss of supply event frequency, and
- average outage duration.

These parameters focus on providing an incentive to TNSPs to improve network availability and reliability. The parameters that apply to electricity transmission networks are in some respects different from those that apply to electricity distribution networks. This is because electricity transmission networks are inherently reliable,

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1 ACCC, *Decision – statement of principles for the regulation of transmission revenues service standard guidelines*, 12 November 2003.

2 AER, *Final decision – electricity transmission network service providers service target performance incentive scheme*, August 2007.

with significant built in redundancy. As such, interruptions to supply occur very rarely and generally only when there are multiple and significant concurrent events.

Another feature of transmission networks is that, in general, generators are connected to the wholesale market at the transmission level. Version one of the STPIS did not address incentives on TNSPs to reduce the market impact of transmission congestion. Transmission network congestion can lead to higher wholesale prices, which in turn flows through to customer energy prices.

The AER published the STPIS (version two) in March 2008.[3] This version split the scheme into two components:

- the service component, which incorporated the existing network availability and reliability parameters, and
- a new market impact component.

The market impact component provides an incentive to TNSPs to improve the availability of the transmission system at times and on those elements of the network that are most important to determining spot prices.

In March 2010 the AEMC published amendments to the Electricity Rules which permitted the application of the market impact component to TNSPs earlier than under the normal regulatory timelines.[4] The market impact component currently applies to TransGrid, Powerlink, ElectraNet and SP AusNet. It will apply to Murraylink from 1 July 2013 and Directlink from 1 July 2015.

Finally, the AER released the STPIS (version three) in March 2011.[5] This version incorporated relatively minor amendments to the parameters that will apply to Powerlink in its next regulatory control period and is the current version of the scheme.

1.2 Overview of the STPIS

The STPIS aims to provide an incentive to TNSPs to maintain and improve service performance in operating and maintaining their networks.

The key elements of the scheme include:

- parameters and sub-parameters (and their definitions)
- the revenue at risk
- targets, caps and collars

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3 AER, *Final decision – electricity transmission network providers service target performance incentive scheme (incorporating incentives based on the market impact of congestion),* March 2008.

4 AEMC, *Rule determination – national electricity amendment (early implementation of the market impact parameters) rule 2010,* 11 March 2010.

5 AER, *Final decision – electricity transmission network providers service target performance incentive scheme,* March 2011.

- weightings, and
- timing for measuring performance.

Each of these are explained briefly below.

Parameters

The parameters are the performance indicators that are used to assess each TNSP's performance under the scheme. The parameters included in the scheme are:

- circuit availability
- loss of supply event frequency
- average outage duration, and
- the market impact parameter.

The first three of these parameters (and the arrangements for their application) are set out in the service component of the scheme. The final parameter is set out in the market impact component.

The scheme sets out the definitions for each parameter. The definitions outline:

- any sub-measures
- the unit of measure
- source of data
- formula
- exclusions, and
- inclusions.

The draft STPIS (version one) that applied during the last ElectraNet and SPAusNet determinations permitted certain other elements of the parameter definitions (such as the definition of peak periods) to be included in the transmission determinations for these businesses.[6]

The circuit availability and loss of supply event frequency parameter definitions include further sub-parameters. The sub-parameters are based on the broader parameter definition, but generally target slightly different timeframes or assets. For example the circuit availability parameter may include sub-parameters that focus on availability only at peak times or on particular types of transmission assets. Similarly

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[6] AER, *Draft decision – electricity transmission network service providers service target performance incentive scheme,* August 2007, p.13, 15.

the loss of supply event frequency parameter has two sub-parameters to capture events of different magnitudes.

The parameters and sub-parameters that apply to each TNSP are set out in the STPIS. The parameters that apply under the service component (including their definitions) generally vary between TNSPs.

The revenue at risk

The scheme places a percentage of a TNSP's maximum allowed revenue (MAR) at risk. Under the STPIS a TNSP can receive:

- a financial bonus or penalty of up to +/- 1 per cent of MAR under the service component of the scheme, and
- a financial bonus of up to 2 per cent of MAR under the market impact component. A TNSP cannot receive a penalty under the market impact component.

Weightings

The weightings describe the way in which the financial incentive is distributed across parameters. The AER assigns the weightings that apply to each parameter under the service component of the scheme during the transmission determination. The weighting of a parameter defines the total amount of revenue at risk that is placed on each parameter and sub-parameter in the service component of the scheme. The sum of each of the weightings (for each parameter and sub-parameter) will total the revenue at risk.

The market impact component does not have weightings as it only includes one parameter.

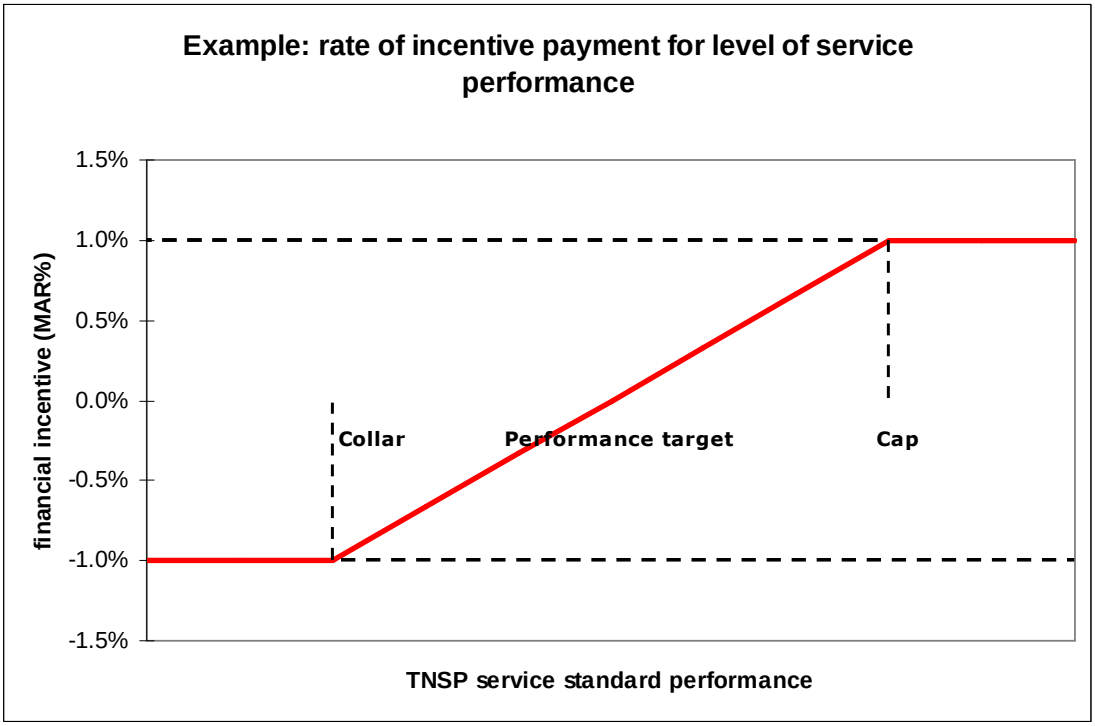
Targets, caps and collars

The AER establishes a performance target, cap and collar for each of the parameters in each TNSP's transmission determination:

- The performance target defines the level of performance at which a TNSP will not receive a penalty or a bonus.
- The cap defines the level of performance at which the TNSP will receive the total maximum bonus, such that it will not receive any further increase in its revenues for further improvements in performance.
- The collar defines the level of performance at which the TNSP will receive the total maximum penalty, such that it will not receive any further decrease in its revenues for further reductions in performance.

Together the performance target, collar and cap define the rate of incentive payment for any given level of performance (see figure 1.1). The percentage increment or decrement that the MAR is adjusted by in each financial year is called the service standards factor (or s-factor).

Figure 1.1: Service standard collar, target and cap



Box 1.1 sets out a simplified example of how the target, cap and collar is used to determine the financial penalty or bonus applying to a TNSP.

Box 1.1: simplified example of operation of the scheme

Assume that a TNSP has two parameters applying to it under the service component of the STPIS:

- circuit availability with a weighting of 0.35 per cent, and
- average outage duration with a weighting of 0.65 per cent.

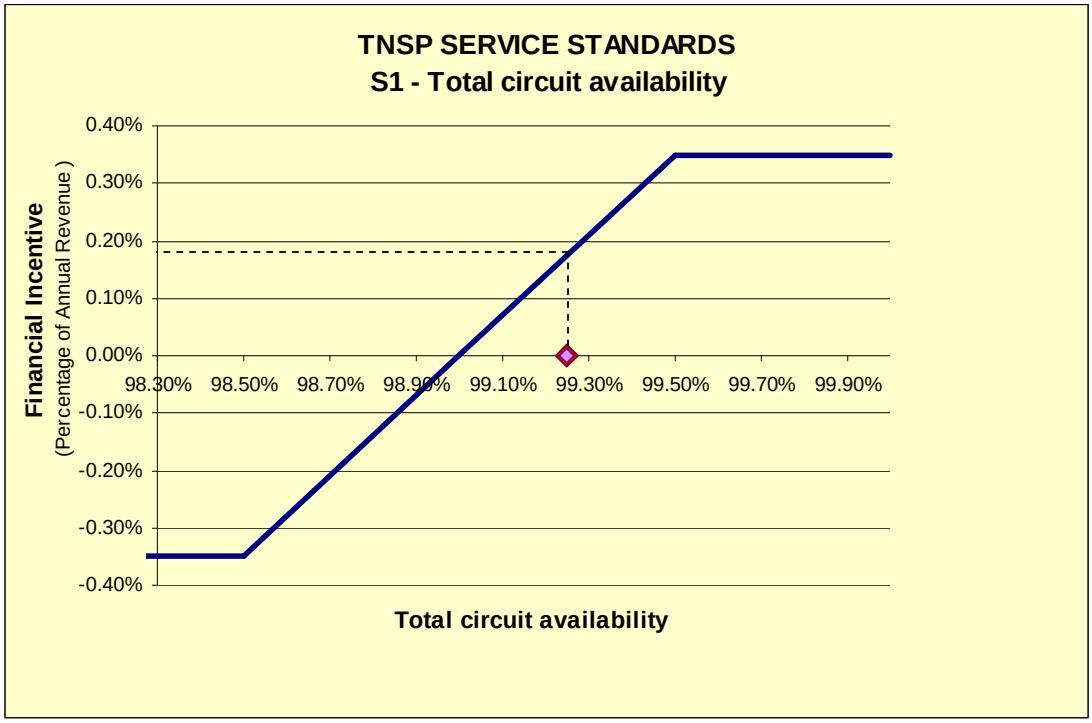
For simplicity, the following considers the TNSP's performance under the circuit availability parameter only. Assume that for this parameter:

- the performance target is 99.00 per cent availability
- the cap is 99.50 per cent availability, and
- the collar is 98.50 per cent availability

Also assume that the TNSP achieved an average circuit availability of 99.25 per cent over a calendar year.

The TNSP's performance incentive curve for this parameter is at figure 1.2

Figure 1.2: Example of operation of the scheme



In this example the TNSP has achieved a bonus (or 's-factor') for this parameter of 0.175 per cent of its allowed revenue. The overall financial incentive (bonus or penalty) the TNSP will receive will also depend on its performance under the average outage duration parameter.

The performance targets are typically calculated by averaging the TNSP's historical performance over the previous five years. The scheme permits some limited adjustments to be made to these historical averages. For example a performance target under the service component of the scheme may be adjusted for (among other things) the expected effects of any increase or decrease in the volume of capital works undertaken during the period.

In some limited circumstances a TNSP may also propose a performance target under the service component of the scheme that is not based on historical averages. In these circumstances the performance target may be based on an alternative benchmark or methodology.

The cap and the collar are calculated by reference to the proposed performance targets. The cap and collar may result in symmetric or asymmetric incentives for a TNSP. The AER has typically considered statistical analysis in setting cap and collar values.

Timing for measuring performance

The STPIS requires that each TNSP's performance is measured over a calendar (rather than financial) year. The financial bonus or penalty is then applied to each TNSP's MAR in the following financial year. This approach is taken to reduce the lag between the annual performance being measured and the financial incentive being added or subtracted from the MAR to six months.

Appendix D of the STPIS (version three) provides further detail on how the adjustment to the MAR is calculated.

1.3 Rationale and scope of the STPIS review

The AER considers it is timely to undertake a detailed review of the effectiveness of the service component of the STPIS. Since its inception, there have been no major reviews or amendments to the service component. In this period, the AER has completed its first round of transmission determinations and has identified a number of issues in regard to both the application of the STPIS in revenue determinations and in its annual compliance reviews.

As the market impact component was only introduced in 2008, the review will not consider a major review to this part of the scheme. However, the review will consider the design of the incentive framework related to the market impact component. This approach is consistent with the AER's view that the STPIS model should be developed over time.[7]

The review will focus on the following areas:

- service component parameters (including exclusions)
- weighting of service component parameters
- methods for setting targets, caps and collars
- the amount of revenue at risk
- the method for establishing the financial incentive for the service component
- the method for establishing the financial incentive for the market impact component, and
- the triggers to amend the STPIS.

1.4 The process and timing of the review

The AER may amend or replace the STPIS at any time, however the amendment or replacement cannot apply to a TNSP for a regulatory control period that has commenced before, or that will commence within 15 months of the amendment or replacement coming into operation.[8]

In amending the scheme, the AER must comply with the transmission consultation procedures set out in the Electricity Rules.[9] The transmission consultation procedures require the AER to publish a proposed STPIS and explanatory statement. Interested parties must have at least 30 business days to provide submissions on the draft scheme. Within 80 business days of publishing the draft STPIS, the AER must

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7 AER, *AER submission transmission frameworks review issues paper*, September 2010, p.10.
8 *National Electricity Rules*, Clause 6A.7.4 (f).
9 *National Electricity Rules*, Clause 6A.7.4 (f).

publish its final decision which sets out (among other things) the final STPIS.[10] The AER may also publish issues, consultation and discussion papers and hold conferences and information sessions on the proposed scheme as it considers appropriate.[11]

The AER plans to amend the STPIS to apply to the next round of transmission determinations, commencing with ElectraNet. For any amended scheme to apply to ElectraNet, it must be in place by 31 March 2012.

Table 1.1 outlines the planned consultation process.

Table 1.1 Consultation process.

Date	Action
11 October 2011	Publish issues paper and invite written submissions
11 November 2011	Close of written submissions on issues paper
December 2011	Publish explanatory statement and draft scheme and invite written submissions
February 2012	Close of written submissions on draft scheme and accompanying explanatory statement
31 March 2012	Publish final decision

1.5 Request for submissions

Interested parties are invited to make written submissions to the AER on the issues discussed in this paper by the close of business Friday 11 November 2011. Submissions can be sent electronically to AERinquiry@aer.gov.au.

Alternatively, written submissions can be sent to:

Mr Chris Pattas
General Manager
Network Operations and Development Branch
Australian Energy Regulator
GPO Box 520 Melbourne Vic 3001
Tel: (03) 9290 1444 Fax: (03) 9290 1457

The AER prefers that all submissions be publicly available to facilitate an informed and transparent process. Submissions will be treated as public documents unless otherwise requested and will be placed on the AER's website (www.aer.gov.au). Parties wishing to submit confidential information are requested to:

- clearly identify the information that is subject of the confidentiality claim and

[10] *National Electricity Rules*, Clause 6A.20.
[11] *National Electricity Rules*, Clause 6A.20(d).

- provide a non-confidential version of the submission, in addition to the confidential one.

The AER does not generally accept blanket claims for confidentiality over the entirety of the information provided and such claims should not be made unless all information is truly regarded as confidential. The identified information should genuinely be of a confidential nature and not be otherwise publicly available.

In addition, parties must identify the specific documents or relevant parts of those documents which contain confidential information. The AER does not accept documents or parts of documents which are redacted or 'blacked out'.

For further information regarding the use and disclosure of information provided to us, please refer to the *ACCC–AER information policy: the collection, use and disclosure of information* on our website under 'Publications'.

Any enquiries about this issues paper, or about lodging submissions, should be directed to AERinquiry@aer.gov.au.

1.6 Structure of this issues paper

The remainder of this issues paper is structured as follows:

- chapter two sets out some objectives and criteria for assessing amendments to the transmission STPIS
- chapter three reviews the service component parameters, service component exclusions and triggers to amend the scheme
- chapter four reviews the weighting of parameters and the setting of targets, caps and collars for the service component, and
- chapter five reviews the setting of the financial incentive for both the service component and market impact component.

2 Objectives and criteria for assessing amendments to the scheme

This chapter sets out the objectives and criteria which the AER will consider when amending the STPIS.

National Electricity Rules requirements

Under the Electricity Rules, the principles which the STPIS should comply with are to:[12]

(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.

AER STPIS objectives

The AER's current STPIS objectives are that it:[13]

(a) contributes to the achievement of the *national electricity objective*

(b) is consistent with the principles in clause 6A.7.4 of the Electricity Rules

(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

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12 *National Electricity Rules*, Clause 6A.7.4(b).

13 AER, *Final decision – electricity transmission network providers service target performance incentive scheme*, March 2011, p.1.

the need to maintain and improve *reliability* for customers and reduce the market impact of transmission congestion.

Q.1	Are the AER's current STPIS objectives satisfactory? Should the AER have any other STPIS objectives in mind when considering amendments to the STPIS?

Incentive options evaluation criteria

In this issues paper, the AER is asking interested parties and stakeholders to consider several new incentive options for the service standards component.

When developing the market impact component, the AER developed a number of evaluation criteria to assist interested parties and stakeholders to consider proposed incentive options. The AER consider these evaluation criteria are also relevant in considering the proposed incentive options in this issues paper. Thus, in determining whether to implement the proposed incentive options the AER will consider how well the proposed options meet the evaluation criteria.

The evaluation criteria are outlined and discussed in further detail below.

Incentive options should promote the NEM objective

As an overarching criterion, any incentive should promote the NEM objective. The NEM objective is:

"…to promote efficient investment in, and efficient use of, electricity services for the long term interests of consumers of electricity with respect to price, quality, reliability and security of supply of electricity and the reliability, safety and security of the national electricity system."

The AER considers that this efficiency objective may be promoted by an appropriately targeted incentive regime. Most notably an appropriate incentive regime may promote:

- more efficient transmission operating and maintenance practices
- more efficient use of existing transmission infrastructure.

Incentive options should relate the economic benefit of the TNSP's action to the cost

An economic incentive mechanism is a system of financial payments which rewards TNSPs for taking actions that increase the quality or quantity of the service they provide. However there is no expectation that TNSPs should take all possible actions to increase the quality of the services they provide. Some actions to increase service quality will have costs greater than the benefits. Therefore an economic incentive should induce TNSPs only to take action if the benefit to the market of that action exceeds the cost.

Incentive options should depend, as far as possible, on the TNSP's action

The economic benefit of the TNSP's action depends on some factors that are outside the TNSP's control, such as generator bidding or the level of demand. Ideally, though, the financial reward should depend, as much as possible, on the impacts that the TNSP is able to manage.

In order to isolate the effect of the TNSP's action from the effect of other factors the incentive should be based on measures that are closely related to the TNSP's action and only partially on other factors.

Incentive options should be constructed on objective information and analysis that can be audited

In order to achieve this objective, any incentive should be based on readily available information and analysis which enables verification of the measures produced.

Incentive options should apply consistently across TNSPs

Any incentive should apply equally across all TNSPs so as to avoid a framework that might (dis)advantage some TNSPs against other TNSPs.

Incentive options should minimise administrative costs

Administrative complexity, including the costs of data collection and analysis, should be considered. This is an issue not just for the AER in compiling and publishing the incentive measures, but also for other parties that may be required to provide data or undertake analysis.

Q.2	Are the evaluation criteria proposed for assessing incentive options appropriate? Are there any other criteria which should be used?

3 Review of service component parameters and exclusions

This chapter reviews the current service component parameters, including exclusions and explores potential amendments. This chapter also explores changes to triggers to amend the scheme.

3.1 Current service component parameters

The service standard component has three parameters, with each parameter having two or more sub-parameters.

Transmission circuit availability

This parameter measures the actual circuit hours available for defined transmission circuits relative to the total possible circuit hours available. This parameter provides an incentive to TNSPs to keep transmission assets, such as lines, transformers and reactive plant available to transport energy as much 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 there is an increased probability that reliability may be affected.

Loss of supply event frequency

This parameter counts the number of loss of supply events that breach a particular 'system minute' threshold. System minutes measure the size of an unplanned outage against the entire energy the network supplies. This parameter is disaggregated into a moderate (x) system minute loss of supply sub-parameter and a large (y) system minute loss of supply sub-parameter.

This parameter is an indicator of network reliability. The purpose of this parameter is to provide an incentive to TNSPs to minimise the number of loss of supply events experienced by customers.

Average outage duration

This parameter measures the average length of unplanned outages in minutes. All unplanned outages greater than one minute are included in the calculation of this parameter; however large duration outages are capped for some TNSPs.

This parameter uses the time a TNSP takes to restore supply as a proxy for measuring the effectiveness of the TNSP's operational response to unplanned events. The parameter provides an incentive to TNSPs to minimise the length of all unplanned outages.

3.2 Adequacy of existing parameters

The AER has recognised that the existing service component parameters, which focus on network availability and reliability, have limitations.[14] For example, in many cases

[14] AER, *Service target performance incentive scheme developing incentives based on the market impact of transmission congestion issues paper*, June 2007, p. 6.

reduced circuit availability does not affect network users. Electricity transmission networks are inherently very reliable. The infrastructure consists of high quality components, with significant built in redundancy. As such, interruptions to supply occur very rarely and generally only when there are multiple and significant concurrent events. Given this, the current measures of network reliability may not effectively measure all relevant aspects of service performance.

Transmission circuit availability

This parameter differs from the other service component parameters that focus on interruptions to supply. A reduction in transmission circuit availability (whether this relates to lines, transformers, reactive plant or any other type of plant) does not necessarily lead to an interruption to supply but could lead to an increase in the likelihood of an interruption to supply. In this context this parameter serves as a "lead" or "near miss" indicator of an interruption to supply, which is one reason why the parameter is often used as a key indicator of performance in Australia and internationally.

However the parameter does not distinguish between unavailability due to planned and unplanned outages of plant. Planned outages are required to maintain equipment but may lead to an impact on the wholesale market. The impact of the transmission network on the wholesale market is the focus of the market impact component of the STPIS.

The AER observes that unplanned outages (including forced and emergency outages) occur far less frequently than planned outages. Arguably unplanned outages of network elements warrant increased attention under the scheme as an increase in their frequency may be an indication of insufficient maintenance. This may increase the likelihood of an interruption to supply or an impact on the market (or both). By not distinguishing between planned and unplanned outages in the circuit availability parameter, the STPIS may not provide sufficient incentive to TNSPs to minimise unplanned outages.

It may be appropriate for the transmission circuit availability parameter to focus on unplanned outages in the future design of the STPIS. Planned outages that affect market outcomes (whilst a small subset of all transmission outages) are already captured in the market impact component. Given this, they should be excluded from this part of the scheme. Unplanned outages however, may be a more effective and targeted indicator of an actual or potential interruption to supply and should be the focus of any lead indicator of reliability.

Designing an alternative parameter based only on the frequency of unplanned outages may necessitate a change in the method for setting the target. In particular, it is observed that historically transmission circuit availability is very close to 100 per cent, as it measures the proportion of time that network elements are unavailable compared to the time that all network elements are available. However, it is also observed that unplanned outages of network elements occur far less frequently than planned outages of network elements. The AER considers that ideally there should be zero unplanned outages that are within the control of the TNSPs. That is, any amended parameter should incentivise the proper maintenance and operation of

the network by a TNSP with the target of reducing the incidence of unplanned outages to zero.

Q.3	Should the transmission circuit availability parameter still be included as a measure of network reliability?
Q.4	Given the overlap between the circuit availability and the market impact component, should the circuit availability parameter focus on unplanned outages (with or without interruption to supply)?
Q.5	Should the target for unplanned outages be zero rather than an average of past performance
Q.6	What measure should be used to measure unplanned outages – should it be number of events or total duration (with individual events capped at say seven days)? Should the measure be normalised based on the number of transmission elements, to make comparison between TNSPs possible?

Loss of supply event frequency

The AER notes there are different definitional thresholds for the loss of supply event frequency parameter across TNSPs. In principle, the AER considers that there is no reason for variations in these thresholds as the rationale for system minutes is to normalise outages between the TNSPs. Further, this difference in thresholds used across TNSPs makes performance comparisons difficult.

Q.7	Should the definitional thresholds for the loss of supply event frequency parameters differ across TNSPs? If so why?

3.3 Additional service component parameters

As discussed in the previous section, electricity transmission networks are inherently reliable. In particular, interruptions to supply are rare, but when they do occur they tend to have a significant and widespread impact on customers. This level of reliability performance is different to the reliability of distribution networks where there is reduced or no redundancy (and therefore more frequent and localised loss of supply events).

The infrequency of interruption to supply events on transmission networks makes transmission reliability incentive schemes contentious. For example, when there is an interruption to supply the financial impact on a TNSP can be relatively large. This can lead to significant debate over whether the event should be excluded from the scheme.[15]

[15] For example there was a interruption to supply event at Bayswater in July 2009, which TransGrid claimed should have been excluded, but the AER included. This reduced the incentive payment to TransGrid by more than $1 million. See AER, *Letter to TransGrid – transmission service standards compliance review 2009*, 30 April 2010, available at http://www.aer.gov.au/content/index.phtml/itemId/736457.

Accordingly, for transmission networks, it may be appropriate to consider a range of indicators of reliability, to include not only the infrequent interruption to supply events, but also 'near miss' or 'lead' indicators that measure the potential for the loss of supply. Ideally these measures would indicate the effectiveness of the TNSP's maintenance, operations and training practices and have a high correlation to the likelihood of an unplanned outage if not undertaken.

Examples of 'near miss' indicators include:

- unplanned outages of plant (regardless of impact on customers)—as discussed in section 3.2 *transmission circuit availability*
- incorrect operation of protection and control equipment
- when reliability standards are not met—either operationally or when planned construction programs are not met on time; and
- when there is an incorrect operational isolation of the network (required for maintenance).

Protection and control equipment

Clause 5.7.4 (a1) requires a TNSP to institute and maintain a compliance program to ensure that its protection and control systems operate reliably. This obligation requires a TNSP to monitor the performance of these systems. The AER in accordance with the Electricity Rules has introduced a scheme for monitoring these programs.

This compliance obligation recognises that every time a protection or control system fails to operate as required there is the potential for an interruption to customer supply. The AER considers that ideally best practice maintenance, testing and training should reduce the prevalence of protection or control system failure events to zero.

The Supervisory Control and Data Acquisition (SCADA) system is a distributed control and communications system that is required to operate the power system and the market. TNSPs play a crucial role in providing these systems. Every time SCADA fails to operate as required there is the potential for an impact on the market or for an interruption to customer supply. The AER considers that ideally there should be zero SCADA failures.

Failure to meet reliability standards

Another indicator to consider is whether a parameter can be designed around a circumstance in which reliability standards are not met. For example, there is the potential for an interruption to customer supply when a prescribed standard (say an N-1 connection or exit point reliability standard) is not met either because:

- during a network outage the demand at a connection point exceeds the (N-1) standard, or
- during system normal conditions actual connection point demand is greater than the standard (N-1).

Network outages could include those that are for planned maintenance (which captures the adequacy of maintenance outage planning) and unplanned outages (which captures the adequacy of preventative maintenance). The AER considers that ideally there should be zero events of planned maintenance leading to a failure to meet reliability standards.

If under system normal conditions (that is when there are no outages of network equipment) the reliability at a connection point falls below a prescribed reliability standard, this may indicate that the planning of the network has failed. The ESCOSA currently reports on ElectraNet's performance in this area in its annual performance reports.[16]

In particular, ESCOSA has specified six categories of reliability within clause 2 of the Electricity Transmission Code (ETC) and reliability standards for N, N-1 or N-2 connection capacity are specified as appropriate at each category. As the load growth exceeds these standards, the ETC requires ElectraNet to augment the relevant connection point and, where necessary, the transmission network. In addition, ElectraNet is required by the ETC to use its best endeavours to correct any breach of the agreed maximum demand reliability standards in the ETC within twelve months, and in any event, no later than three years.

The AER notes that South Australia currently has clearly defined reliability standards. The standards are not, however, as clearly defined in other regions - and are not always portrayed as a deterministic standard. The AEMC has recommended that all TNSPs be required to build and operate their networks to clearly defined reliability standards,[17] which the AER has supported.

Accordingly, the AER considers that it may be worthwhile considering whether the STPIS could target the instances where clearly defined reliability standards are not met. Further, measures of performance in this area could include whether proposed projects are delivered on time.

It may also be appropriate to consider whether the STPIS could provide incentives on improving the accuracy of connection point demand forecasts, as an over forecast of demand could lead to over-investment.

Incorrect operational isolation

High voltage (and secondary) plant outages (usually for maintenance) require correct isolation for safe work. An incorrect operational isolation of equipment can lead to the potential for an interruption to customer supply. The AER considers that ideally best practice maintenance and training should reduce the occurrence of incorrect operational isolations to zero.

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16 For example, see ESCOSA, *09/10 annual performance report South Australia energy supply industry*, November 2010.

17 AEMC, *Final report – transmission reliability standards review final report to the MCE* , 30 September 2008, p.9.

Network transfer capability measures

As discussed in 2.1 the AER considers that the efficiency objective of the NEM objective may be promoted by an appropriately targeted incentive regime. Most notably an appropriate incentive regime may promote:

- more efficient transmission operating and maintenance practices
- more efficient use of existing transmission infrastructure.

The measures discussed so far focus on the first point regarding operating and maintenance practices In the AER's submission to the AEMC's Transmission Frameworks Review (where the AER flagged its intention to conduct this review of the STPIS) the AER stated:[18]

> *In the AER's conception of an ideal transmission framework, a significant proportion of a TNSPs' remuneration would be based on the level of service they provide rather than the size of their investment programs. … TNSPs would have incentives to operate, maintain and upgrade their network in a manner that delivers an appropriate level of network capability for least sustainable cost.*

The AER also stated that it supports the use of financial incentives to encourage TNSPs to take steps to maximise network transfer capability through some form of network capability incentive. This is consistent with promoting the efficient use of existing transmission infrastructure.

There are a range of technical transmission network factors that can affect the efficient dispatch of generation in the market. The TNSPs have significant discretion in making decisions which affect these technical factors.

A network capability transfer incentive would encourage TNSPs to devote resources to maintaining the capability of their existing network rather than focusing solely on new investments. Under this approach, TNSPs would be rewarded for improving the capability of existing infrastructure, and penalised for allowing network capability to deteriorate.

While the AER does not yet have a view on the mechanism for determining a network transfer capability incentive, the AER would welcome the views of stakeholders on this matter.

Q.8	Is there merit in including these 'near miss' (or any other) additional parameters in the STPIS?

3.4 Service component parameter exclusions

Current approach to exclusions

The current STPIS excludes the impact of specified 'events' from a TNSP's performance. These events are excluded on the basis that a TNSP should not be

[18] AER, *Submission – transmission frameworks review directions paper,* 31 May 2011, p. 3.

rewarded or penalised for service standard performance that arises from events or circumstances which are beyond the reasonable control of the TNSP. This approach is also consistent with the AER's STPIS for distribution businesses.

The current STPIS has resulted in some differences in exclusions between the TNSPs, including:

- differing specification of caps on events, and
- the option for additional exclusion events to be established in the transmission determination.[19]

Issues arising from the current approach to exclusions

Inconsistent application of exclusions to TNSPs

Under the STPIS some TNSPs have sought, and the AER has approved, exclusions that differ from the standard scheme exclusions. The AER has previously allowed SP AusNet to propose additional exclusions as part of its revenue determination. The AER allowed SP AusNet to propose variations to the standard exclusions on the basis that the scheme applied to SP AusNet under the transitional Electricity Rules and there was limited time to finalise the scheme to apply to its respective revenue determinations.[20]

The AER considers that given the AER has now completed its 'first round' of resets, it is now appropriate to consider a common approach to exclusions across TNSPs. In principle there is no reason why variations in exclusions should exist across TNSPs.

Lack of clarity in the definition of exclusions

Since the introduction of the ACCC's service standards guidelines TNSPs have typically sought to exclude a number of events or circumstances from annual service performance that they consider meet the exclusion definitions. During its annual review processes, the AER has identified a number of issues with the operation of exclusions under the scheme. In particular some of the exclusions are not clearly defined. Outages that arise due to a third party event and force majeure events have been particularly problematic.

The force majeure event, for example, as defined in Appendix E of the scheme identifies a number of events or circumstances that *may* and *without limitation* be included as a force majeure event.[21] The AER has been required to undertake a number of annual assessments as to whether proposed exclusions meet the definition in the scheme.[22]

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19 This option was provided to SP AusNet and ElectraNet on a once off basis only given that the scheme applied to the TNSPs revenue determinations under the transitional rules and the AER had not finalised the scheme at the time of these TNSP's revenue determinations.

20 ElectraNet was also able to propose elements of its parameter definitions, however this did not extend to providing additional exclusions.

21 AER, *Final decision – electricity transmission network service providers service target performance incentive scheme*, March 2011, p.54.

22 See AER website: http://www.aer.gov.au/content/index.phtml/itemId/660322

The AER, in assessing whether specific events satisfy the definition of each TNSP's 'exclusions', has in some cases required an assessment by an independent technical consultant. The AER has also relied on a number of principles developed previously by the ACCC and set out in the scheme to guide its assessment of whether an outage related to a force majeure event is not within the control of a TNSP and should be excluded from the scheme. The AER has also applied similar principles in assessing outages related to third parties. These principles are outlined in table 3.1

Table 3.1: Principles to guide assessment of a third party and force majeure outage

Third party exclusion principles[23]	Force majeure exclusion principles
What is the primary cause of the event?	Is the event unforeseeable and its impact extraordinary, uncontrollable and not manageable?
Is the cause/event within the reasonable control of the TNSP?	Does the event occur frequently? If so, how did the impact of the particular event differ?
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, 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?

This approach has a number of disadvantages. It may not provide sufficient certainty to TNSPs as to whether particular outages will be excluded. The approach also may not promote regulatory consistency and transparency, which may affect the incentives on TNSPs to maintain or improve service performance over time.

The AER also notes that other aspects of this review may have implications for the application of the existing exclusions regime. In particular, the AER's review will consider the merits of broadening the scheme to include 'near miss' parameters related to service performance (refer to section 3.3). The AER notes that the 'near miss' parameters described in 3.3 by their nature are within the control of the TNSPs such that an exclusion regime is not appropriate.

In addition, to the extent that any amended scheme includes additional parameters, the significance (i.e. weight) of any individual parameters may be lower than the current parameter weightings. In these circumstances any reduction in the weights applied to individual parameters will also reduce the impact of uncontrollable events on service performance as measured by any individual parameter.

The scheme requires that proposed performance targets must be equal to the TNSP's average performance history over the most recent five years. However, the scheme also allows the performance targets to be adjusted for statistical outliers (amongst other things). The AER notes that to the extent that historical performance reflects the impact of excluded events (irrespective of whether it is adjusted for outliers), the

[23] The AER applied these principles in assessing TransGrid's proposed exclusions for third party events in 2009.

performance target will include the impact of uncontrollable events. In these circumstances it may not be appropriate to remove the impact of all uncontrollable events from actual service performance in calculating any rewards or penalties under the scheme.

Q.9	Should the AER apply a common approach to defined exclusions across all of the TNSPs? If not, why not?
Q.10	To the extent that the current scheme parameters are retained can the current definition of third party outages and force majeure events be more clearly defined? If not, are the AER's principles appropriate and do they need to be developed further? If so, what amendments should be made to these principles?
Q.11	Do stakeholders consider the current exclusions are sufficient, If not what other exclusions should be considered?

Alternative approaches to excluding uncontrollable events

The AER has identified a number of options to the application of exclusions under an amended scheme. These options include adopting a:

- definitional approach; or
- statistical approach; or
- service performance threshold approach.

These options are discussed below.

Option 1: Definitional based approach

Under this approach, an exhaustive list of every exclusion event that could occur on the transmission system would be defined for inclusion in the scheme. The AER considers that this approach may in principle have an advantage over the current approach as it provides the TNSP with regulatory certainty.

That said the AER considers that it is not possible nor in some cases appropriate to produce a list of every outage event that could conceivably occur on a transmission system that would be excluded from the scheme. The AER considers that any approach to considering every conceivable event individually would likely overlook some relevant events. In such cases this approach would undermine the regulatory certainty that was originally being sought and may not promote incentives for maintaining or improving performance.

The AER considers this approach is not likely to provide benefits in terms of promoting regulatory certainty over the current 'principles based' approach. In particular, it is likely that even under a more prescriptive event based definition the AER would still be required to assess whether a defined event has occurred. Accordingly, the AER considers that this approach is unlikely to provide additional benefits over the current approach and may in some cases exclude events that should arguably be within the reasonable control of a TNSP.

Q.12 The AER seeks stakeholder views on the defined exclusion approach to applying exclusions.

Option 2: Statistical based approach

The AER has introduced a statistical approach to determining exclusions in its distribution STPIS. This statistical approach uses a normalised data set for the development of a performance target based on the mean. The events excluded from the analysis of performance are defined as major events. That is those events that occur beyond the 98th percentile (or 2.5 standard deviations above the mean) are defined as major events which are expected to occur less than once in a five year period.

The advantage of this approach is that it improves regulatory consistency and transparency and avoids the issues related to whether an event meets the definition of an excluded event. However, a statistical approach introduces other issues such as whether there is sufficient historical data and whether performance data follows a normal distribution.

The AER notes that under a statistical approach many events that occur due to third parties and force majeure events (such as bush fires) may not be excluded. That is, the events excluded from the scheme would only be excluded if they were likely to occur less than once in five years. This is likely to represent most major outages caused by uncontrollable events such as bush fires. Under a statistical approach for exclusions all other events that are likely to occur at least once in a five year period are considered to be normal operational events to be managed by the TNSP on the basis that transmission networks are constructed to operate in these conditions. In addition, given that target performance under the scheme (subject to considering outliers) is based on historical performance, events that occur within a five year period are reflected in the target. Accordingly, a statistical approach would have the advantage of excluding significant uncontrollable events (or outliers) on network performance, where target performance includes all other events that occur in a five year period.

The AER notes that this approach may not be readily applied to a number of parameters, which measure events that are by their nature very irregular and rare.

Q.13 Is the adoption of a statistical approach for the transmission STPIS appropriate?

Q.14 Would a statistical approach be appropriate for only some parameters or sub-parameters (e.g. would this approach be appropriate for the loss of supply parameter)?

Q.15 The AER would also welcome views on approaches to developing adjustments to account for parameters, which measure events that are by their nature very irregular and rare under this statistical approach.

Option 3: Service performance threshold based approach

Finally, another option which is similar to a statistical approach would include determining a threshold for excluding events around target performance similar to the

approach adopted by Ofgem. In particular, Ofgem has determined a range of -/+5 per cent around historical performance, where the impact of events on performance that fall outside the boundaries is potentially excluded. However, to maintain incentives Ofgem does not automatically exclude events that fall outside these boundaries. For events that fall outside these boundaries Ofgem considers:

- whether the event was exceptional and
- whether the network service provider took reasonable steps to prevent the event and mitigate its impact (both in terms of in anticipation of the event and subsequent to the event).[24]

The disadvantage of this approach is in determining the percentage threshold and there may still be a need to consider whether events above or below this threshold should be excluded.

Q.16 The AER seeks stakeholder views on whether a service performance threshold approach for transmission STPIS is appropriate.

Q.17 The AER would also welcome views on approaches to developing exclusions to account for parameters, which measure events that are by their nature very irregular and rare.

3.5 Triggers to amend the scheme

Current approach to scheme amendments

Under the STPIS, amendments to the scheme can be initiated by the AER or proposed by a TNSP. There are two avenues through which TNSPs can propose to amend the STPIS.

Clause 2.3 of the STPIS allows TNSPs to propose amendments to any aspect of the scheme at any time up to 22 months before the commencement of the next relevant regulatory control period. Clause 3.2 of the STPIS allows TNSPs to propose alterations to elements (i.e. definition, unit of measure, source of data, exclusions) of the service component parameters as part of the transmission determination.

These processes were included in the scheme to recognise that the introduction of chapter 6A of the Electricity Rules significantly altered the matters that were addressed in the scheme rather than in a revenue determination. The ACCC's service standards guidelines anticipated that most aspects of a TNSP's service standards regime, including particular parameter definitions, would be set out in each transmission determination. In contrast, under chapter 6A of the Electricity Rules, the AER's STPIS included the specific parameters and the parameter definitions that applied to each TNSP.

[24] Ofgem, *Electricity transmission network reliability incentive schemes, Final proposals*, December 2004, p.9-10.

Given that the application of particular parameters and parameter definitions was no longer considered as part of a transmission determination and it was the first application of the scheme by TNSP's the AER considered it appropriate to include a process for a TNSP to propose amendments to the STPIS. This process was intended to provide the AER with sufficient time and information to assess a TNSP's proposed amendments to the application of particular parameters and the parameter definitions ahead of the TNSP submitting its regulatory proposal for the next regulatory control period.

Issues with the current approach to scheme amendments

The AER questions whether there is merit in continuing this approach to amending the STPIS. The regular review of the STPIS for individual TNSPs inevitably leads to a piecemeal approach to considering the operation of the STPIS and the appropriateness of applying particular parameters or parameter definitions to each TNSP. This approach may also contribute to divergent parameter definitions and inconsistency in the way that the STPIS is developed and applied over time.

The AER proposes that a better approach is to undertake periodic reviews of the scheme. This would provide for the AER to undertake a detailed review of the STPIS, including the parameters applying to each TNSP. Such an approach may also improve stakeholder engagement in the development of the STPIS.

Q.18	Should the current process for proposing amendments to the STPIS be removed?
Q.19	If the current process for proposing amendments is removed, should it be replaced with a regular review of the STPIS by the AER?

4 Review of parameter weightings and the setting of targets

The STPIS outlines how targets, caps, collars and weightings for parameters are determined. This chapter reviews the methodologies for calculating these values and explores whether they should be amended.

4.1 Methodologies to set performance targets, caps and collars

The AER has predominately set performance targets using five years of historical performance data. The AER takes the mean of the performance data from the previous five years to determine the target for the following regulatory period. The cap and collar applied to the target are then generally determined through the use of two standard deviations around the mean.

The AER notes that some TNSP's performance against the circuit availability parameter has approached a point where two standard deviations from the mean above the target is greater than 100 per cent availability ("the natural limit"). Whilst the AER is reviewing whether the parameter should be amended to focus on unplanned outages only, if the circuit availability parameter was retained in its current form, the AER considers it would need to address setting the cap for TNSP performance when, under the current methodology, the cap would exceed the natural limit.

Alternative approaches to applying the cap when two standard deviations from the mean will violate the natural limit include setting the cap at:

- the natural limit
- the percentile level that is less than the natural limit, or
- one standard deviation above the mean.

The AER notes that some TNSPs currently have caps set at one standard deviation above the mean. The rationale for applying this approach is that the closer a TNSP is to operating its network at 100 per cent availability the closer to the efficiency frontier the firm is operating. Therefore any further improvement will be harder to obtain under the scheme.

In recent decisions, the AER agreed to this approach to determining the cap where the TNSP was approaching an efficiency frontier. The AER then moved to an approach of setting the cap at one standard deviation above the mean to incentivise future performance improvements.

Looking to the future the AER considers that it may be appropriate to:

- apply the natural limit when an approach of applying one standard deviation leads to a value greater than 100 per cent, or
- apply an alternate value based on a calculation of the efficiency frontier.

Q.20 What approach should be adopted for setting the cap for TNSP performance when the cap set at two (or one) standard deviation from the mean would exceed the natural limit?

4.2 Service component parameter weightings

Under the current scheme a TNSP must, in its revenue proposal, propose weightings for each of its parameters and demonstrate how the proposed weightings are consistent with the objectives listed in clause 1.4 of the scheme. The AER may reject the proposed weightings if it forms the opinion that they are inconsistent with the objectives of the scheme. The sum of the weightings must equal the maximum revenue increment or decrement that a TNSP may earn under the service component (currently 1 per cent of the TNSP's maximum allowed revenue for the year).

Under the current scheme, a TNSP must, where relevant, take the following factors into account when proposing weightings to apply to each parameter:

- the extent to which each parameter applying to the TNSP under the service component provides the incentives described in clause 6A.7.4(b)(1) of the Electricity Rules.
- the *availability of accurate and reliable data* for determining the values for each parameter applying to the TNSP
- the *scope that the TNSP has to improve its performance* as measured by each of the parameters that apply to it, and
- the extent to which the parameters and sub-parameters applying to the TNSP *overlap***.**

Clause 6A.7.4(b)(1) of the Electricity Rules states that the STPIS should provide incentives for each TNSP to:

- 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
- improve and maintain the reliability of those elements of the transmission system that are *most important to determining spot prices***.**

Table 4.1 provides a summary of the weightings applied to each parameter by TNSP.

Table 4.1: Service component parameter weightings by TNSP

Parameter	TransGrid	Powerlink	ElectraNet	Transend	SP AusNet	Directlink	Murraylink
Transmission circuit availability	0.45	0.40	0.50	0.45	0.50	1.00	1.00
Loss of supply event frequency	0.35	0.45	0.30	0.55	0.25	0.00	0.00
Average outage duration	0.20	0.15	0.20	0.00	0.25	0.00	0.00

Source: AER transmission determinations.

Rationale for parameter weightings

The following provides a summary of some of the matters the AER has considered when assessing whether proposed parameter weightings are consistent with the STPIS.

Times and services most valued by customers

The AER has previously considered whether proposed weightings are structured so as to provide incentives for the TNSP to plan and minimise outages at times and to assets highly valued by customers. For example, peak circuit availability is allocated a greater weighting than off-peak circuit availability, reflecting that availability during peak periods is when customers most value a reliable service. Similarly, critical circuit availability is more heavily weighted than non-critical circuit availability to recognise that an outage event on certain parts of the network will have a greater effect on customers.[25]

The AER also accepted weightings that placed half of the revenue at risk for parameters related to 'security of supply' (i.e. circuit availability) and allocated the remainder equally to parameters related to 'reliability of supply' (i.e. loss of supply) and 'operational response' (i.e. duration of an outage). The AER considered this weighting structure to be consistent with the services more highly valued by customers and the objectives of the STPIS.[26]

Scope for performance improvement

Under the current scheme, a TNSP is required to consider the scope that it has to improve its performance as measured by each of the parameters that apply to it, when proposing weightings for those parameters. This reflects the view that a TNSP should

[25] Ibid. See also: AER, *Draft decision – ElectraNet transmission determination 2008-09 to 2012-13*, p. 201; AER, *Draft decision – SP AusNet transmission determination 2008-09 to 2013-14*, p. 210.

[26] AER, *Draft decision – SP AusNet transmission determination 2008-09 to 2013-14*, p.209.

be incentivised to improve service performance where it has the greatest scope or ability for service improvement.[27]

Strength of incentives for service performance improvement

In considering TNSP proposals for specific weightings, the AER has accepted the argument that a parameter specific weighting of less than 10 per cent of the total revenue at risk is too weak to provide an incentive to maintain or improve service performance. That said, it has been argued that where the parameters are not independent, weightings for a sub-measure can be less than 10 per cent and still provide an effective incentive for service performance. [28]

Availability and reliability of data

The AER has accepted a zero weighting on some parameters in circumstances where there is a low degree of confidence regarding the reliability of the available data to determine performance targets.[29]

Issues with the current approach to determining weightings

Standardisation of parameter weights across TNSPs

Appendix C outlines the current weights that apply to each TNSP's parameters and sub-parameters for the service performance component. The flexibility in the STPIS in setting weightings was provided to take into account data limitations and the need to respond to unforeseen issues that may arise in applying the STPIS. In contrast, the performance incentive scheme for distribution network service providers 'locks' the weightings into the scheme.

Notwithstanding the current design of the scheme, the AER considers that in principle there does not appear to be a compelling rationale for why weightings should vary across TNSPs. Furthermore, the reasoning provided by TNSPs for why one parameter should be weighted more heavily than another has in some cases resulted in inconsistencies in the relative weightings between TNSPs. For example, most TNSPs have allocated a greater weighting to the large loss of supply event frequency sub-parameter on the basis that this weighting matches transmission customers' high expectations with respect to reliability of supply. However, one TNSP has allocated a greater weighting to the *small* loss of supply event frequency sub-parameter on the basis that large loss of supply events will also be counted as smaller loss of supply events. The AER notes that a consistent approach may be required to parameter weights across the TNSPs in the event that an amended scheme removes this flexibility.

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27 See AER, *Draft decision – Transend transmission determination 2009-10 to 2013-14*, p. 224; AER, *Draft decision – TransGrid transmission determination 2009-10 to 2013-14*, p. 178.

28 Under the scheme, the TNSPs are exposed to a reward or penalty of up to +/- one per cent of the Maximum Allowed Revenue. The scheme also requires that each parameter must be weighted so that in aggregate, the weights across all of the service component parameters are equal to one per cent.

29 AER, *Draft decision – Transend transmission determination 2009-10 to 2013-14*, p. 224; AER, *Draft decision – SP AusNet transmission determination 2008-09 to 2013-14*, p.209.

In addition, one of the factors that a TNSP must take into account when proposing weightings to apply to each parameter is the scope that the TNSP has to improve its performance as measured by each of the parameters that apply to the TNSP. However, the AER observes based on historical performance that it appears that there may not be a significant correlation between parameter weightings and scope for improved performance by the TNSP. For example, the historical performance of one TNSP would suggest that it has the greatest scope for improvement for the average outage duration parameter and yet circuit availability is allocated the largest weighting. Similarly, one TNSP has different historical performance for its two outage duration sub-parameters and yet has the same weighting for both.[30]

Derivation of parameter weightings

The relative weightings of the service performance parameters may be informed by the value of customer reliability studies. The Australian Energy Market Operator (AEMO) has commissioned a recent study, which concluded that:

> residential customers indicated that they are likely to take more significant and costlier measures to lessen the impacts of power outages as the length of the interruption increases.[31]

The study had similar findings for the agricultural, commercial and industrial sectors. This suggests that customers place greater value on avoiding longer outages relative to shorter outages, which should be reflected in the parameter weightings.

Strength of the incentive

As discussed above it has been argued that with the aggregate incentive under the scheme set at one per cent of revenue, a parameter specific weighting of less than 10 per cent of the total revenue at risk is too weak to provide an incentive for a TNSP to maintain or improve service performance. (Refer to section 5.3 for a discussion on the aggregate incentive under the scheme). In light of this, increasing the number of parameters without also increasing the aggregate incentive under the scheme may result in weightings which are too weak to provide a material incentive to TNSPs.

Q.21	Is there any justification for why weightings should vary across TNSPs for existing parameters? If not, should the weightings be locked into the scheme? Should these weightings be the same across all TNSPs?
Q.22	Should greater weight be put on measures which reflect longer interruptions than shorter interruptions?
Q.23	Would weights that are less than 10 per cent of total revenue at risk result in weak incentives, if so should a TNSP's revenue at risk be increased such that no individual parameter or sub-parameter weight is less than 10 per cent? Also, if a less than 10 per cent weighting results in weak incentives, does this also apply to sub-parameters?

[30] See Appendix C below for historical performance data.
[31] CRA International, *Assessment of the Value of Customer Reliability (VCR)*, p. 22.

Q.24	Should more weight be given to interruptions to supply rather than duration of the interruption consistent with the distribution STPIS? Do customers place greater value on reducing the number of interruptions than on the length of the interruption?
Q.25	Should the existing measures be given equal weight, if so why? If not, which measure should receive the most weight and which measure the least weight?
Q.26	Is there sufficient data to apply a positive weighting to parameters which previously had a zero weighting?

5 Setting the financial incentive and revenue at risk for both the service component and market impact component

The Electricity Rules provide that the maximum revenue increment or decrement that a TNSP may receive as a result of the operation of the scheme must be in the range of one and five per cent of the maximum allowed revenue (MAR).

This chapter provides a review of the setting of the financial incentive and revenue at risk for both the service component and market impact component of the STPIS and explores potential amendments to both components of the scheme.

5.1 Current service component financial incentive and revenue at risk

The service component provides a financial bonus (or penalty) of up to one per cent of each TNSP's MAR for the relevant calendar year.[32] The financial incentive that a TNSP receives is calculated by comparing a TNSP's performance against its cap, target and collars for each of its parameters and sub-parameters and applying the weighting that is attributed to each parameter and sub-parameter.

The revenue at risk was set at one per cent given the scheme was still in its early stages and there was concern around exposing TNSPs to additional uncertainty or risk.[33]

5.2 New approaches to setting the financial incentive and revenue at risk for the service component

Given the current arrangements are at the bottom of the range and have not been reviewed since the start of the STPIS, the financial incentive and revenue at risk arrangements may be outdated. Thus, it is appropriate to consider new approaches to the design of the financial incentive and revenue at risk arrangements within the current boundaries of the Electricity Rules.

Overseas regulatory bodies are increasingly placing more emphasis on outputs based regulation.[34] This helps to ensure customers receive value for money. Similarly, if the revenue at risk is increased for the service component, there will be a greater linkage between the service outputs by TNSPs and the revenue received. This should help ensure customers receive value for money as service performance is linked to a greater proportion of the TNSP's revenue.

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[32] There is an additional zero to two per cent for the market impact component.

[33] ACCC, *Decision – statement of principles for the regulation of transmission revenues service standards guidelines,* 12 November 2003, p.10; AER, *First proposed electricity transmission network service providers service target performance incentive scheme explanatory statement and issues paper*, January 2007, p.6.

[34] For example, in the UK, following the RPI-X@20 review by Ofgem there has been a greater emphasis on outputs delivered by network operators.

Q.27 Should the AER increase the revenue at risk for TNSPs under the service component of the STPIS?

Consideration of the economic cost of outages

The AER proposes any revised design of the financial incentive and revenue at risk should factor in the economic cost of a drop in service level. Economic theory indicates the objective of the STPIS is to minimise economic harm to consumers by incentivising the TNSP to increase network reliability. A TNSP should operate to ensure its actions do not deprive the economy as a whole of the economic benefit of electricity.

In principle, the correct economic penalty can be achieved by setting the size of the financial incentive on the TNSP equal to the size of the economic harm resulting from outages on the transmission network. Setting the penalty in this way will induce the TNSP to make efficient decisions and trade-offs as it operates its business. This could include decisions on maintenance practices, asset replacement/refurbishment and network augmentation.

The AER notes a financial incentive regime based purely on penalising the TNSP for outages based on the economic cost of an outage may not be practical to implement. For one, the calculation of the economic harm of transmission outages is related to the impacts on the customers affected at a specific point in time. Further, the use of the economic harm of transmission outages may be inappropriate for near miss or lead indicators such as transmission circuit availability, where no loss of supply may occur.

Regarding the measurement of the economic harm of outages, the AER's preliminary view is that an estimated value for the economic cost of an outage be used. For example, the Value of Customer Reliability (VCR) produced by AEMO could be used as a proxy measure of economic harm. The VCR, expressed in $ per MWh of unserved energy, is used in transmission planning to ensure that the extra benefit of reliability associated with an augmentation outweighs the building costs.

On balance, the AER is of the view that incorporating the economic cost of outages in the financial incentive warrants serious consideration. While it may not be an appropriate financial incentive for all parameters, it could be incorporated into parameters and sub-parameters that measure loss of supply. Examples could include:

- For loss of supply events, the TNSP may start at the beginning of each calendar year in a default incentive payment position of one per cent of the MAR. Every time an interruption to supply occurs in the calendar year, an amount is deducted from the default incentive payment equal to the economic harm of the outage. Amounts may be deducted up to a collar or floor of one per cent of the MAR. If at the end of the financial year the TNSP's position is positive, then a financial bonus is awarded. If at the end of the financial year the TNSP's position is negative, then a financial penalty will be imposed. The bonus or penalty may be adjusted by any weighting applied to the parameter; or

- For loss of supply events, the extent to which a TNSP outperforms (or underperforms) against its parameter and sub-parameter values, it will be awarded

a bonus (or penalty) based on the average economic cost of the TNSP's outages in one calendar year in the previous regulatory period.

Q.28 Should the financial incentive incorporate the economic cost of outages for parameters and sub-parameters which measure loss of supply?

Q.29 Do stakeholders support any of the approaches outlined above for incorporating the economic cost of outages into the financial incentive?

Q.30 Is the VCR an appropriate measure to base calculations on the economic cost of outages? If not, what methodology should be AER use to determine the economic cost of a loss of supply?

Asymmetrical financial incentive for 'efficiency frontier' and 'near-miss' parameters

Efficiency frontier parameters

Clause 3.3(g) of the STPIS allows a TNSP to propose a lower performance target where (among other things) its performance has been consistently high and it is unlikely to improve performance in the regulatory control period. By doing so, the TNSP is given a financial bonus for maintaining rather than improving its current level of service and not penalised for reaching the efficiency frontier of its network. The clause was included in the STPIS to address a situation in which a TNSP has reached the 'efficiency frontier' and it is unable to improve performance any further.[35]

Where the TNSP is unlikely to improve performance against a parameter value because it has reached the 'efficiency frontier' it may be more appropriate for an asymmetric financial penalty-only incentive to apply for that parameter. This is because as there is no scope for improvement, it is inappropriate to provide the TNSP with a financial bonus for network maintenance.

Q.31 Should the parameters which have reached the 'performance frontier' be subject to an asymmetric penalty-only scheme?

Near miss parameters

As discussed in section 3.3, the AER is considering including 'near miss' parameters to measure the potential loss of supply as an indicator of reliability. If these 'near miss' parameters are included, the AER is considering whether the financial incentive associated with these parameters should be penalty-only. Under this arrangement, every occurrence of a near miss measure by a TNSP would result in a penalty. This would provide an incentive to TNSPs to minimise actions which lead to reduced levels of service and is akin to the imposition of fines on drivers for actions which contribute to accidents (such as speeding).

[35] AER, *Final decision – Electricity transmission network service providers service target performance incentive scheme*, August 2007, p.9.

Q.32 If 'near miss' parameters are included, should these parameters be subject to a penalty only scheme?

Q.33 Taking into account the proposed 'near miss' parameters in section 3.3 of the issues paper, what should the size of a penalty for the occurrence of a 'near miss' measure be set to properly incentivise TNSP behaviour?

5.3 Current market impact component financial incentive and revenue at risk

Market impact component of the scheme

The market impact component was first introduced in 2008. The component provides an incentive to TNSPs to minimise transmission outages that can affect the NEM spot price. It measures the number of dispatch intervals where an outage on the TNSP's network results in a network outage constraint with a marginal value greater than $10/MWh.

The market impact component operates as a bonus only scheme which provides a TNSP with a financial bonus of up to two per cent of its MAR in each calendar year. A TNSP receives the full two per cent bonus if it can reduce the number of dispatch intervals with a marginal value greater than $10/MWh to zero. The financial bonus which a TNSP receives in each calendar year is calculated by measuring the TNSP's annual performance against the target. The asymmetric nature of the scheme means there is no revenue at risk for the TNSP.

5.4 Development of a symmetrical financial incentive for the market impact component

The market impact component was introduced as a bonus-only arrangement as it was unproven. The AER considered that given it was difficult to predict TNSP performance under the market impact component, it was appropriate to have an asymmetric financial incentive scheme with no penalty.[36]

All mainland TNSPs (TransGrid, Powerlink, ElectraNet and SPAusNet) are now subject to this component of the STPIS. Given that there is now data available on the operation of the scheme, the AER considers it is appropriate to reconsider whether the market impact component should be a bonus-only scheme.

After reviewing the performance data available for TransGrid, Powerlink and ElectraNet, the AER has found evidence to support that TNSP's possess a higher level of control over market impacts flowing from outages that occur on its network, than first anticipated. Analysis of historical outage information used to calculate the performance target (either under the early implementation arrangement, or through the normal regulatory reset arrangement) and actual performance measure for the

[36] 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.20.

market impact component (shown in table 5.1) indicates that on average more than 80 per cent of outages having a market impact are planned by the TNSPs.

Table 5.1: Ratio of planned and unplanned outages for market impact component decisions

TNSP	Performance data assessed	Decision in which performance data was assessed	Binding constraints related to planned outages	% of binding constraints related to planned outages	Binding constraints related to unplanned outages	% of binding constraints related to unplanned outages
ElectraNet	2005-2009	Early implementation target	7388	79	1922	21
Powerlink	2005-2009	Early implementation target	6599	84	1266	16
Powerlink	Jan – Jul 2010*	2012/13 to 2016/17 target	1348	95	66	5
Powerlink	Jul – Dec 2010	Jul–Dec 2010 performance measure	7	64	4	36
SPAusNet	2006-2010	Early implementation target	5447	76	1719	24
TransGrid	2004-2007	2009 to 2014	10002	88	1425	12
TransGrid	2010	2010 performance measure	402	52	378	48
TransGrid	2009	2009 performance measure	1097	95	52	5

* The AER is currently assessing Powerlink's Jan–Jul 2010 performance data as part of Powerlink's 2012/13–2016/17 revenue proposal and this breakdown is based on the unassessed data provided by Powerlink. The AER has previously assessed Powerlink's 2006-2009 and Jul–Dec 2010 performance data.

The high level of control over market impacts flowing from outages appears to have allowed TNSPs to engage in strategic behaviour to influence the outcomes of the scheme. Note that the scheme was designed to encourage TNSPs to modify their behaviour to reduce the market impact of network outages. The incentive-only arrangement, however, has potentially led to perverse outcomes.

For example, on 13 July 2010, under the early implementation framework, Powerlink commenced participation in the market impact component. Powerlink's performance

measure for 2010, from the period 13 July to 31 December, was a market impact parameter of 11 dispatch intervals of binding constraints. However, prior to the commencement of the scheme (from the period 1 January to 12 July 2010), Powerlink's market impact parameter totalled approximately 1400 binding constraints. The majority of these binding constraints were planned outages taken by Powerlink. The AER considers this is strong evidence of Powerlink undertaking strategic behaviour by shifting its planned outages to a period just prior to the commencement of measuring the impact to maximise its incentive payment.

The AER has also found evidence of a high degree of control over outages through examining the performance of TransGrid under the market impact component. TransGrid has responded to the incentive by rescheduling transmission outages away from peak hours and consolidating outages to minimise the number of outages required. This behaviour is, however, entirely consistent with the objectives of the scheme.

The examples of TransGrid and Powerlink point to a high level of control over planned outages by TNSPs. This shows that TNSPs are able to shift planned outages to periods of low demand on the transmission network where market outcomes are less likely to be affected by the outage.

The high level of control over planned outages and the significant proportion of planned outages which contribute to the market impact parameter can also give rise to strategic TNSP behaviour to maximise incentive payments during the transition between regulatory years. This arises because a pro rata adjustment is made to the performance target during calendar years in which TNSPs transition between regulatory periods. Incentive payments can be maximised by:

- shifting planned outages to the six month period for which the lower performance target applies. Shifting outages in this way maximises the incentive payment for the calendar year by reducing performance during the six month period that has the lower possible incentive payment.

- shifting planned outages to the end of one regulatory period to skew the performance target for the next regulatory period (as the performance target is based on average performance over the last five years). This increases the performance target, which makes it easier for the TNSP to receive a bonus.

As there is no financial penalty for failing to meet the performance target, TNSPs have an incentive to engage in such behaviour.

Given this, the AER's preliminary view is that it is appropriate to consider whether the financial incentive of the market impact component should be symmetrical. The introduction of a financial penalty would sharpen the incentives under the scheme while also preventing potential strategic behaviour which may occur between regulatory periods.

Q.34	Should the financial incentive of the market impact component of the STPIS be symmetrical?

Q.35 If the financial incentive is symmetrical, how should the AER determine the appropriate caps and collars?

Timing for measuring performance

The STPIS requires that each TNSP's performance is measured over a calendar (rather than financial) year. The financial bonus or penalty is then applied to each TNSP's MAR in the following financial year. This approach is taken to reduce the lag between the annual performance being measured and the financial incentive being added or subtracted from the MAR to six months.

Q.36 Does this misalignment between financial year revenue resets and calendar year measurement lead to any perverse outcomes?

A. Rule Requirements

A.1 Rule 6A.7.4 – Service Target Performance Incentive Scheme

(a) The AER must, in accordance with the transmission consultation procedures, develop and publish an incentive scheme ('a service target performance incentive scheme') that complies with the principles in paragraph (b).

(b) The principles are that the 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.

(c) At the same time as it publishes a service target performance incentive scheme, the AER must also publish parameters (the performance incentive scheme parameters) for the scheme. For the avoidance of doubt, the parameters may differ as between Transmission Network Service Providers and over time.

(d) The AER must set out in each service target performance incentive scheme any requirements with which the values attributed to the performance incentive scheme parameters must comply, and those requirements must be consistent with the principles set out in paragraph (b).

(e) The AER must develop and publish the first service target performance incentive scheme under the Rules by 28 September 2007 and there must be a service target performance incentive scheme in force at all times after that date.

(f) The AER may, from time to time and in accordance with the transmission consultation procedures, amend or replace any scheme that is developed and published under this clause, except that no such amendment or replacement may change the application of the scheme to a Transmission Network Service Provider in respect of a regulatory control period that has commenced before, or that will commence within 15 months of, the amendment or replacement coming into operation.

(g) Subject to paragraph (h) the AER may, from time to time and in accordance with the transmission consultation procedures, amend or replace the values to be attributed to the performance incentive scheme parameters.

(h) An amendment or replacement referred to in paragraph (g) must not change the values to be attributed to the performance incentive scheme parameters where:

(1) those values must be included in information accompanying a Revenue Proposal; and

(2) the Revenue Proposal is required to be submitted under clause 6A.10.1(a) at a time that is within 2 months of the publication of the amended or replaced performance incentive scheme parameters.

A.2 Rule 6A.20 – Transmission Consultation Procedures

(a) This rule 6A.20 applies wherever the AER or the AEMC is required to comply with the transmission consultation procedures. For the avoidance of doubt, the transmission consultation procedures:

(1) are separate from, and do not apply to, the process for changing the Rules under Part 7 of the National Electricity Law; and

(2) are separate from, and (where they are required to be complied with) apply to the exclusion of, the Rules consultation procedures under rule 8.9.

(b) If the AER or the *AEMC* is required to comply with the transmission consultation procedures in making, developing or amending any guidelines, models or schemes, or in reviewing any values or methodologies, it must publish:

(1) the proposed guideline, model, scheme, amendment or revised value or methodology;

(2) an explanatory statement that sets out the provision of the Rules under or for the purposes of which the guideline, model, scheme or amendment is proposed to be made or developed or the value or methodology is required to be reviewed, and the reasons for the proposed guideline, model, scheme, amendment or revised value or methodology; and

(3) an invitation for written submissions on the proposed guideline, model, scheme, amendment or revised value or methodology.

(c) The invitation must allow no less than 30 business days for the making of submissions, and the AER or the *AEMC* is not required to consider any submission made pursuant to that invitation after this time period has expired.

(d) The AER or the *AEMC* may publish such issues, consultation and discussion papers, and hold such conferences and information sessions, in relation to the proposed guideline, model, scheme, amendment or revised value or methodology as it considers appropriate.

(e) Within 80 business days of publishing the documents referred to in paragraph (b), the AER or the *AEMC* must publish:

(1) its final decision on the guideline, model, scheme, amendment, value or methodology that sets out:

(i) the guideline, model, scheme, amendment or revised value or methodology (if any);

(ii) the provision of the Rules under which or for the purposes of which the guideline, model, scheme or amendment is being made or developed or the value or methodology is being reviewed; and

(iii) the reasons for the guideline, model, scheme, amendment value or methodology; and

(2) notice of the making of the final decision on the guideline, model, scheme, amendment, value or methodology.

(f) Subject to paragraph (c), the AER or the *AEMC* must, in making its final decision referred to in paragraph (e)(1), consider any submissions made pursuant to the invitation for submissions referred to in paragraph (b)(3), and the reasons referred to in paragraph (e)(1)(iii) must include:

(1) a summary of each issue raised in those submissions that the AER or the *AEMC* reasonably considers to be material; and

(2) the AER's or the *AEMC's* response to each such issue.

B. Weightings for individual TNSPs

The following table outlines the weightings applicable to the service component parameters and sub-parameters for each TNSP.

Parameter	**Weighting (MAR %)**
TransGrid	
Circuit availability – transmission line availability	0.20
Circuit availability – transformer availability	0.15
Circuit availability – reactive plant availability	0.10
Loss of supply event frequency > 0.05 (x) system minutes	0.25
Loss of supply event frequency > 0.25 (y) system minutes	0.10
Average outage duration - total	0.20
Powerlink	
Circuit availability – critical	0.15
Circuit availability – non-critical elements	0.085
Circuit availability – peak hours	0.15
Loss of supply > 0.2 system minutes	0.15
Loss of supply > 1.0 system minutes	0.30
Average outage duration	0.15
ElectraNet	
Circuit availability – total transmission	0.30
Circuit availability – critical circuit peak	0.20
Circuit availability – critical circuit non-peak	0.0
Loss of supply event frequency > 0.05 (x) system minutes	0.10
Loss of supply event frequency > 0.2 (y) system minutes	0.20
Average outage duration - total	0.20
Transend	
Transmission circuit availability – critical	0.2
Transmission circuit availability – non-critical	0.1
Transformer circuit availability	0.15

Loss of supply event frequency > 0.1 (x) system minutes	0.20
Loss of supply event frequency > 1.0 (y) system minutes	0.35
Average outage duration – transmission lines	0.0
Average outage duration – transformers	0.0
SP Ausnet	
Total circuit availability	0.20
Peak critical circuit availability	0.20
Peak non-critical circuit availability	0.05
Intermediate critical circuit availability	0.025
Intermediate non-critical circuit availability	0.025
Loss of supply event frequency > 0.05 minutes	0.125
Loss of supply event frequency > 0.3 minutes	0.125
Average outage duration – lines	0.125
Average outage duration – transformers	0.125
Directlink	
Scheduled circuit availability	0.30
Forced outage circuit availability in peak periods	0.35
Forced outage circuit availability in off-peak periods	0.35
Murraylink	
Planned circuit energy availability	0.40
Forced outage circuit energy availability in peak periods	0.40
Forced outage circuit energy availability in off-peak periods	0.20

C. Historical Performance Data

C.1 Energy Australia

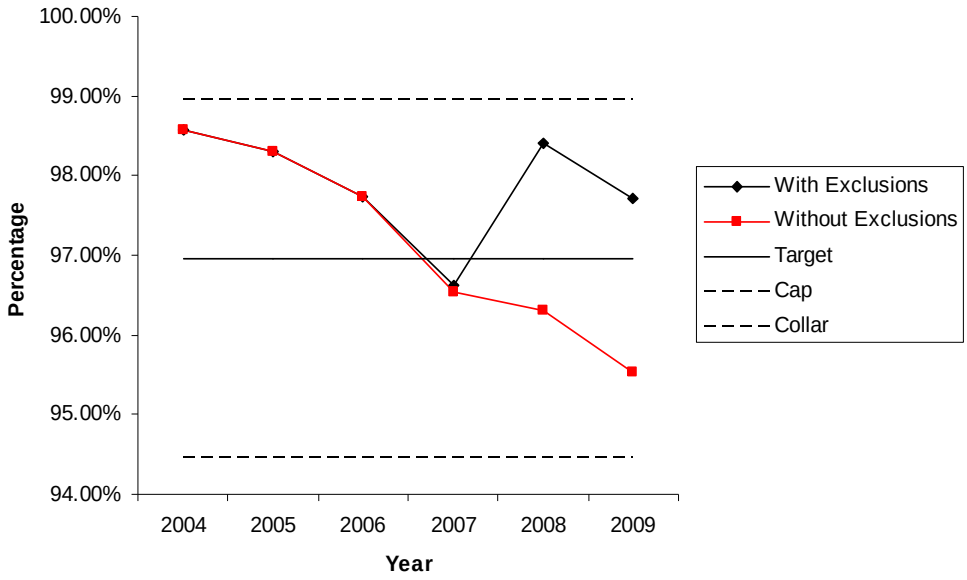

Figure 1: Energy Australia - Transmission Circuit Availability

C.2 ElectraNet

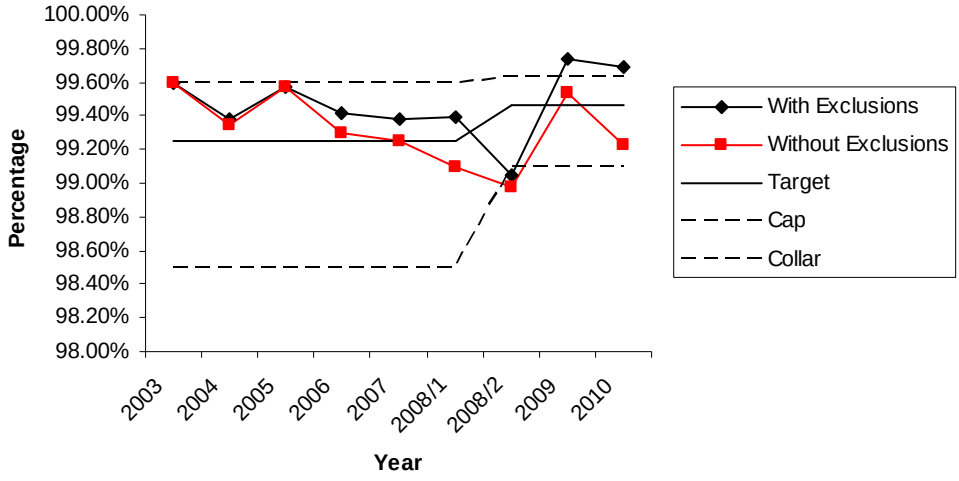

Figure 2: ElectraNet - Transmission Circuit Availability

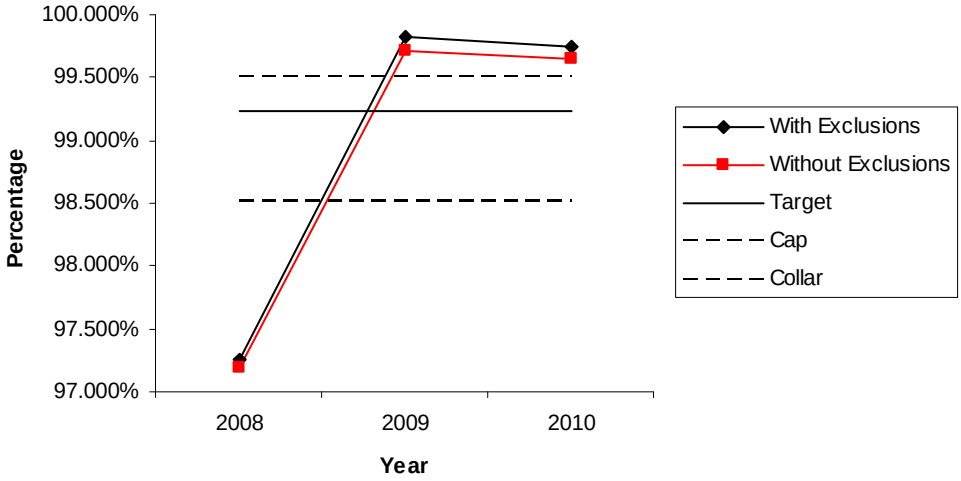

Figure 3: ElectraNet – Peak Critical Circuit Availability

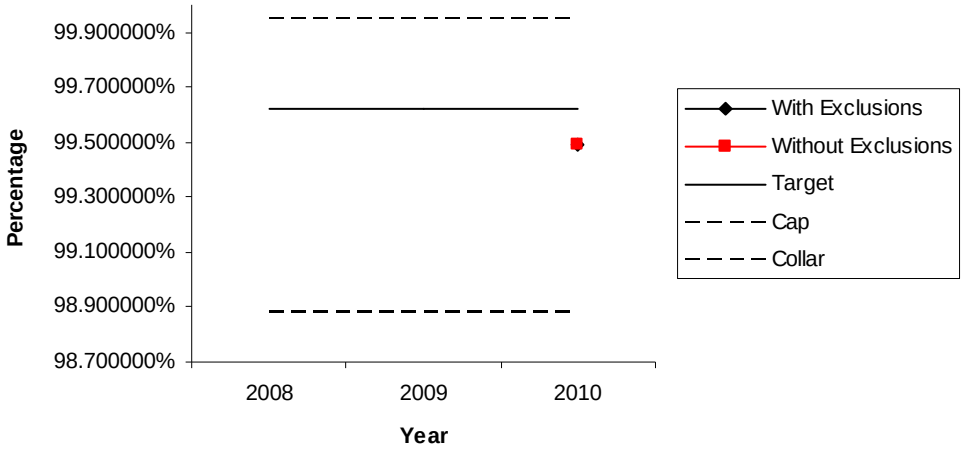

Figure 4: ElectraNet – Off-peak Critical Circuit Availability

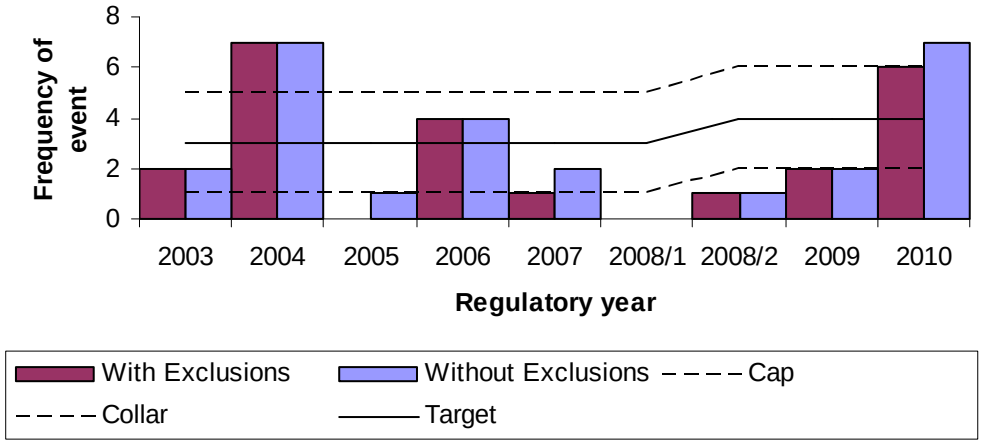

Figure 5: ElectraNet - Loss of Supply Event Frequency > 0.20 System Minutes

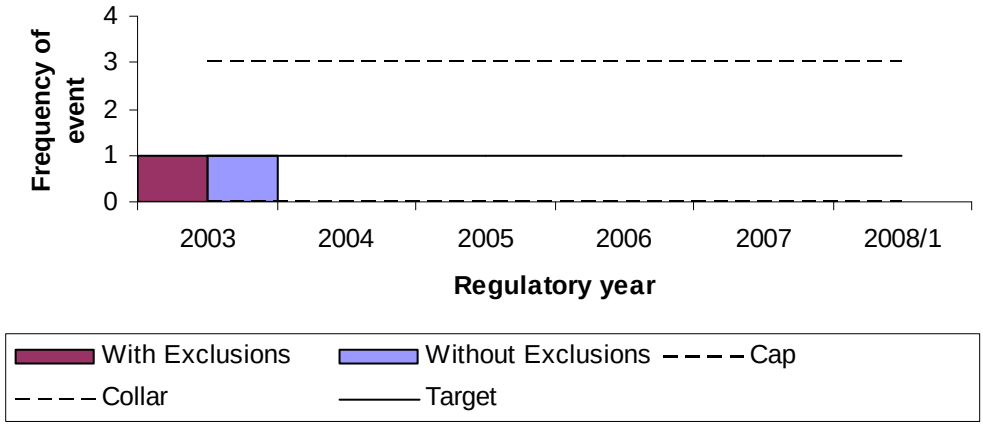

Figure 6: ElectraNet - Loss of Supply Event Frequency > 1.0 System Minutes

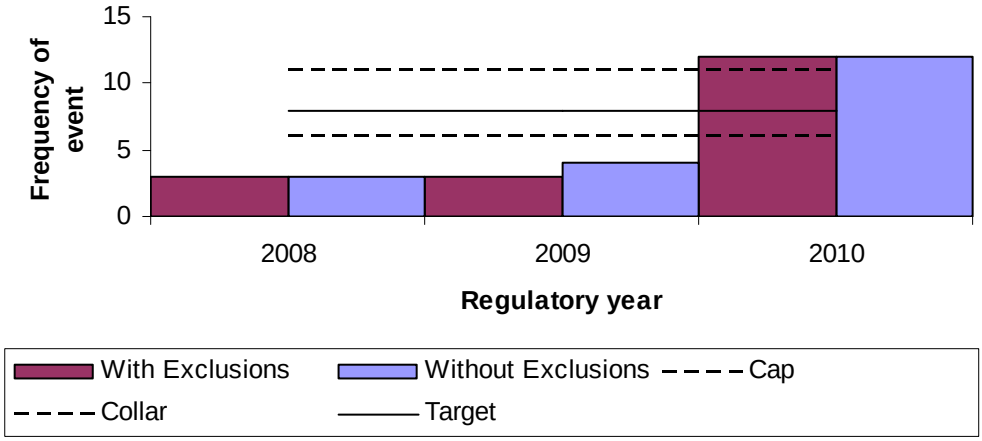

Figure 7: ElectraNet - Loss of Supply Event Frequency > 0.05 System Mintues

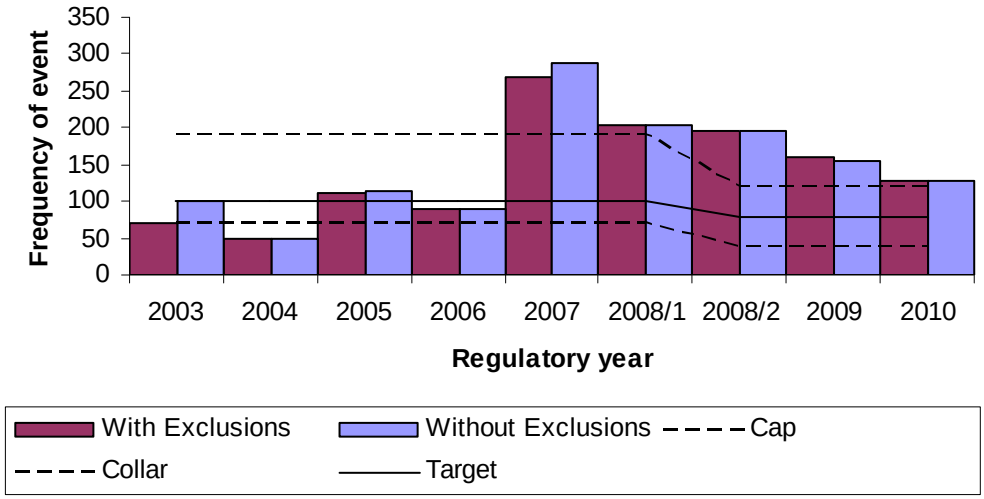

Figure 8: ElectraNet - Average Outage Duration

C.3 Powerlink

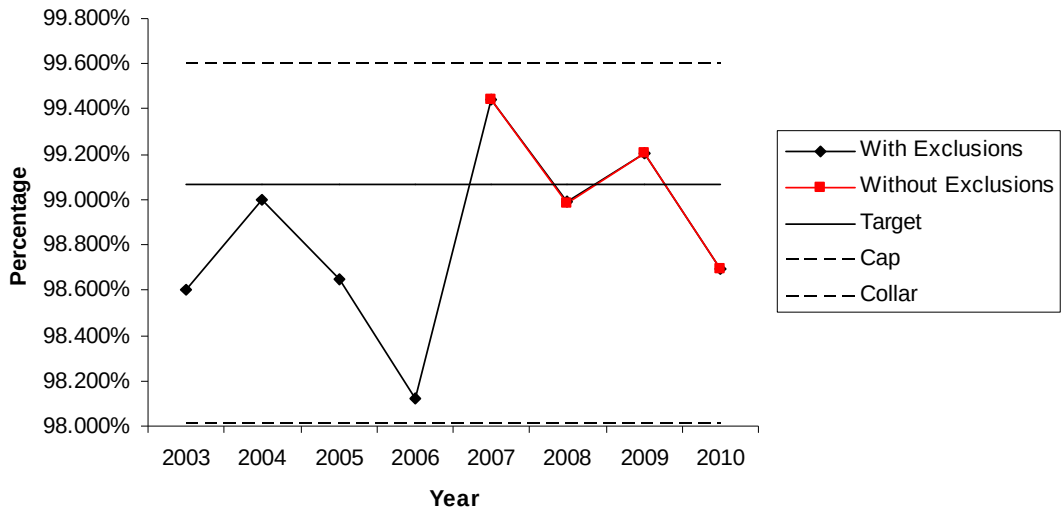

Figure 9: Powerlink – Critical Transmission Circuit Availability

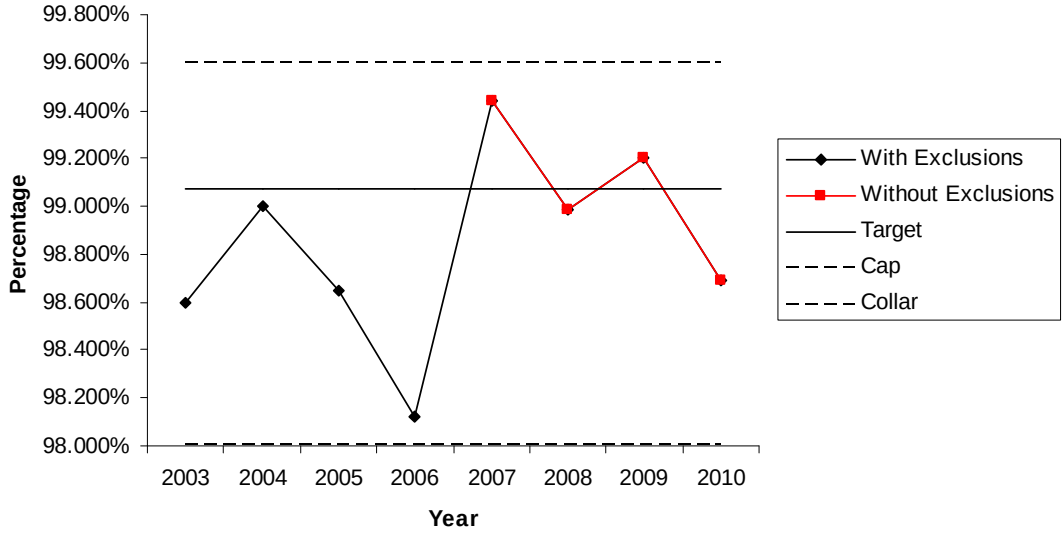

Figure 10: Powerlink – Non-critical Transmission Circuit Availability

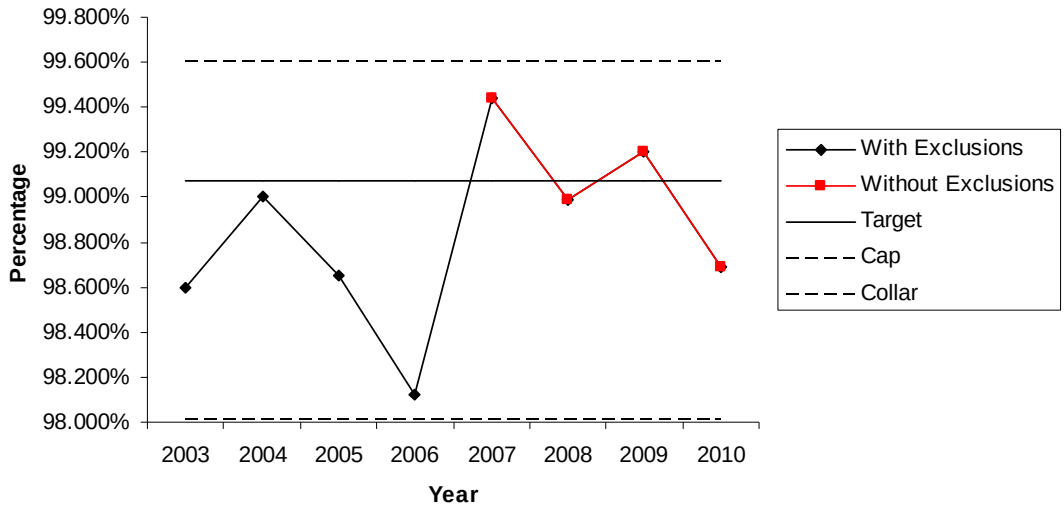

Figure 11: Powerlink – Peak Transmission Circuit Availability

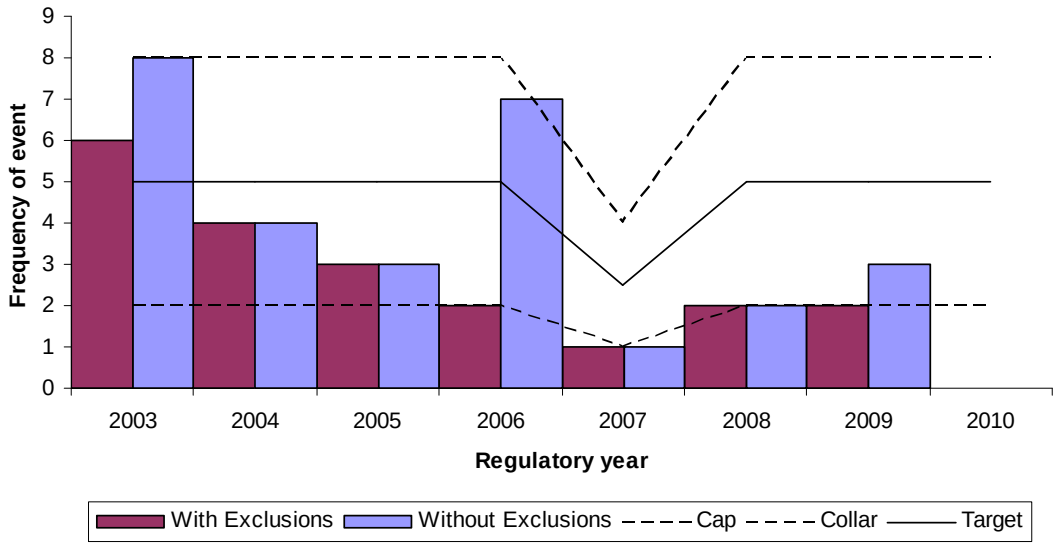

Figure 12: Powerlink - Loss of supply event frequency > 0.20 system minutes

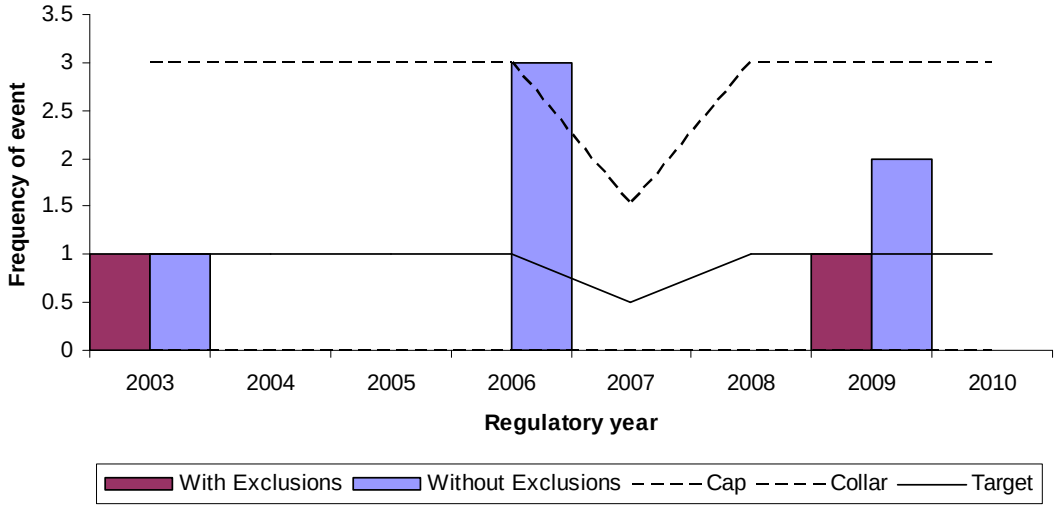

Figure 13: Powerlink - Loss of supply event frequency > 1.0 system minutes

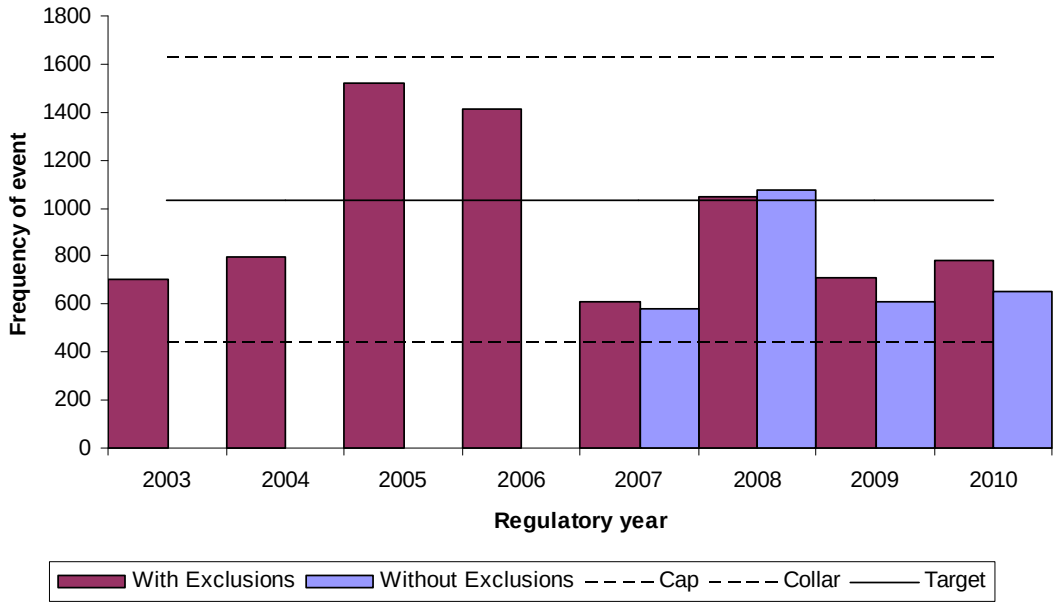

Figure 14: Powerlink - Average Outage Duration

C.4 SP AusNet

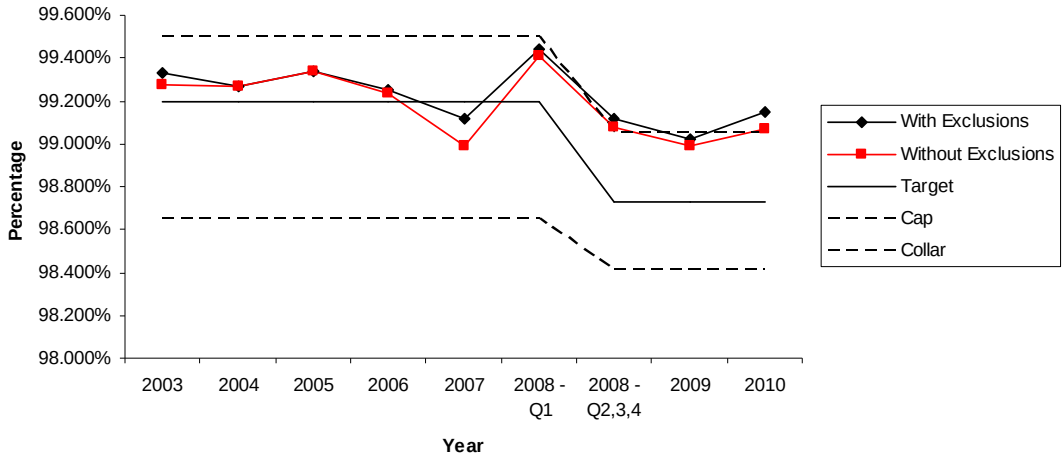

Figure 15: SP AusNet - Transmission Circuit Availability

Figure 16: SP AusNet - Peak Critical Transmission Circuit Availability

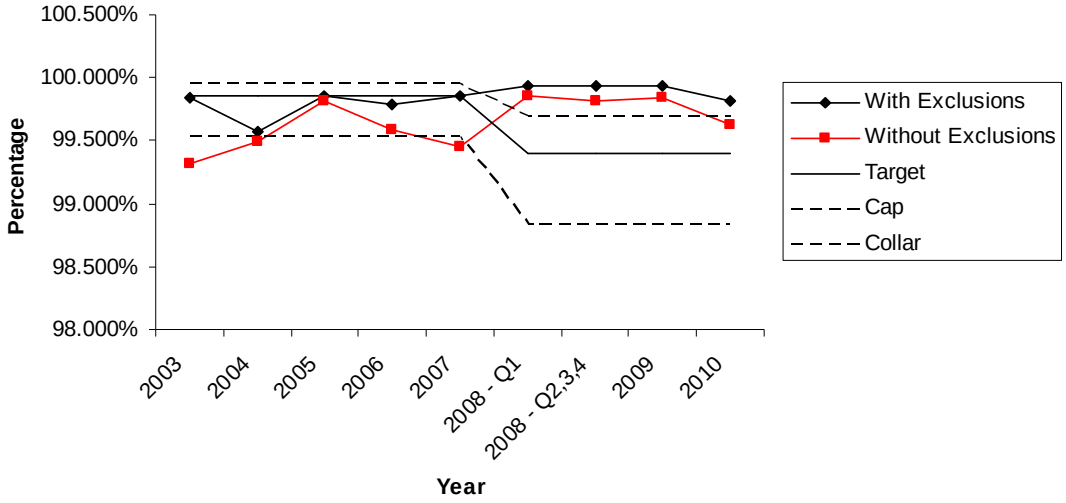

Figure 17: SP AusNet - Peak Non-Critical Transmission Circuit Availability

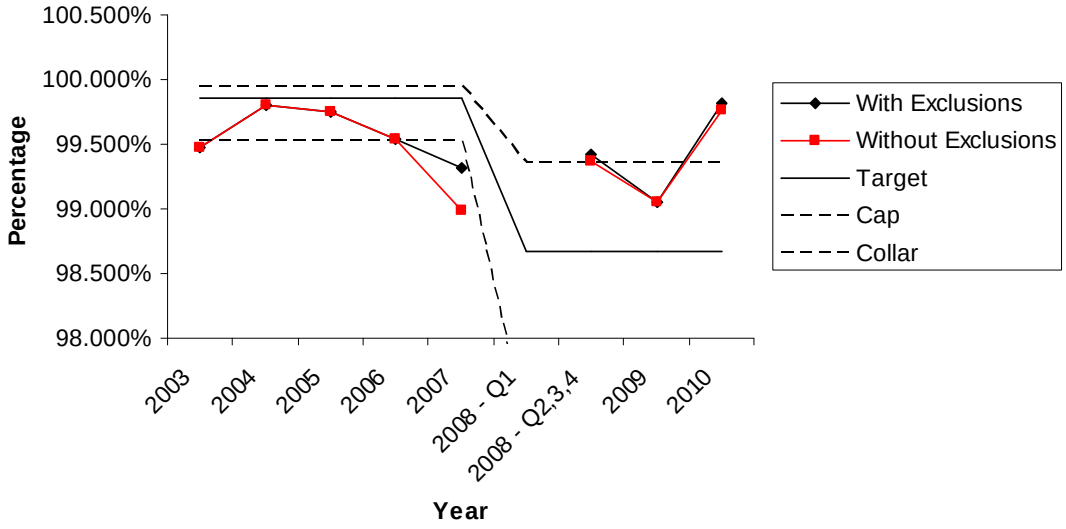

Figure 18: SP AusNet - Intermediate Critical Transmission Circuit Availability

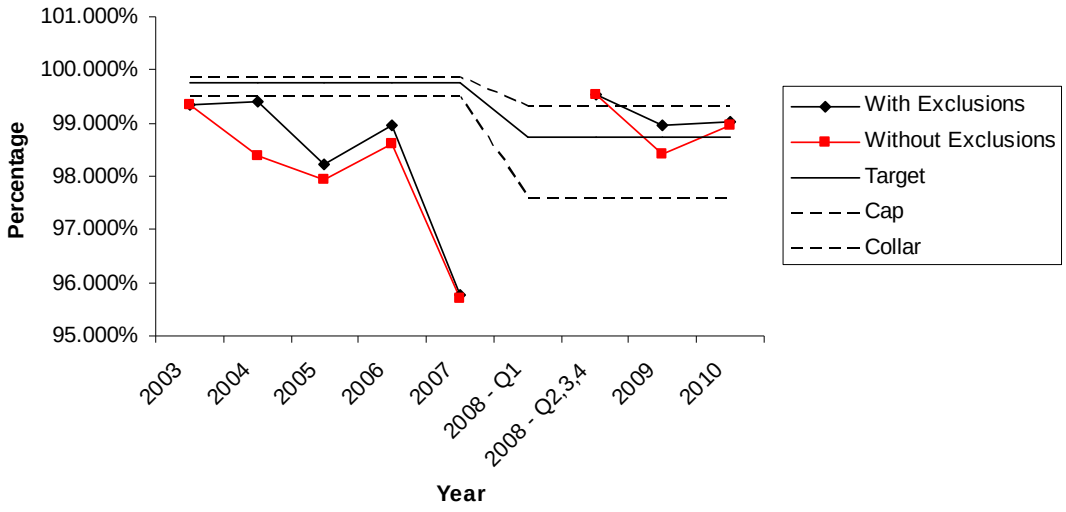

Figure 19: SPAusnet - Intermediate Non-Critical Transmission Circuit Availability

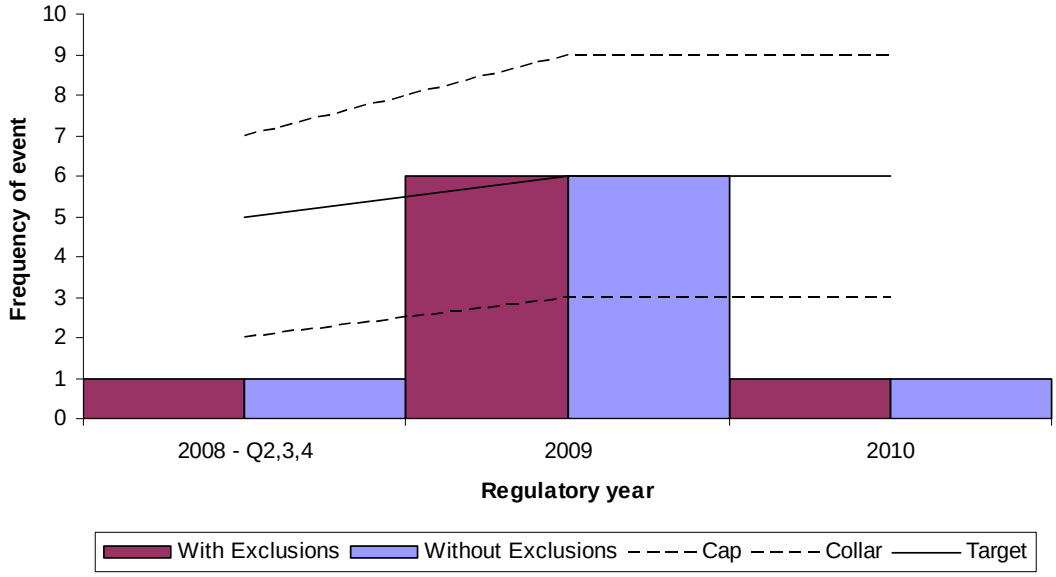

Figure 20: SP AusNet - Loss of supply event frequency > 0.05 system minutes

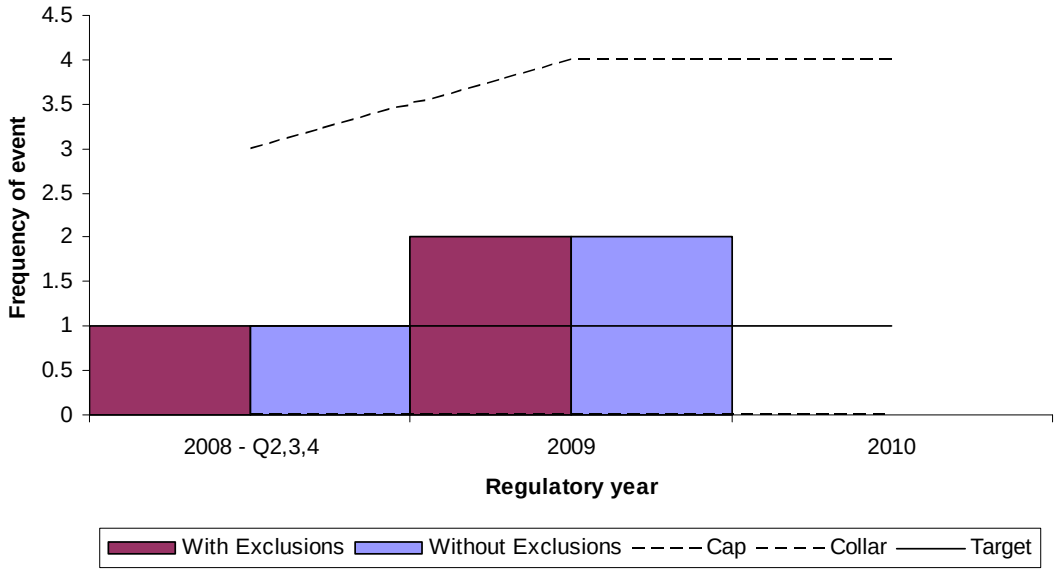

Figure 21: SP AusNet - Loss of supply event frequency > 0.03 system minutes

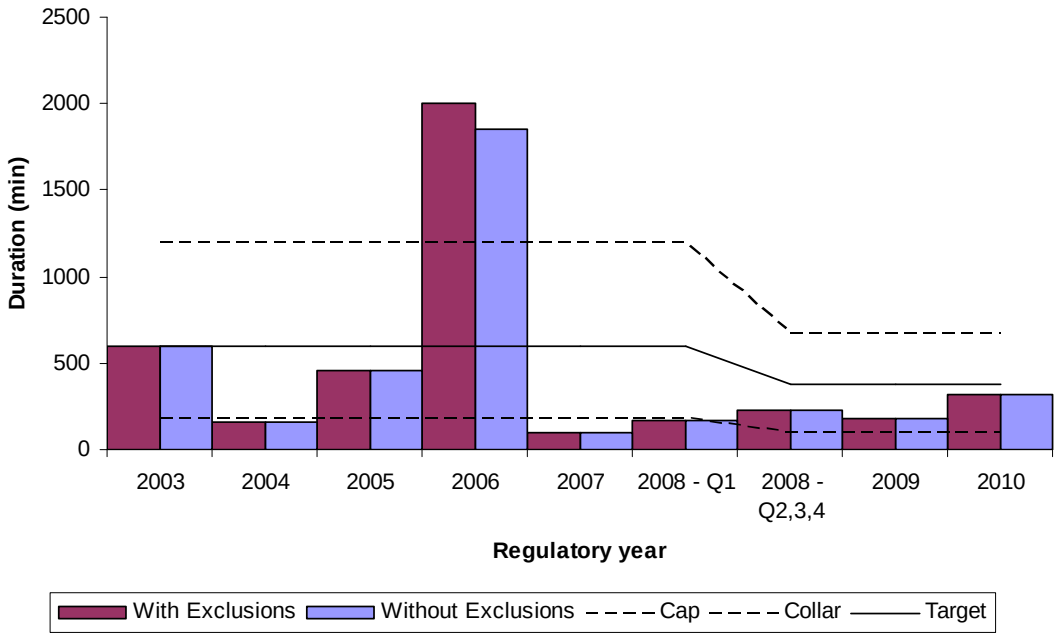

Figure 22: SP AusNet - Average Outage Duration (lines)

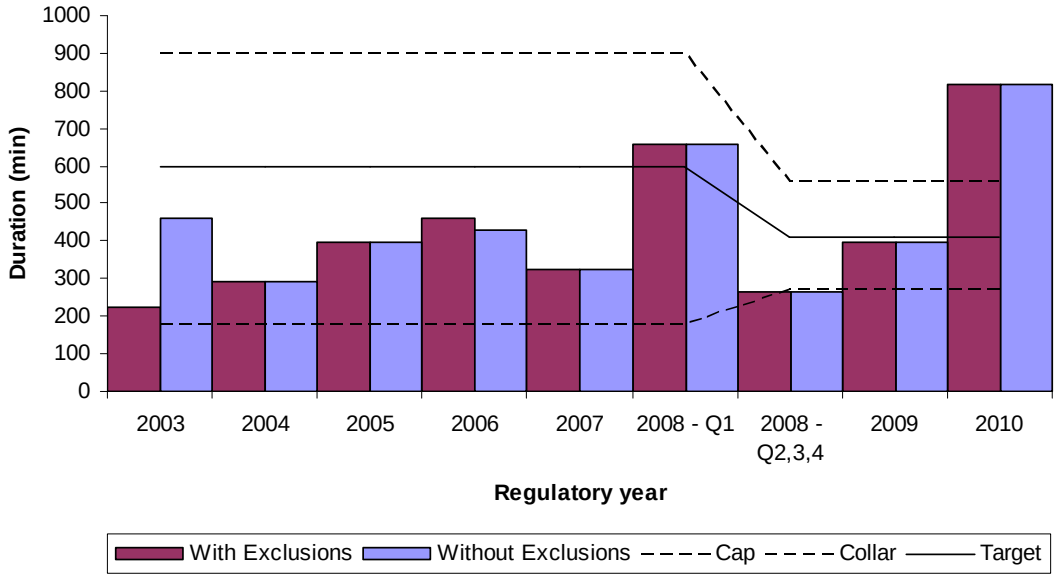

Figure 23: SP AusNet - Average Outage Duration (transformers)

C.5 Transend

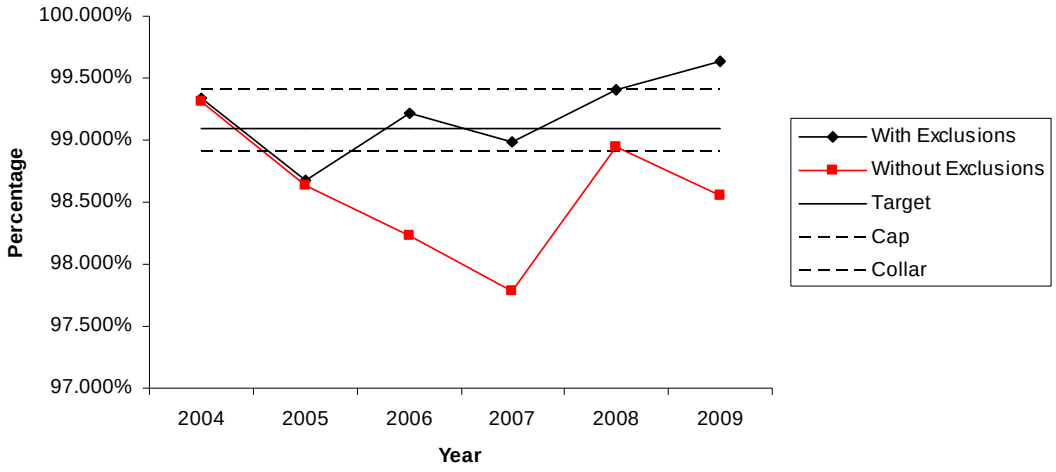

Figure 24: Transend - Transmission Circuit Availability

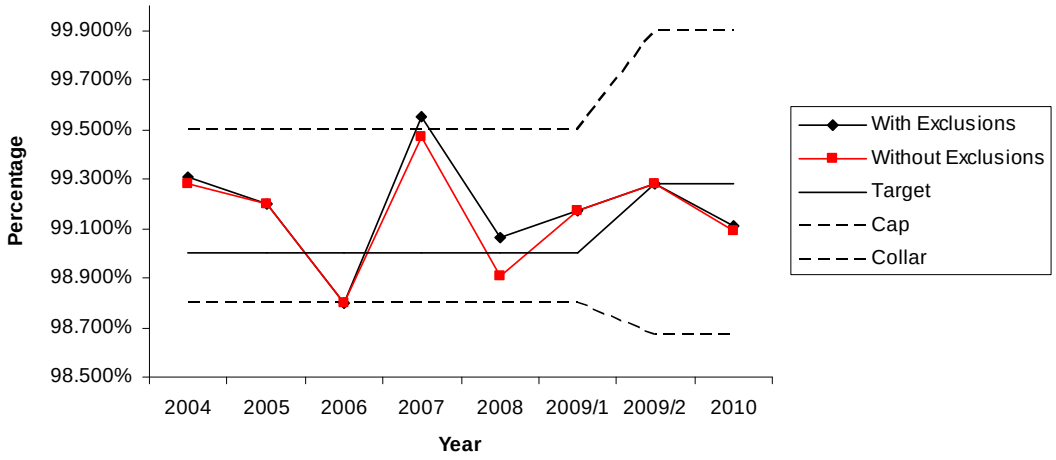

Figure 25: Transend - Transformer Availability

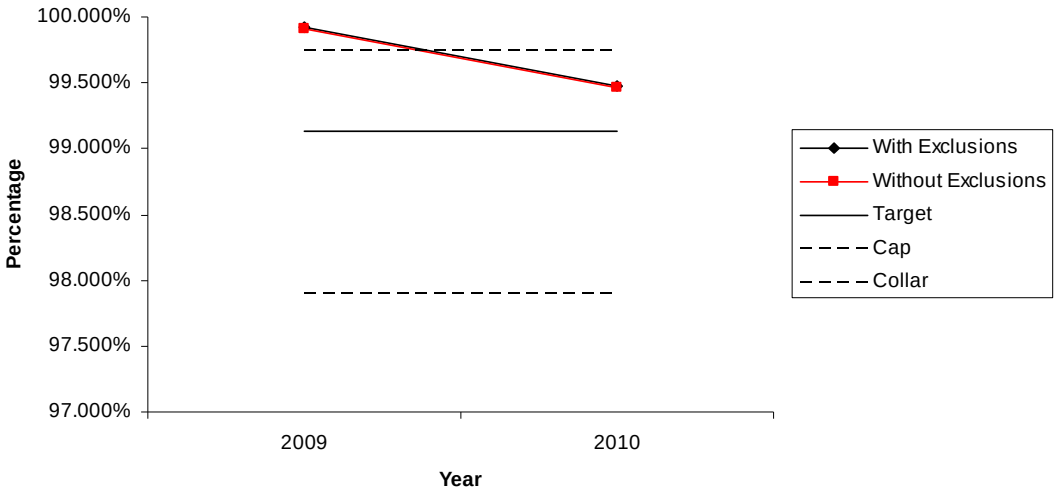

Figure 26: Transend - Critical Transmission Circuit Availability

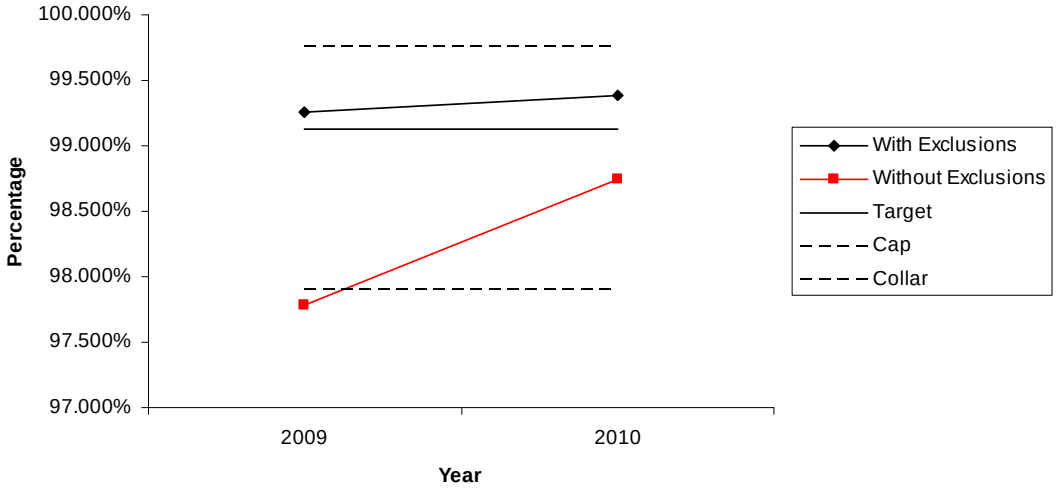

Figure 27: Transend - Non-Critical Transmission Circuit Availability

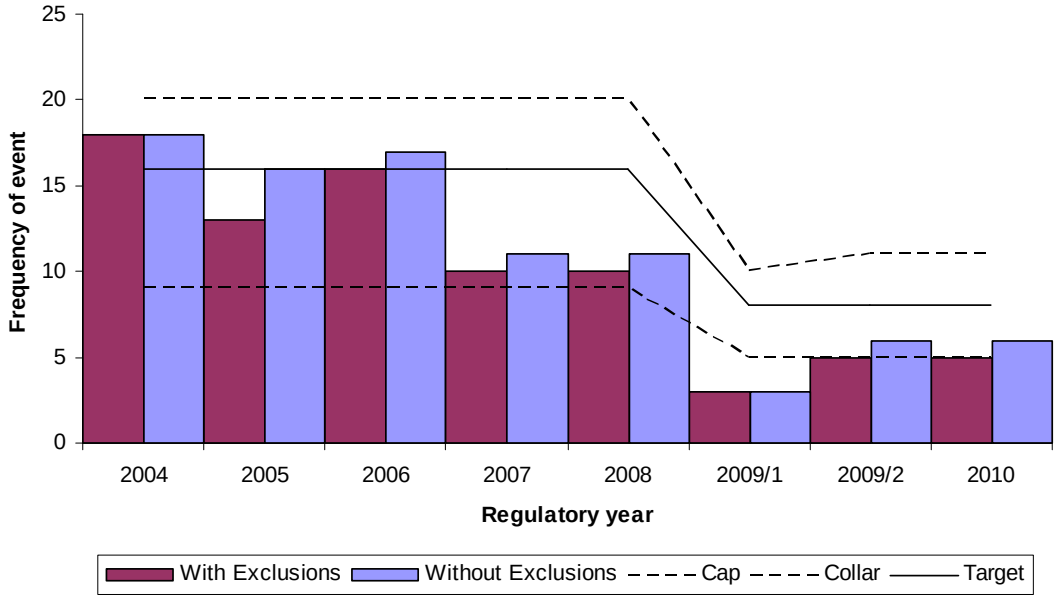

Figure 28: Transend - Loss of supply event frequency > 0.1 system minutes

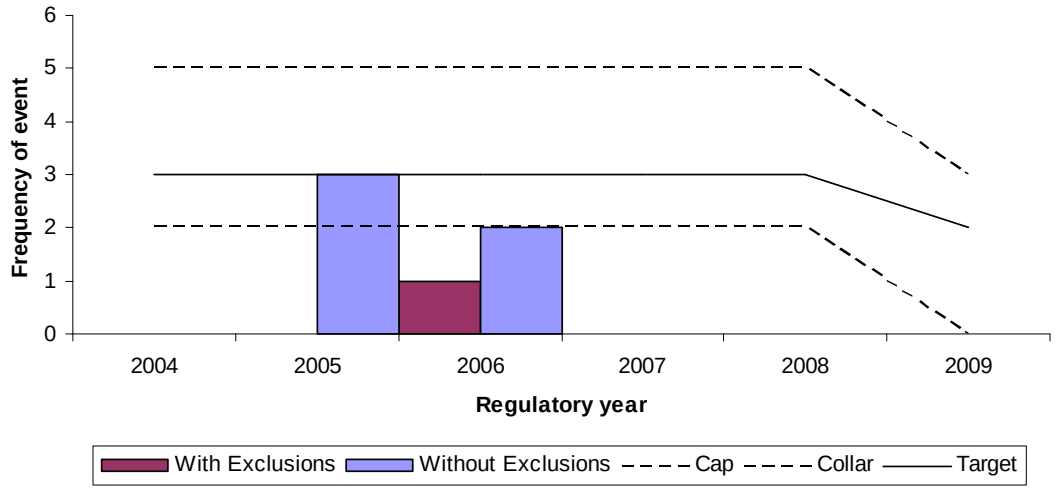

Figure 29: Transend - Loss of supply event frequency > 2.0 system minutes

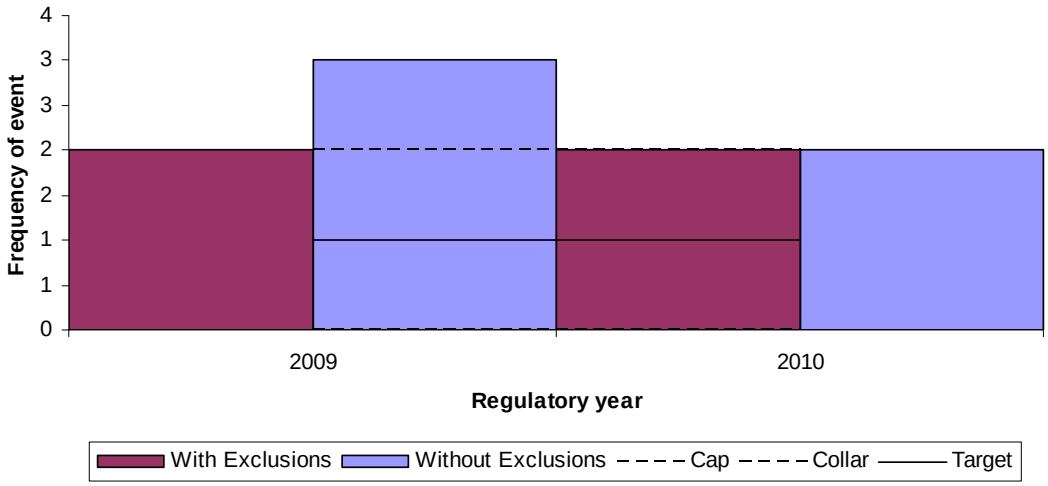

Figure 30: Transend - Loss of supply event frequency > 1.0 system minutes

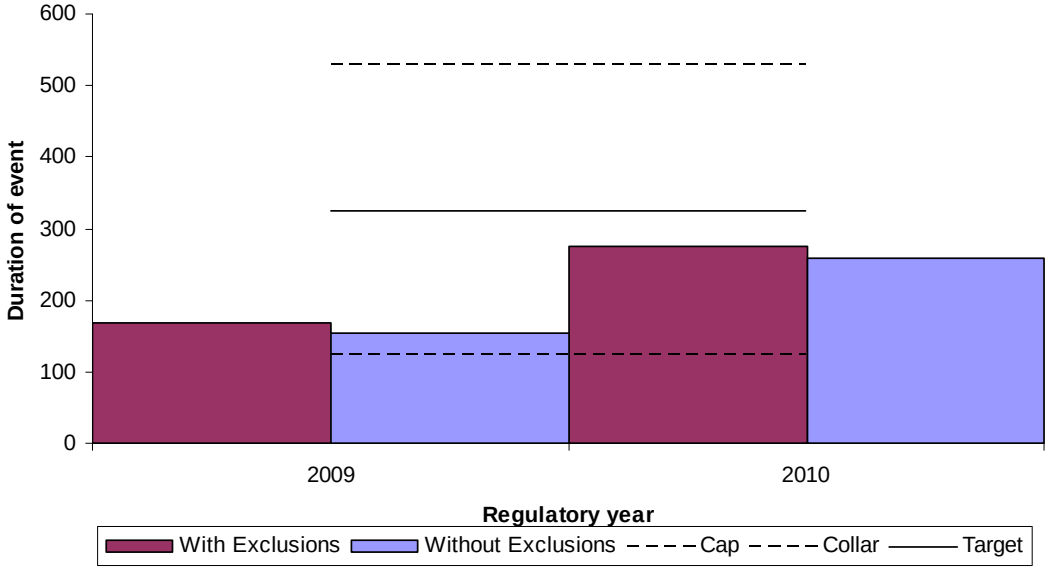

Figure 31: Transend - Average Outage Duration (transmission lines)

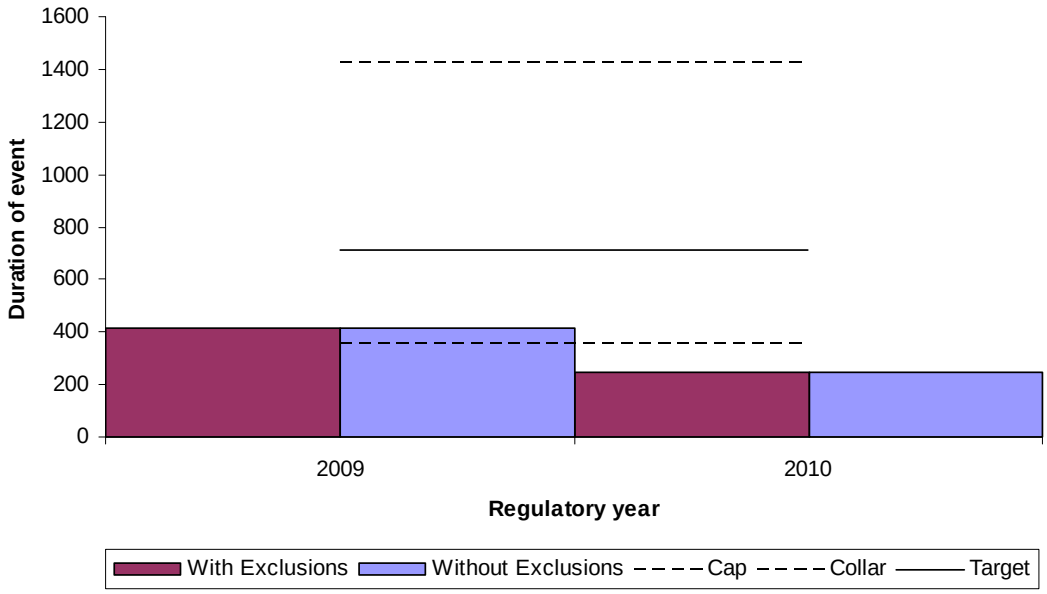

Figure 32: Transend - Average Outage Duration (transformers)

C.6 Transgrid

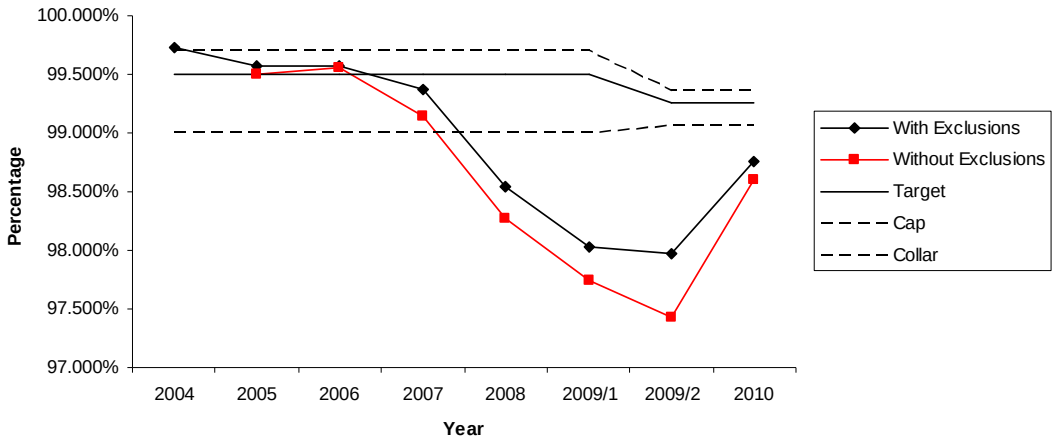

Figure 33: Transgrid - Transmission Line Availability

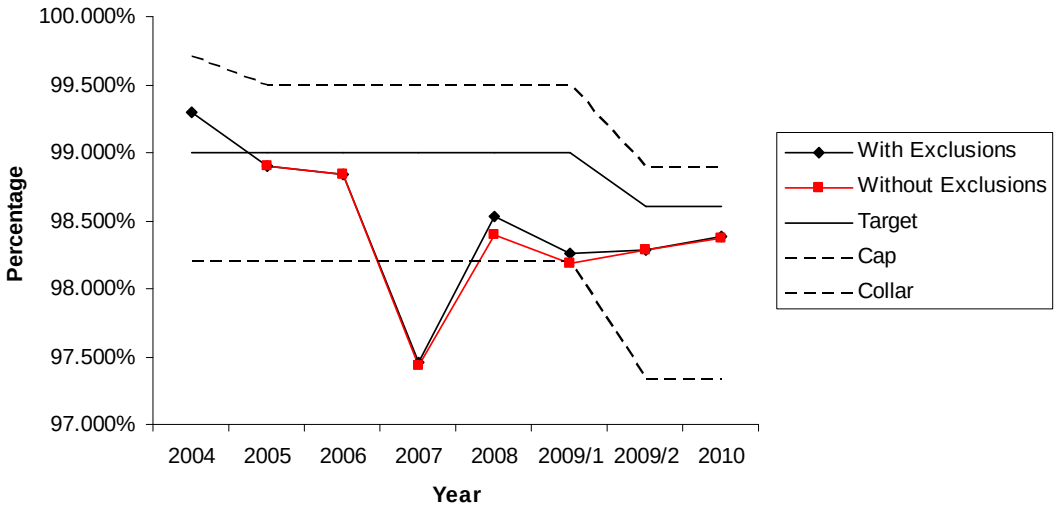

Figure 34: Transgrid - Transformer Availability

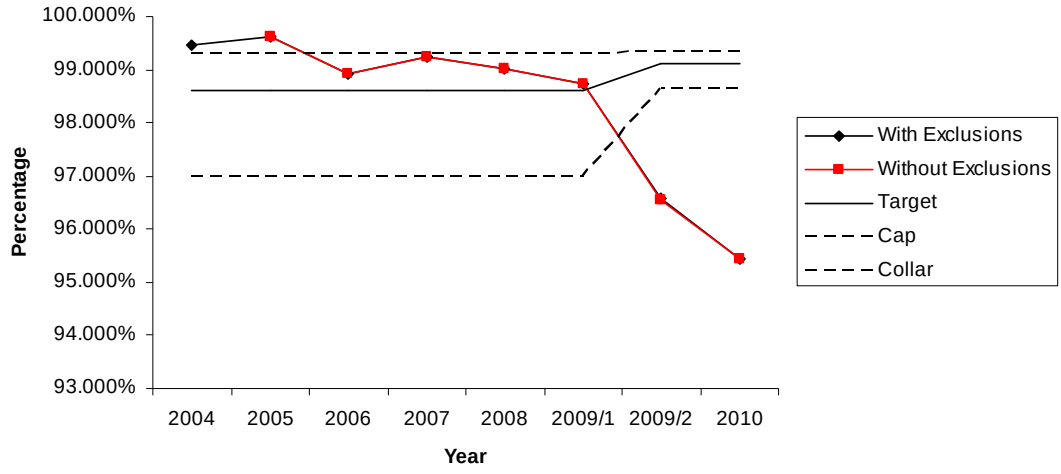

Figure 35: Transgrid - Reactive Plant Availability

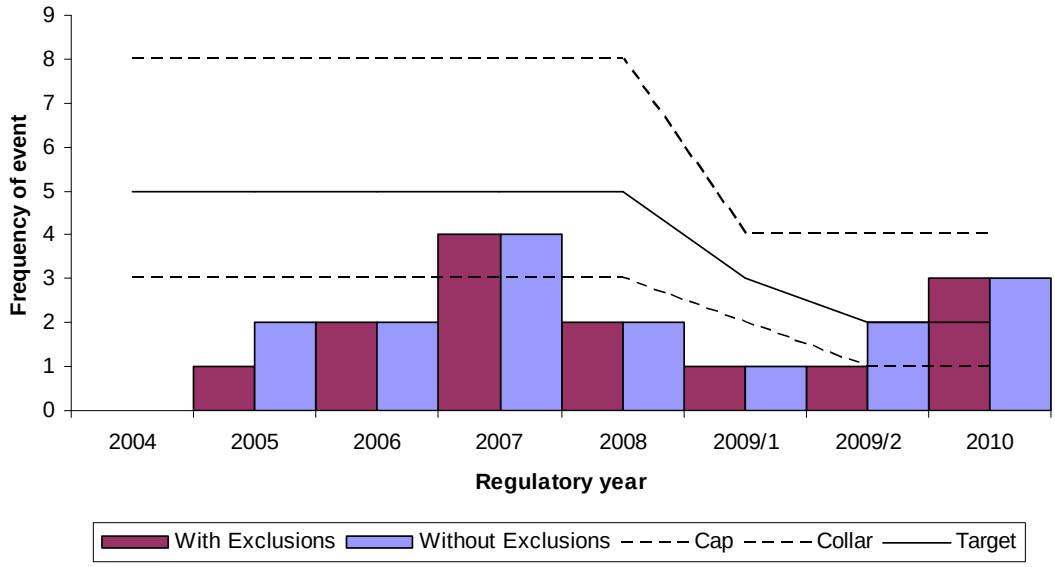

Figure 36: Transgrid - Loss of supply event frequency > 0.05 system minutes

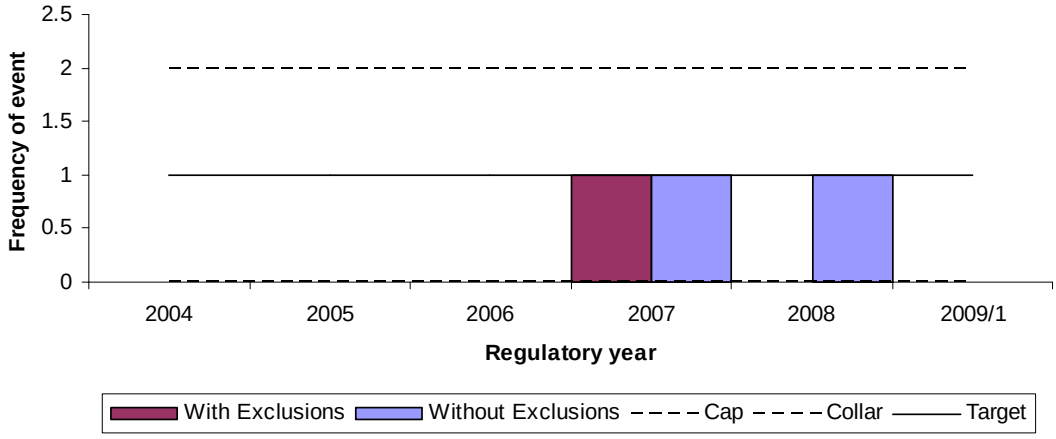

Figure 37: Transgrid - Loss of supply event frequency > 0.4 system minutes

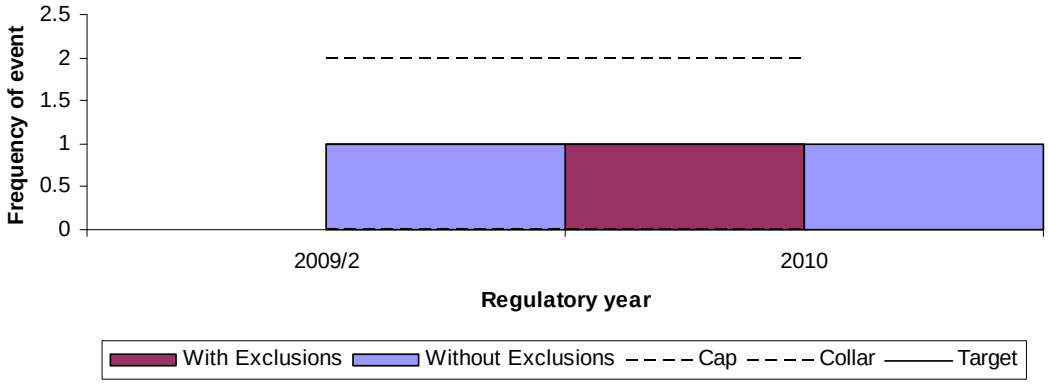

Figure 38: Transgrid - Loss of supply event frequency > 0.25 system minutes

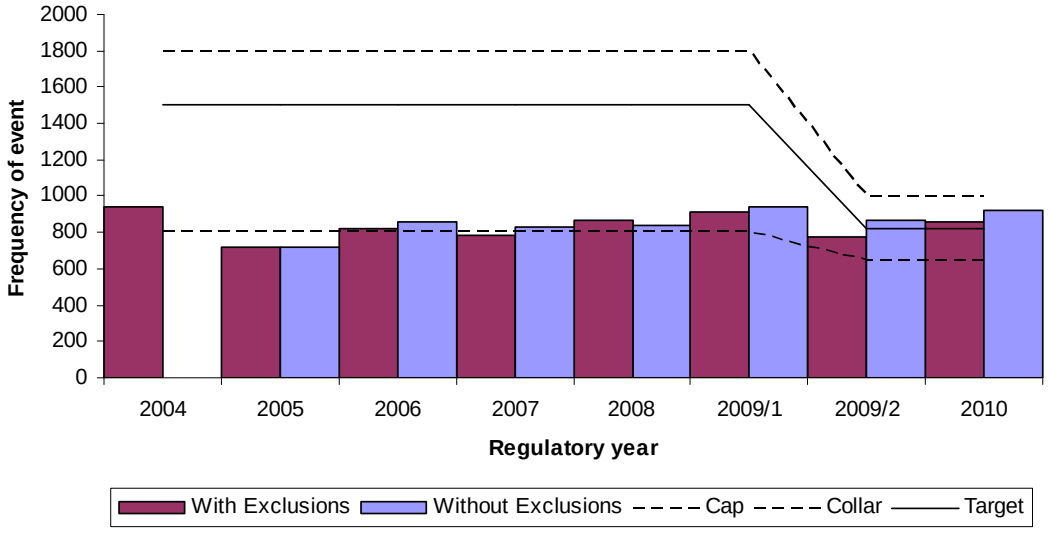

Figure 39: Transgrid - Average Outage Duration

C.7 Directlink

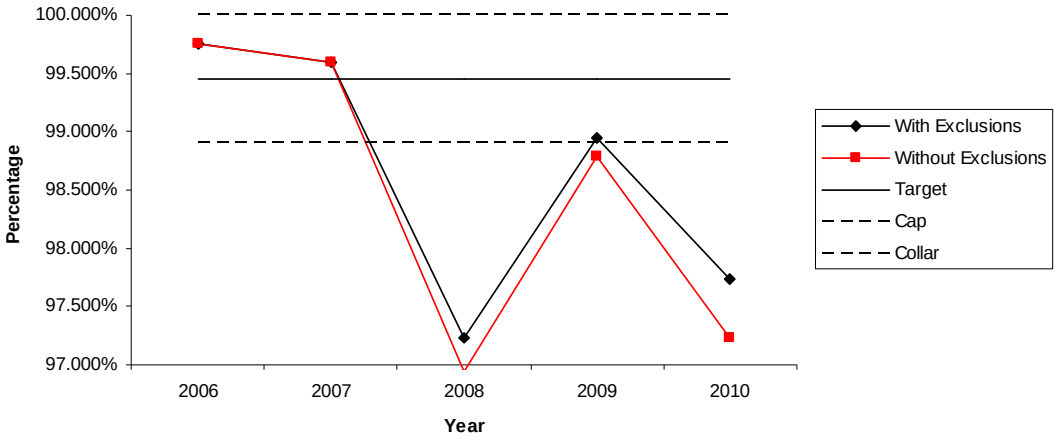

Figure 41: Directlink – Scheduled Circuit Availability

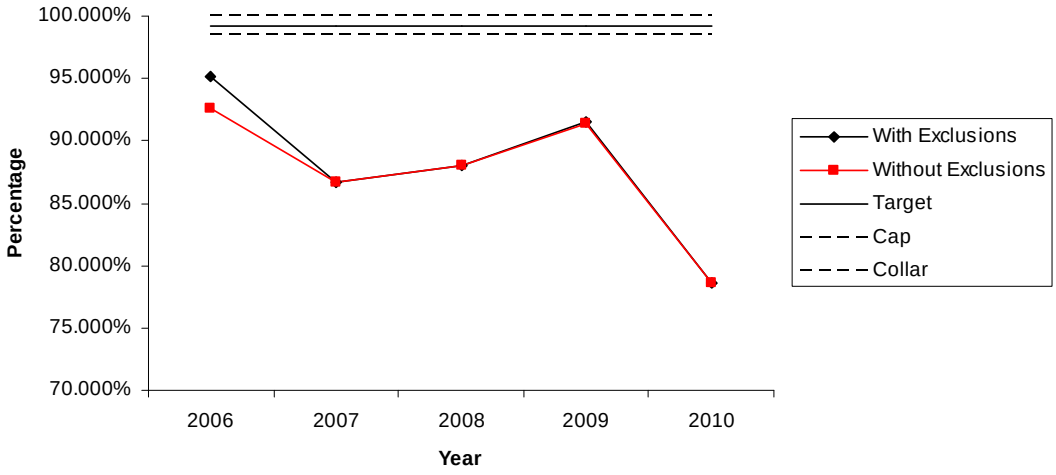

Figure 42: Directlink - Forced Peak Circuit Availability

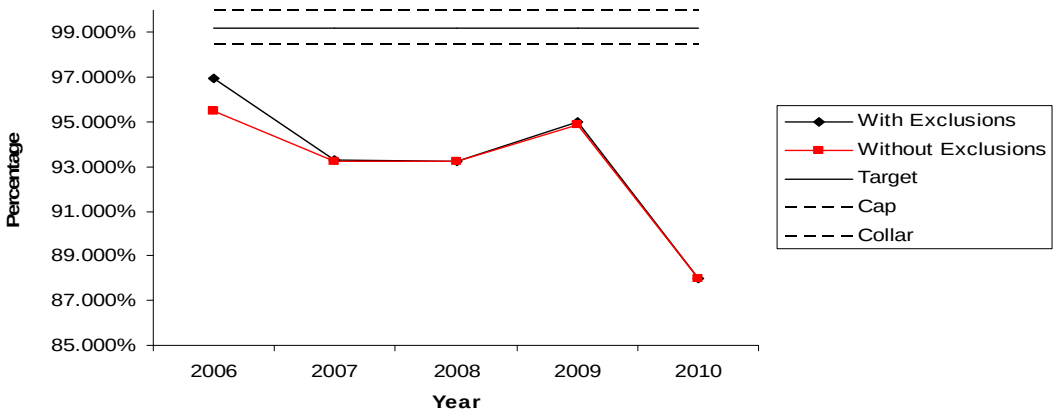

Figure 43: Directlink - Forced Off-peak Circuit Availability

C.8 Murraylink

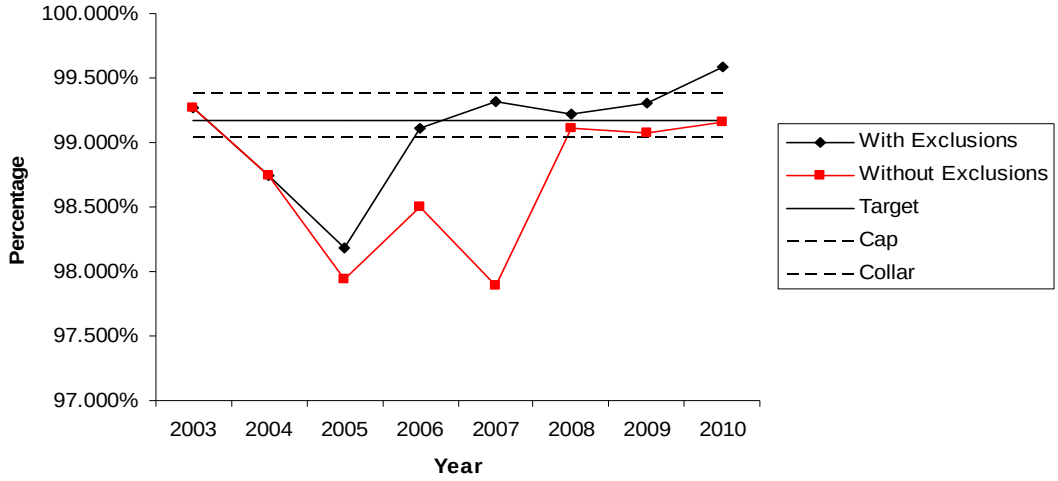

Figure 44: Murraylink - Planned Circuit Energy Availability

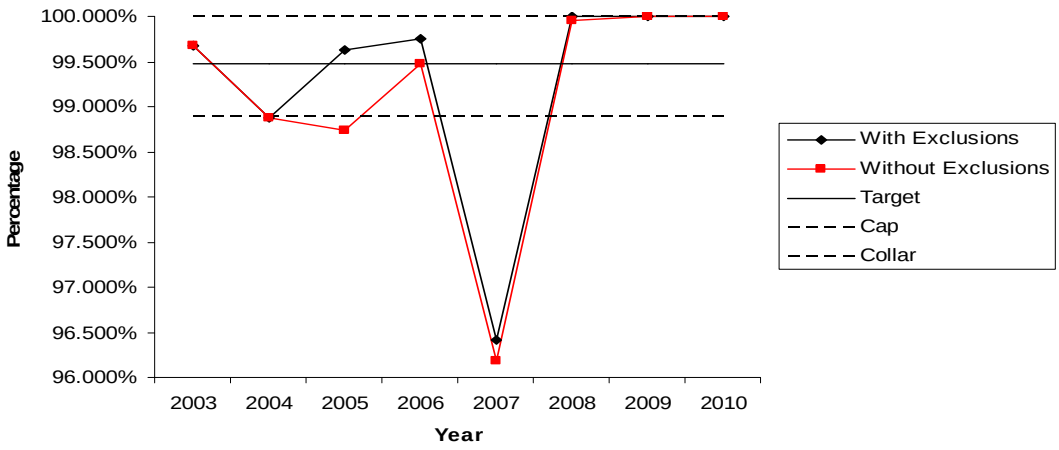

Figure 45: Murraylink - Peak Forced Outage Availability

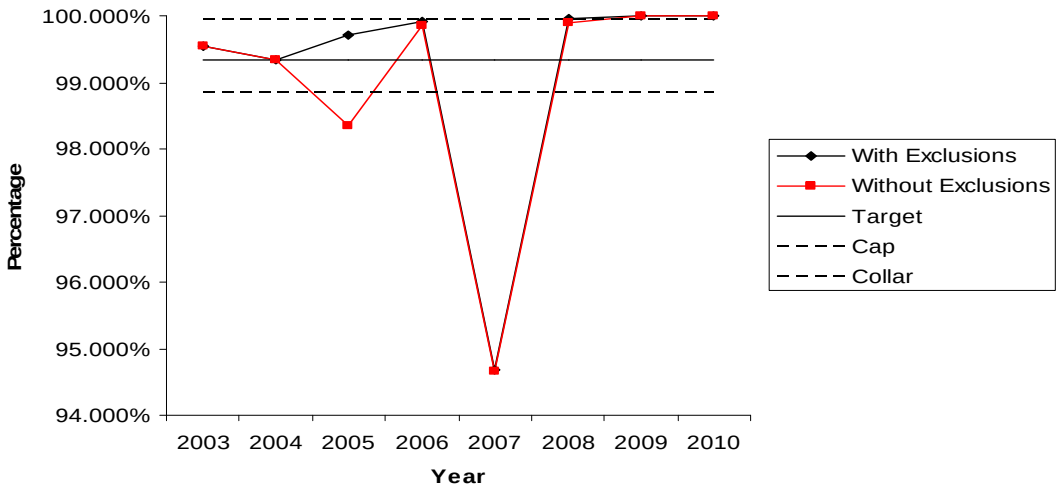

Figure 46: Murraylink - Off-peak Forced Outage Availability

Glossary

This issues paper uses the following definitions.

Cap	the level of performance that results in a TNSP receiving the maximum financial reward attributed to a *parameter*.
Collar	the level of performance that results in a TNSP receiving the maximum financial penalty attributed to a *parameter*.
financial incentive	the dollar value of the revenue increment or decrement that the *maximum allowed revenue* is adjusted by in each *regulatory year* based on a TNSP's performance in the preceding *calendar year*.
force majeure event	has the meaning set out in Chapter 5.
market systems	*AEMO*'s systems for operating the *national electricity market*, and for recording and publishing data relating to the operation of the *national electricity market*.
material change	a change that can influence the outcomes that may otherwise result.
national electricity objective	has the meaning set out in the National Electricity Law.
National Electricity Rules	the rules as defined in the National Electricity Law.
Parameters	the *performance incentive scheme parameters* and includes the sub-parameters, where applicable.
performance target	the level of performance that results in a TNSP neither receiving a financial penalty nor financial reward in the *regulatory year*.
service target performance incentive scheme or scheme	the *service target performance incentive scheme* defined in the National Electriciy Rules.
s-factor or service standards factor	the percentage revenue increment or decrement that the *maximum allowed revenue* is adjusted by in each *regulatory* year based on a TNSP's performance in the previous *calendar year*.
TNSP	*transmission network service provider* as defined in the National Electricity Rules.
Weightings	the proportion of the *financial incentive* under the *service component* allocated to each of *parameters* applying to the TNSP under the *service component*.