Draft

Service target performance incentive scheme (incorporating incentives based on the market impact of transmission congestion)

Explanatory Statement

November 2007

AUSTRALIAN ENERGY REGULATOR

Contents

Shortened forms

ACCC	Australian Competition and Consumer Commission
AER	Australian Energy Regulator
ERAA	Energy Retailers Association of Australia
ETNOF	Electricity Transmission Network Owners Forum
EUAA	Energy Users Association of Australia
MAR	maximum allowed revenue
MCC	marginal cost of constraint
MITC	market impact of transmission congestion
NEM	national electricity market
NEMMCO	National Electricity Market Management Company
NEMDE	national electricity market dispatch engine
NER	National Electricity Rules
NGF	National Generators Forum
OCC	outage cost of constraint
PB	PB Associates
REIMNS	Review into the Integration of the Energy Market and Network Services
SKM	Sinclair Knight Mertz Pty. Ltd.
SRA	settlement residue auction
TNSP	transmission network service provider
TCC	total cost of constraint

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 (NER).

On 31 August 2007, the AER published its service target performance incentive scheme (initial scheme), fulfilling the requirement in clause 6A.7.4 of the NER that the AER publish the scheme by 28 September 2007.

Concurrently, the AER has been developing service target performance incentive scheme parameters based on the market impact of transmission congestion (MITC). In June 2007, the AER released an issues paper *Service target performance incentive scheme – developing incentives based on the Market Impact of Transmission Congestion*. In the issues paper, the AER noted that the development of any incentive based on the MITC measures would form part of the broader service target performance incentive scheme. However, given the need for appropriate consultation and consideration of market impact parameters, it was not possible to incorporate market impact parameters into the initial scheme before it was published in August.

The AER has now developed a proposed service target performance incentive scheme (proposed scheme) which incorporates a market impact parameter. The proposed scheme comprises two elements.

The first is the initial scheme (parameters set out in appendix A and B of the proposed scheme), which provides incentives for the TNSPs to minimise the number and duration of outages and maximise circuit availability.

The second element (parameters set out in appendix C of the proposed scheme) provides an incentive for TNSPs to minimise the market impact of outages.

In its final decision on the initial scheme the AER indicated that it will also review the parameters applying to each TNSP before each transmission determination. Any amendments to the scheme as a result of these reviews will be finalised at least two months before the TNSP is due to lodge its revenue proposal so that the amended scheme can be applied during the TNSP's next regulatory control period.

The AER has since completed its review of the parameters applying to EnergyAustralia and received proposed amendments from Transend and TransGrid. The AER has included several amendments to the parameters that apply to these TNSPs under the scheme. Section 3 of the explanatory statement sets out the AER's reasons for these changes.

Except for the amendments to the parameters that apply to EnergyAustralia, Transend and TransGrid, the initial scheme has not been amended. The only other change proposed by the AER is the inclusion of the market impact parameter (and associated amendments). The two elements of the proposed scheme will operate in parallel.

As required by clause 6A.20(b)(2) of the NER, this explanatory statement accompanies the proposed scheme. It sets out the NER requirements, the purpose and

objectives of the proposed scheme, the nature and reasons for the proposed scheme (including consideration of submissions on the issues paper) and the consultation process to be undertaken. It also invites written submissions on the proposed scheme as required by clause 6A.20(b)(3) of the NER.

1.1 NER requirements

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

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

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

1.2 Structure of this document

This document is structured as follows:

- Section 2 sets out the purpose and objectives of the proposed scheme.
- Section 3 outlines the proposed amendments to the parameters that currently apply to EnergyAustralia, Transend and TransGrid
- Section 4 outlines the nature and reasons for the proposed market impact parameter. For each area it sets out what was discussed in the AER's issues paper, issues raised in submissions, and the AER's considerations and conclusions.
- Section 5 describes the consultation process that the AER will undertake in developing the final scheme.
- Section 6 invites written submissions on the proposed scheme.

2 Purpose and objectives of the proposed scheme

The proposed scheme outlines the approach to setting a service target performance incentive within the transmission determination framework. The objectives of the scheme are to:

- contribute to the NEM objective
- be consistent with the principles in the NER
- promote transparency in the information provided by a TNSP and AER decisions
- promote efficient TNSP capital and operating expenditure by balancing the incentive to reduce actual expenditure with the need to maintain and improve reliability for customers and minimise the market impact of transmission congestion.

In particular, the AER notes that the development of a market impact parameter in the proposed scheme meets the requirement of clause 6A.7.4(b)(1) of the NER which states that the scheme must provide incentives for each TNSP to:

- provide greater reliability of the transmission system at all times when users place greatest value on the reliability of the transmission system
- improve and maintain the reliability of those elements that are most important to determining spot prices.

3 Amendments to existing parameters under the initial scheme

In its final decision on the initial version of the scheme the AER indicated that it would review the parameters applying to each TNSP under the scheme before each transmission determination. The AER has since completed its review of the parameters applying to EnergyAustralia. The AER considered that it was necessary to engage a consultant to provide expert advice on appropriate amendments to the parameters that apply to EnergyAustralia given that it is currently reporting against a number of parameters that do not apply to any other TNSPs under the scheme.

The AER also reviewed proposed parameter amendments received from Transend and TransGrid. These proposed amendments clarified some of the definitions that apply to these TNSPs under the initial scheme and incorporated circuit availability sub-parameters to ensure that the scheme provides the incentives referred to in clause 6A.7.4 of the NER.

The AER has included several amendments to the parameters that apply to EnergyAustralia, Transend and TransGrid under the service component of the draft scheme. This part of the explanatory statement sets out the AER's reasons for these changes.

3.1 EnergyAustralia parameter amendments

EnergyAustralia has the following parameters applying to it under its current revenue determination:

- transmission circuit availability
- transformer availability
- reactor availability
- MVA days of feeder availability
- MVA days of transmission bulk supply transformers non-availability
- MVAr days of reactive plant non availability
- loss of supply event frequency
- hours that planned outage plans were in place

While the transmission circuit availability parameter is the only parameter that currently affects EnergyAustralia's financial incentive, it has an obligation to report its performance on the remaining seven parameters.

3.1.1 PB review

The AER engaged PB Associates (PB) to review the parameters that currently apply to EnergyAustralia and determine whether alternative parameters should apply during EnergyAustralia's next regulatory control period.

Review of existing parameters

PB reviewed the appropriateness of EnergyAustralia's existing parameters by considering whether they are:

- consistent with the requirements of the NER and the objectives of the scheme
- suitable for EnergyAustralia's network
- are appropriately structured to reflect the services which are valued by customers and providing EnergyAustralia with an incentive to improve the delivery of these services.

Consistency with regulatory requirements

Amendments to chapter 6A of the NER in November 2006 required the AER to release a service target performance incentive scheme which complied with the principles listed in clause 6A.7.4(b). PB assessed the parameters applying to EnergyAustralia under its current determination against these new NER requirements and the objectives of the scheme and considered that:

- none of the existing parameters provide incentives for EnergyAustralia to improve or maintain reliability at times most valued by users or on those elements of the network that are most important to determining spot prices
- not all of the parameters currently applying to EnergyAustralia are necessary to meet the objectives of the scheme.

Suitability of parameters to the EnergyAustralia network

Unlike other TNSPs in the national electricity market, EnergyAustralia is only responsible for a small component of highly meshed shared transmission network assets that operate in parallel and provide support to the TransGrid network. EnergyAustralia has previously stated that some of the standard service target performance incentive scheme parameters are not appropriate to apply to EnergyAustralia because of the unique nature of its network.[1] In particular, EnergyAustralia considered that the circuit availability and average outage duration parameters were not appropriate for measuring the performance of its network.

EnergyAustralia considered that the availability parameters are not appropriate because they do not take into account the relative size of the asset that is out of service.[2] During its current revenue determination, EnergyAustralia proposed the MVA days parameters. These parameters are similar to the circuit availability

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1 EnergyAustralia, *Report to ACCC: Service standard 2004 – compliance report*, February 2005.
2 ibid., p. 14.

parameters but weight the elements that are taken out of service depending on their size. PB reviewed these proposed parameters and considered that the features of EnergyAustralia's network do not justify their use as:

- the standard availability parameters are aimed at addressing security of supply and the relative size of the equipment is less important as a measure of system security than its location in the network
- the inclusion of the MVA days parameters may provide an incentive to plan a larger number of smaller outages or install a larger number of smaller capacity equipment items even when it is not efficient
- the MVA days parameters require specialist knowledge to understand and are not in common usage.

EnergyAustralia also stated during its current revenue determination that the average outage duration parameter was not suitable because:

- the average outage period does not impact on its customers due to its highly meshed network
- repair times can be significant because of the high proportion of underground cables in its network and as a result EnergyAustralia is unable to easily control the length of an outage through operational and management decisions
- the long duration of repair times could result in highly volatile annual results from year to year.

PB agreed with this view and considered that the average outage duration parameter should not be applied to EnergyAustralia in its next regulatory control period.

Services most valued by users and improving service delivery to customers

PB considered that a TNSP is provided with an incentive to improve service delivery when:

- the parameters target improvements in service performance
- TNSPs can affect the performance outcome
- the monetary value of the reward or penalty is material.

PB considered that a scheme with more than seven parameters would not provide material incentives when only 1per cent of revenue is at risk.

EnergyAustralia indicated during PB's review that the services most valued by its users are continuity of supply, security of supply and quality attributes. PB considered that customer responses during distribution price reviews and customer willingness to pay studies carried out in other jurisdictions supported this view. PB considered that the outage plans parameter did not encourage EnergyAustralia to improve its performance against any of these services and should not be included in the scheme.

Recommendations for alternative parameters

PB recommended the following parameters apply to EnergyAustralia under the scheme:

- transmission feeder availability – non critical
- transmission feeder availability –peak times
- transmission bulk supply transformer availability
- circuit availability – total (including all feeders, transmission transformers and reactive plant)
- loss of supply event frequency greater than x system minutes
- loss of supply event frequency greater than y system minutes.

PB noted that a critical circuit availability parameter should not apply to EnergyAustralia under the scheme, as EnergyAustralia does not have any constraint equations within the National Electricity Market Management Company's (NEMMCO) dispatch engine (NEMDE) and therefore does not have any circuits which can be defined as critical. PB recommended that the AER should instead apply a non-critical feeder availability parameter (which by default measures the availability of all feeders in EnergyAustralia's transmission network).

PB considered that the scheme should include peak and off-peak circuit availability sub-parameters, to ensure that the scheme meets the principle in the NER that each TNSP is provided with incentives to improve and maintain reliability at times most valued by users. PB noted that it is difficult to define peak and off peak times for EnergyAustralia because may of the elements forming EnergyAustralia's network support the main transmission network that is owned by TransGrid. However, demand could be used as a proxy for determining the times when consumers place greatest value on reliability of the network and the definition of peak periods should include a seasonal element as many elements of EnergyAustralia's network are moving from winter peaking to summer peaking due to the growth in air conditioning. PB recommended the following:

> Peak periods is defined as weekdays from 7am to 10pm during the periods 1 December to 24 December, 2 January to 28 February, 1 June to 31 August inclusive, excluding weekends and public holidays.

PB considered that the reactive plant availability sub-parameter should not apply to EnergyAustralia as the data for this parameter is not as robust compared to other parameters and is time consuming to collect. PB considered that this parameter was less important in the incentive scheme given that reactive plant is required to maintain voltage flows and power flow capabilities and is subject to operational scrutiny by NEMMCO and transmission customers. PB recommended using a total circuit availability parameter (which includes reactive plant) as this reduces the risk associated with inaccurately maintained data and would ensure that the scheme still captures the availability of reactive plant as this is important for system security. PB also recommended limiting the circuit availability transformers parameter to capturing

only bulk supply transformers as these are more important for system security than other transmission transformers.

As mentioned above, PB considered that MVA days, average outage duration and the outage plans parameters should not apply to EnergyAustralia during its next regulatory control period. PB considered that the loss of supply event frequency parameters should continue to apply to EnergyAustralia as they are necessary to meet the reliability objectives in the scheme.

3.1.2 AER consideration and decision

The AER accepts the parameters recommended by PB and has amended appendix B of the draft scheme to replace the parameters that currently apply to EnergyAustralia. The AER considers that these parameters are an improvement on the current parameters that apply to EnergyAustralia under its current transmission determination as they:

- comply with the requirements of the NER and the objectives of the scheme
- align more closely with the parameters used by other TNSPs to measure network performance
- provide EnergyAustralia with material incentives and streamline EnergyAustralia's service target performance reporting obligations.

Circuit availability parameters

The AER agrees with PB that the parameters applying to EnergyAustralia under its current revenue determination do not comply with the requirements in clause 6A.7.4(b) of the NER. In particular, EnergyAustralia does not have an incentive to improve its performance at times most valued by users and on those elements of the network most important to determining spot prices.

As previously noted in the final decision for the initial version of the scheme, the AER considers that it is not possible to design a parameter for EnergyAustralia which provides incentives for it to improve and maintain reliability of those elements that are most important for determining spot prices. This is because EnergyAustralia does not have any constraint equations within NEMDE and by definition cannot affect spot prices.

The AER accepts PB's recommendation that a critical feeder availability parameter cannot apply to EnergyAustralia during its next regulatory control period as it does not have any circuits which can be defined as critical (and by default all feeders are considered non-critical). However, the AER agrees with PB that feeder availability should still be applied during EnergyAustralia's next regulatory control period as it is an important measure of system security.

The AER considers that the peak availability sub-parameter proposed by PB will encourage EnergyAustralia to minimise outages at times most valued by users. The definition of peak period is also appropriate given EnergyAustralia's advice that it is experiencing a movement away from only experiencing high peak demand during

winter to experiencing high peak demand during both summer and winter (due to the increased penetration of air-conditioning).

The AER also accepts PB's recommendations on the remaining circuit availability sub-parameters including removing the reactive plant availability sub-parameter and limiting the transformer availability parameter to bulk supply transformers.

Loss of supply

The AER considers EnergyAustralia should be subject to the loss of supply event frequency parameters in its next regulatory control period. This is an important parameter that is highly valued by customers as it is the only parameter which actually measures outage events that affect customers. The AER accepts PB's recommendation that the x and y thresholds for these parameters be established in EnergyAustralia's transmission determination.

Remaining parameters

The AER accepts PB's recommendation that the MVA days and outage plans parameters should not be applied during EnergyAustralia's next regulatory control period. These parameters were proposed by EnergyAustralia during its current revenue determination and do not apply to any other TNSPs under the scheme. Given PB's advice that these parameters are not necessary to meet the objectives of the scheme or overcome the unique characteristics of EnergyAustralia's network, the AER considers that these parameters should not apply during EnergyAustralia's next regulatory control period.

The AER also accepts that the average outage duration parameter should not apply to EnergyAustralia under the scheme because of the unique nature of its network. In particular, the AER accepts EnergyAustralia's advice that repair times can be significant because of the high proportion of underground cables in its network and that this could lead to highly volatile results that EnergyAustralia is unable to easily control through operational and management decisions.

3.2 Transend parameter amendments

Transend has the following parameters applying to it under its current transmission determination:

- transmission line availability
- transformer availability
- loss of supply event frequency greater than 0.1 system minutes
- loss of supply event frequency greater than 2.0 system minutes

3.2.1 Transend proposal

Transend wrote to the AER in September 2007 requesting that the following amendments be made to the parameters that currently apply to it under the scheme:

- split the transmission line circuit availability sub-parameter into transmission line circuit availability (critical circuits) and transmission line availability (non critical circuits)

- lower the threshold for the second loss of supply event frequency sub-parameter from 2.0 system minutes to 1.0 system minutes

- include minor amendments to the parameter inclusions and exclusions.

3.2.2 SKM review

Transend engaged Sinclair Knight Mertz (SKM) to review the parameters applying to Transend under its current transmission determination and determine whether these parameter definitions should apply during the next regulatory control period. Transend based its proposed amendments on the recommendations made by SKM.

Circuit availability

Critical and non-critical circuit availability

Under clause 6A.7.4(b) of the NER the scheme must provide incentives for each TNSP to improve and maintain those elements of the network that are most important to determining spot prices. SKM considered that the existing transmission line availability parameter should be separated into critical and non-critical circuit availability sub-parameters to ensure that Transend is provided with this incentive.

SKM considered that:

- lines in those areas under direct NEMMCO oversight should be defined critical

- lines in areas under indirect NEMMCO oversight and the radial portions of the transmission system that are currently under direct oversight should be deemed non-critical as they have very little impact on market participants.

SKM considered that this classification is consistent with the AER's intention of placing greater emphasis on developing parameters that encourage TNSPs to consider the potential market impact of various levels of circuit availability.

Peak and non-peak circuit availability

SKM noted that the AER has previously stated that it intends to apply peak sub-availability parameters to TNSPs to meet the NER requirement that the scheme provide incentives for TNSPs to provide greater reliability at times most valued by users. However SKM considered that it is not appropriate to separate Transend's availability parameters into peak and off-peak sub-parameters as it is extremely difficult to determine a suitable peak period and the application of a peak availability sub-parameter to Transend could be counterproductive to the underlying intention of the scheme.

SKM noted that Transend has five major industrial customers that consume over 50% of the total system load in Tasmania. The nature of the industries within which these customers operate results in demand remaining relatively constant over a 24 hour period. This relative uniformity in demand makes it very difficult to identify a period of peak demand. SKM also considered that spot prices in Tasmania could not be used

to determine a peak period as its analysis revealed there is no correlation between periods of higher demand and higher spot prices.

In addition, SKM noted that separating the availability parameters into peak and off-peak sub-parameters is designed to encourage TNSPs to develop initiatives to undertake its works program during off peak periods. SKM considered that this incentive is less relevant in Tasmania due to its unique climatic conditions. In particular, undertaking maintenance outside daylight hours could be contrary to industry best practice as there are a relatively high number of days reaching dew point in Tasmania and there are significant risks in undertaking maintenance works during these relatively colder, wetter night-time hours.

Transformer availability

SKM recommended retaining the existing transformer availability parameter as:

- the parameter has been reported in the past and there is high confidence in the available data
- transformers are in a different asset class to transmission lines with different maintenance practices, profiles and support staff
- transformers and their associated assets comprise a large part of Transend's network base and have a significant impact on the reliability of the transmission system.

Loss of supply event frequency

SKM analysed Transend's loss of supply event frequency performance data to determine whether the current system minute thresholds of 0.1 and 2.0 are appropriate to apply to its next regulatory control period. Transend's average performance history against the loss of supply event frequency parameter greater than 0.1 system minutes over the previous five years is 15.6 events. Given this, SKM considered that the 0.1 system minute threshold is still relevant as Transend has an opportunity and incentive to seek further performance improvement.

For the loss of supply event frequency parameter greater than 2.0 system minutes, Transend has consistently met or surpassed its current target of three events since 2000 and its average performance over the previous five years is 0.6 events. SKM was concerned that given Transend's recent performance against this parameter it would be difficult to calculate a meaningful performance target.

SKM did not consider that lowering the target for this parameter was appropriate as reducing it to two events does not give Transend a sufficient incentive to improve given its recent performance. Lowering the performance target further to one event is also not appropriate as it results in an 'all or nothing' situation which provides Transend with little scope to control its performance around the target over time.

SKM considered that the 2.0 system minutes threshold should be changed to 1.0 system minutes. This revised threshold would allow a meaningful performance target to be calculated as a greater number of events have occurred previously and there is a higher possibility that these events are likely to occur in the future. Transend's

average performance over the previous five years against a loss of supply parameter with a 1.0 system minute threshold is 2.9 events. SKM considered that reducing the threshold would ensure that the parameter is consistent with the objectives of the scheme and the principles in clause 6A.7.4 of the NER as it would place an incentive on Transend to achieve continued performance improvement during the next regulatory control period.

Average outage duration

SKM analysed Transend's average outage duration performance data and considered that this parameter should not apply to Transend during its next regulatory control period as the data for this parameter is highly volatile. SKM found that for Transend's network, the parameter is highly sensitive to individual instances of long duration and would not provide a suitable incentive for performance improvement.

3.2.3 AER considerations and decision

Circuit availability

The AER accepts Transend's proposed changes to the availability parameters (subject to the minor drafting amendments noted below). Under clause 6A.7.4(b) of the scheme the AER must provide incentives for each TNSP to:

- provide greater reliability of the transmission system at all times when users place greatest value on reliability
- improve and maintain reliability of those elements of the transmission system that are most important to determining spot prices.

In its final decision for the initial version of the scheme the AER stated that until market impact parameters are incorporated into the scheme it would apply (where appropriate) peak period and critical circuit availability sub-parameters to each TNSP. This would ensure that the scheme provides each TNSP with the incentives described in clause 6A.7.4 of the NER.

The AER agrees with Transend and SKM that the transmission line availability parameter should be separated into critical and non-critical sub-parameters. The AER also considers that SKM's proposed classification of critical and non-critical circuits is appropriate. The classification is consistent with the NER as it provides incentives for Transend to improve and maintain reliability on those elements of its network that are important for determining spot prices.

For the peak and off-peak availability sub-parameters, the AER accepts SKM's advice these parameters are not appropriate to apply in Transend's particular circumstances. The AER accepts that there appears to be no reasonable basis from which a peak period can be determined due to the unique circumstances faced by Transend. However based on the information provided in the SKM report, the AER is unable to accept that the climatic conditions in Tasmania make it much more difficult to undertake typical maintenance works outside daylight hours. The report provides

evidence that the dew point temperature[3] in Tasmania is relatively lower than in other states, but it does not provide any information on the actual number of days that reach dew point temperatures compared to other states. Nevertheless the AER accepts that the peak period sub-parameters should not apply to Transend under the scheme as there is no basis for determining a peak period.

The AER also agrees that the transformer availability parameter should be retained during Transend's next regulatory control period.

The AER has included Transend's proposed amendments to the availability parameters in the draft scheme. However, the AER did not accept Transend's proposed amendment to the drafting of the third party system exclusion. Transend proposed the following:

> Circuit outages shown to be caused by a 3rd party system eg. intertrip signal, generator outage (including coincident outages), fire services direction, customer installation, customer request or NEMMCO direction

The AER was concerned that Transend's alternative drafting departs from the definition applied to all other TNSPs and potentially increases significantly the number and types of events that would be excluded from the parameter.

The AER discussed these concerns with Transend and it provided the following alternative third party exclusion definition:

> Circuit outages caused by a fault or other event on a 'third party system' eg. intertrip signal, generator outage (including coincident outages), customer installation (including a customer request), or by direction by fire services or NEMMCO.

The AER accepts this definition and has included it in the parameters that apply to Transend.

Loss of supply event frequency

The AER accepts Transend's proposal to reduce the threshold for the loss of supply event frequency sub-parameter from 2.0 system minutes to 1.0 system minutes. The AER agrees with SKM that the existing threshold of 2.0 system minutes is no longer appropriate due to the considerable improvement Transend has experienced in the frequency of these events over the previous regulatory period.

The AER agrees with SKM that it would be difficult to set a performance target for this parameter if the threshold is maintained at 2.0 system minutes. Reducing the system minute threshold to 1.0 system minutes would allow a meaningful performance target to be set during the next regulatory control period as more events of this magnitude have occurred previously and there is a greater opportunity for Transend to improve on its past performance.

The AER has amended the 2.0 system minute threshold and adopted Transend's proposed amendments to the parameter definition. The AER has also adopted

[3] A dew point temperature is a measure of moisture content of the air and is the temperature that air must be cooled in order to form dew (source: Bureau of Meteorology www.bom.gov.au)

Transend's revised third party system exclusion definition for the loss of supply event frequency parameters.

Average outage duration

The AER agrees with SKM and Transend that its performance results for the average outage duration parameter appear to be highly volatile and vary significantly from year to year. Due to this volatility, the AER considers that it would not be suitable to attach a financial incentive to this parameter for Transend during the next regulatory control period.

However, the AER considers that this parameter is still an important measure of management and operational responses to outages on TNSP's network and Transend should report against this parameter during its next regulatory control period. To this end, the AER has amended the scheme so that the average outage duration parameter applies to Transend. However, the AER will give this parameter a zero weighting during Transend's next transmission determination so that Transend only has an obligation to report its performance against this parameter.

3.3 TransGrid parameter amendments

TransGrid has the following parameters applying to it under its current revenue determination:

- transmission line availability
- transformer availability
- reactive plant availability
- loss of supply event frequency > 0.05 system minutes
- loss of supply event frequency > 0.4 system minutes
- total average outage duration.

3.3.1 TransGrid proposal

TransGrid wrote to the AER in September 2007 advising that it did not wish to propose amendments to add, remove or vary a parameter or the revenue at risk applicable under the service component of the scheme. However, TransGrid did recommend changes to the definitions in appendix B to ensure that the appendix comprehensively defines the parameters that apply to it under the scheme. In particular, TransGrid proposed including:

- additional detail on the exclusions that it applies when reporting its service target performance
- a 14 day cap for transmission circuit availability outages where an underground cable was damaged by an external party who failed to enquire with "dial before you dig" (or enquired and received accurate information)

- a seven day cap on outages for the average outage duration parameter.

TransGrid also noted that an additional parameter would be required to meet the principle in clause 6A.7.4(b) of the NER that the scheme provide incentives for TNSPs to improve and maintain reliability at times most valued by users and on those elements of the network most important for determining spot prices. TranGrid stated that it would prefer to have a market impact parameter applying to it to meet this requirement, however it noted that this parameter may not be finalised in time to apply to its next regulatory control period. TransGrid proposed including a transmission line availability (peak critical) sub-parameter if the market impact component of the scheme is not finalised in time. The list of critical circuits for this parameter would be established during TransGrid's transmission determination.

3.3.2 AER consideration and decision

The AER considers that the parameters applying to TransGrid under its current determination are generally suitable to apply during its next regulatory control period. These parameters comply with the objectives of the scheme and are consistent with the parameters applied to other TNSPs subject to the service component of the scheme. However, the AER notes that these parameters alone do not provide TransGrid with the incentives described in clause 6A.7.4 of the NER (this is addressed further below).

However, the AER is concerned that the system minute thresholds for the loss of supply event frequency parameters may not be appropriate to apply during TransGrid's next regulatory control period. The AER has drafted the scheme so that these thresholds are to be determined in the transmission determination.

The AER agrees with TransGrid that some of its parameter definitions could be defined more clearly and reflect the actual definitions that have been applied by TransGrid during its current regulatory period. The AER has adopted TransGrid's proposed amendments to the parameter definitions (subject to some minor drafting amendments).

Circuit availability

The AER considers that incorporating the exclusions proposed by TransGrid in the circuit availability parameter definitions is appropriate. In previous compliance reviews, TransGrid has provided the AER with internal service standards reporting documents that outline how TransGrid reports its service target performance. The exclusions proposed by TransGrid align with the definitions previously provided to the AER and more thoroughly and clearly state how TransGrid records and reports its service target performance information.

While the AER has included the additional exclusions proposed by TransGrid to the circuit availability parameters, the AER is concerned that not all of these exclusions are relevant for each of the availability sub-parameters. The AER has re-drafted the actual parameter definitions recommended by TransGrid to ensure that it is clear which exclusions are relevant for each sub-parameter.

The AER is also satisfied that the 14-day cap for this parameter is appropriate where the outage is due to an underground cable being damaged by an external party who failed to enquire with "dial before you dig" (or enquired and received accurate

information). During previous compliance reviews, the AER's consultant SKM recommended that the AER apply this cap to TransGrid for particular events. The AER is satisfied that it should continue to apply this cap given SKM's previous advice that it is appropriate and the historical data used to calculate TransGrid's performance targets in the next regulatory control period will incorporate this cap.

The AER notes that the service component parameters alone do not satisfy the requirement in clause 6A.7.4 of the NER that the scheme provide incentives for TNSPs to improve and maintain reliability at times most valued by users and on those elements of the network that are most important for determining spot prices. The AER accepts TransGrid's suggestion that a critical peak availability parameter be applied during the next regulatory control period if the market impact parameters are not sufficiently developed. This sub-parameter has been included in appendix B of the draft scheme, however it will be removed from the final scheme if the marginal cost of congestion parameter is sufficiently developed to apply to TransGrid during its next regulatory control period.

Loss of supply event frequency

The AER also accepts the additional clarification amendments proposed by TransGrid for the loss of supply frequency parameters. These amendments ensure that the scheme clearly captures the parameter definitions actually used by TransGrid to report its service target performance information.

However, as noted previously the AER is concerned that the system minute thresholds for the loss of supply event frequency parameters may not be appropriate to apply during TransGrid's next regulatory control period. In particular, TransGrid has shown considerable improvement in the number of events for the loss of supply event frequency > 0.4 system minutes over the current regulatory period and its average performance against this parameter over the 2002–2006 period is 0.6 events.

The AER considers that further work needs to be undertaken to determine whether these thresholds are still appropriate. The scheme has been drafted so that these thresholds are to be determined in the transmission determination. However, the AER may consider prescribing these thresholds in the final scheme if TransGrid is able to provide further analysis and evidence that these (or alternative) thresholds are appropriate.

Average outage duration

The AER also considers that incorporating the additional exclusions and seven day cap proposed by TransGrid in the average outage duration parameter definitions is appropriate. These exclusions and the cap have been applied to TransGrid's historical data and have appeared in internal reporting documents provided to the AER during previous compliance reviews.

4 Incentives based on the market impact of transmission congestion

4.1 The nature and reasons for the proposed scheme

The revenue cap form of regulation allows TNSPs to earn up to a maximum allowed revenue (MAR) within a regulatory year. The MAR is based on forecast efficient costs. During the regulatory control period, a TNSP can maximise its profits by reducing its costs below the forecast levels. While cost reductions could occur because of improved efficiency, they could also result from reduced service quality. A TNSP may have an incentive to maximise its profits at the expense of service quality delivered to customers and the market.

The initial scheme aims to address this incentive by linking regulated revenues to the TNSPs' performance against defined performance parameters:

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

The initial scheme provides incentives for TNSPs to improve performance against these parameters by rewarding them when performance standards increase, and penalising them when performance standards decline.

This initial scheme has some limitations. In many cases reduced circuit availability and higher outage levels do not directly affect customers . For example, virtually no outages cause blackouts. Further, some two thirds of outages do not result in the dispatch of more expensive generation, so do not have an effect on price outcomes in the wholesale electricity market.

The proposed market impact of transmission congestion (MITC) incentive scheme discussed in this paper supplements the initial scheme by targeting outages that have an adverse impact on dispatch outcomes (see box 1). The proposed scheme incorporates a market impact parameter based on MITC data and provides financial rewards for improvements in performance standards against a performance target.

The proposed scheme promotes the NEM objective and principles set out in the NER by encouraging TNSPs to consider how customers value their actions and how their operational decisions may affect market outcomes. TNSPs are encouraged to improve the availability, security and ultimately reliability of the transmission system at the times most valued by transmission network users.

Box 1: Market impact of transmission congestion

Generators lodge offers with the National Electricity Market Management Company (NEMMCO) for every five-minute period in the day. NEMMCO uses the offers to determine which generators are dispatched and at what level of output. Subject to transmission and other constraints, NEMMCO dispatches on the basis of offer prices in ascending order until demand is met.

Transmission constraints sometimes prevent NEMMCO from selecting the lowest priced generation. As an example, consider flows across the Victoria to South Australia interconnector. At times there is an abundance of low-priced brown coal generation in the Latrobe Valley and flows across the interconnector reach the interconnector's limit of 460 MW. In these circumstances transmission congestion forces NEMMCO to limit the dispatch of cheap brown coal generation in Victoria and dispatch more expensive gas plant in South Australia in its place. In this example the transmission constraint has an impact on end users who are likely to face higher prices in South Australia.

From an economic efficiency perspective transmission congestion increases the total cost of dispatch as low cost generation is displaced by more expensive generation. The AER measures the total cost of transmission congestion by comparing dispatch costs with and without congestion.

More congestion in the transmission network is typically associated with a higher market impact, though the end impact depends on the respective costs of generators that are constrained on and off. If low cost generation is constrained off and replaced by high-cost generation the market impact can be substantial. By contrast, congestion which constrains off one low cost generator and requires the dispatch of another low cost generator may have little impact.

4.2 Submissions on the issues paper

In June 2007 the AER released an issues paper that outlined a number of possible service target performance incentive scheme options based on the MITC parameters.

The AER received submissions from the following interested parties:

- Electricity Transmission Network Owners Forum (ETNOF)
- Energy Users Association of Australia (EUAA)
- Hydro Tasmania
- International Power, Flinders Power and TRUenergy
- Macquarie Generation
- National Electricity Market Management Company
- National Generators Forum (NGF) and Energy Retailers Association of Australia (ERAA)
- TransGrid

- TRUenergy
- VENCorp

These submissions can be found on the AER's website.

A meeting of the industry working group[4] was held in October to discuss the submissions received and to explore options on the way forward.

The AER's analysis of the major issues associated with the development of market impact parameters, including its analysis of major issues arising from submissions, is outlined below.

4.3 TCC, OCC and MCC based incentive options

4.3.1 AER issues paper

The AER reports on three MITC indicators – total cost of constraints (TCC), outage cost of constraints (OCC) and marginal cost of constraints (MCC). The TCC estimates the benefit to the market when all transmission constraints are removed. It does this by modelling the cost of generation that would have resulted without any transmission constraints and comparing it to the actual cost of generation. The difference is the TCC.

The OCC is similar to the TCC but only estimates the benefit to the market from removing all transmission outage constraints (and retaining other causes of network congestion such as 'system normal' capacity limits). The AER has included the OCC as a useful indicator of one of the congestion factors TNSPs control, namely outages.

The MCC distinguishes between outages that have a market impact, and those that do not. In its simplest form, the number of five-minute dispatch intervals where a network outage results in a market impact can be counted to give the total duration of network outages that have a market impact.

The issues paper sought views on whether it was appropriate to base an incentive regime on these parameters. To assist the AER and interested parties assess the MITC options, the AER developed a number of evaluation criteria. These criteria reflect well understood economic efficiency and regulatory design principles:

- incentive options should promote the NEM objective. The NEM objective focuses on efficiency
- incentive options should relate the economic benefit of the TNSP's action to the cost
- incentive options should depend, as far as possible, on the TNSP's action

[4] The ACCC formed a service standards working group to assist it in developing the MITC measures. The working group members include representatives of consumers, generators, retailers, TNSPs and NEMMCO to provide a cross-section of views and to draw on a broad range of expertise.

- incentive options should be constructed on objective information and analysis that can be audited
- incentive options should apply consistently across TNSPs
- incentive options should minimise administrative costs

In the issues paper, the AER stated that the TCC incentive option performs poorly against a number of the criteria. Conceptually the TCC is useful, but using it for purposes of an incentive scheme raises significant implementation issues. The AER had three main concerns.

First, the TCC captures many events that are outside the control of a TNSP as it does not distinguish between outages and inherent limitations in the transmission network. In other words the incentive is not closely related to TNSP actions.

Second, the TCC does not distinguish between actions of individual TNSPs. This further dilutes the alignment of TNSP actions to the TCC incentive.

Third, the TCC is quite volatile, with a small number of events contributing the majority of the total for the year[5]. This makes the TCC difficult to predict.

The OCC incentive is an improvement over the TCC as it distinguishes between outages and the inherent limitations in the transmission network. Nevertheless it has some of the same implementation problems as the TCC, namely it does not distinguish between actions of individual TNSPs and is volatile.

The AER's issues paper concluded that the MCC option performs well against the evaluation criteria. In particular, the proposed incentive uses publicly available information, which means that the incentive is verifiable and administratively simple for the AER and industry. The MCC option also has the advantage of simplicity. It is an incremental development of the existing service target performance incentive scheme.

4.3.2 Issues raised in submissions

The ETNOF and NGF/ERAA submissions argued that it was not appropriate to base an incentive regime on either the TCC or OCC parameters. The EUAA agreed that it was not appropriate to base an incentive regime on the TCC. However, the EUAA argued that a scheme based on the OCC was appropriate, but not in isolation. It argued that the OCC could inform the weightings to apply to the MCC parameters.

4.3.3 AER considerations

The EUAA's proposal to utilise the OCC to indicate the quantum of the impact and combine this with the MCC parameter is discussed in section 4.3.

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5 For example in 2003–04 the TCC totalled $36 million, with 60 per cent accruing in just nine days, whilst in 2004–05, 2005–06 and 2006–07 over two thirds of the total for each year accrued on 7 days, 10 days and 16 days respectively.

4.3.4 AER conclusion

The AER remains of the view that the TCC and OCC parameters are not suitable for a market impact incentive.

4.4 MCC impact weightings

4.4.1 AER issues paper

An MCC incentive scheme counts the number of five-minute dispatch intervals where a network outage results in a market impact to give the total duration of network outages that have a market impact. Incentives are then provided for the TNSP to reduce the number and duration of outages that have a market impact. This simple measure provides an equal weighting to all outage events that have a market impact, even though the market impact can vary considerably.

The parameter can be enhanced through including a variable "impact" weighting, linking the impact of the event to the incentive mechanism, using a simple high/low distinction. If the marginal value of the constraint is greater than some threshold, then the reward or penalty can be weighted by a factor to attribute more weight to higher marginal value network outages.

The issues paper proposed a $10/MW threshold for this high/low distinction, with a lower weighting for the smaller impact events. The rationale is:

- Introducing a weighting for different impact classifications is likely to encourage TNSPs to focus more on high impact events and improve market outcomes. Even though it is difficult to predict market price outcomes, it is possible to assess which outages are likely to have a material impact[6] and to plan for those outages to occur, where possible, at off-peak times (including weekends and overnight). This will probably result in lower impacts as measured through the MCC.
- Introducing a weighting for different impact classifications is likely to encourage increased availability of critical network equipment. Some network outages will always cause an impact. The likelihood of high impact can be minimised by careful timing. The duration of the outage is also important. Careful coordination of network outages can see one outage covering multiple network elements rather than making the same impact several times[7].

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6 Note that TNSPs are currently obliged under clause 3.7A of the NER to assess the impact outages will have or are likely to have on transfer capabilities.

7 For example consider the Victoria to South Australia (Heywood) interconnector, which consists of several segments of double circuit lines (Sydenham-Moorabool-Heywood in Victoria and South East-Tailem Bend-Para in South Australia). It is possible that an outage of one line of Sydenham Moorabool in Victoria is planned by the Victorian TNSP for a different time than an outage on South East-Tailem Bend in South Australia, which is planned by the South Australian TNSP. As both outages reduce transfers across the Heywood interconnector, there would be significant merit in co-ordinating these outages, thereby reducing the impacts.

4.4.2 Issues raised in submissions

Submissions generally supported the $10/MW threshold to distinguish between high and low impact MCC events.

The EUAA stated that the marginal constraint cost is only a partial measure of economic impact. The other factors relate to how much generation and load are affected by the outage. The OCC could be employed to create efficient weightings that would be robust over time. Alternatively studies could be performed that indicate the relative magnitude of possible economic outcomes that would be expected. The EUAA, however, acknowledged that this would complicate the measure and substantially add to costs.

The issues paper proposed that the simplest way of applying this threshold is to link TNSP incentives only to events over the $10/MW threshold. The joint NGF/ERAA submission supported ignoring the low marginal value events to further simplify the scheme.

4.4.3 AER conclusion

The AER proposes to only consider high impact network outages - those with a marginal constraint value of greater than $10/MW.

4.5 Notification or impact

4.5.1 AER issues paper

The MCC parameters discussed in section 4.3 focus on spot market outcomes. In practice retailers and generators contract heavily. One of the risks around contracting is unexpected network outages. Contracting parties can factor in expected network constraints, but can be left exposed where constraints are unpredictable.

Outage notification can address some of those risks. The longer the period of notice the more straightforward and cheaper it is for market participants to hedge the risks that they may face as a result of an outage. If minimising risk is important to market participants, the market impact of a planned outage with several months notice is likely to be considerably smaller than the market impact of an outage with only a few hours notice.

This risk management can take various forms. Firstly with proper notification of planned network outages generators can time their own outages (for maintenance) taking the outages into account. For the case of a network outage that affects only a small number of generators, the notice allows for generators to coordinate outages with the network outage that may have otherwise reduced their ability to supply into the market. This minimises the down time of the generator. A network outage affecting a large number of generators or a whole region affects overall regional supply and therefore can be taken into account in generator maintenance scheduling for all generators in a region.

Secondly, network outages affecting interconnector capability impact on inter-regional trade and the firmness of inter-regional settlement residues. Access to these residues is through the inter-regional settlement residue auction (SRA) process that

occurs up to 10 months ahead of the quarter in which the residues accrue. Notification of planned network outages enables assessment of the value of those inter-regional settlement residues prior to the time of the auction.

The issues paper proposed enhancing the MCC parameter to address these risks by weighting the TNSP's incentives according to the notice provided to the market. If no notice is given, the impact is the greatest, whilst if greater than 12 months notice is given, the impact is minimised. This reflects the intent of clause 3.7A of the NER[8]. This parameter therefore has two weightings applied to it – impact and outage notification.

The issues paper sought views on whether it was appropriate to include a notification weighting. The relative weightings and timeframes chosen for the notification breakpoints are, however, arbitrary[9]. The issues paper also sought feedback on the relative weightings and timeframes chosen for the notification breakpoints.

4.5.2 Issues raised in submissions

ETNOF agreed outage notification should be included in the scheme but consider 12 months notice is unnecessary.

The EUAA agreed outage notification should be included, especially for higher value constraints. Impact should be more highly weighted than notice.

The joint NGF/ERAA submission supported the inclusion of outage notification. The preferred weighting of notification against market impact varies among market participants. On balance, a stronger weighting towards early notice is preferred - with the weighting system proposed by the AER allowing some degree of compromise between the competing objectives. A concern was raised that the existence of rewards for early notification of outages may provide an undesirable incentive for a TNSP to notify excessive outage numbers or durations to provide insurance against unplanned outage requirements.

Macquarie Generation proposed new notification weightings to discourage outage scheduling at short notice whilst encouraging planned outages with high market impact to be rescheduled to periods having low impact.

The joint International Power, Flinders Power and TRUenergy submission proposed greater weight be applied to minimising the cost of congestion relative to notification.

TRUenergy suggests a scheme based entirely upon market impact will in fact indirectly lead to good planning as outages that are anticipated by affected generators

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8 Under clause 3.7A of the market Rules, TNSPs are obliged to provide a best estimate of their intended network outages over the next 13 months, and NEMMCO must make an assessment of the likely impacts of those outages. Clause 3.7A arose from the Review into the Integration of the Energy Market and Network Services (RIEMNS) in an attempt to improve the information (and reduce the risk) to market traders on transmission outages and their possible impact on network capability.

9 The AER published a tool on its website that models the impacts of various outages on the incentive with different weightings and breakpoints to assist interested parties to comment on the appropriateness of the relative weightings and timeframes chosen.

result in them taking other actions, such as planning their own maintenance or contracting into new positions. The natural result is less spot market congestion.

4.5.3 AER considerations

The AER considers that there are good reasons for improving notification outcomes.

First, with proper notification the generators can time their own outages (for maintenance) to minimise the down time of the generator.

Second, notification may help participants manage their risks. In practice retailers and generators contract heavily. One of the risks around contracting is unexpected network outages. This is important when considering contracting across interconnectors, which is facilitated through the SRA process that occurs up to 10 months ahead of the quarter in which the residues accrue. If minimising risk is important to market participants, the market impact of a planned outage with several months notice is likely to be smaller than the market impact of an outage with only a few hours notice.

Third, the TNSP's notification performance is poor. Every month, in accordance with clause 3.7A of the NER, NEMMCO publishes information on network outages - which is intended to provide information on network outages for the next 13 months. Analysis of published data shows that very few of the outages are more than a couple of months ahead. The poor notification record is consistent with the findings in the four published MITC reports (covering 2003–04, 2004–05, 2005–06 and 2006–07) where little notice was provided for those network outages with significant market impacts.

However, the AER does not propose including a notification weighting in the scheme. The AER proposes to instead address the issue through an enforcement response. Clause 3.7A (c) of the NER states that:

> (c) Each month each Transmission Network Service Provider must provide to NEMMCO and publish:
>
> (1) details of the forecast timing and the factors affecting the timing of planned network outages and the likelihood that the planned timing will vary;
>
> (2) details of the reason for the planned network outage, including the nature and extent of works required, if any; and
>
> (3) any other information with respect to planned network outages that is reasonably requested by NEMMCO with a view to achieving the objective set out in clause 3.7A(a),
>
> for those network outages planned for the following thirteen months that, in the reasonable opinion of the Transmission Network Service Provider, will have or are likely to have a material effect on transfer capabilities.

There are three main reasons for proposing an enforcement mechanism rather than an incentive mechanism to address notification.

First, there may be good reasons for re-scheduling outages, for example if there is a significant change in the likely market impact of the outage, or if there are legitimate technical issues. These need to be assessed on a case by case basis. An ex-post enforcement review provides flexibility to review issues on a case by case basis. By contrast an incentive mechanism lends itself better to unambiguous targets.

Second, notification should not take precedence over sensible timing of outages during off peak periods. Again this can be addressed through a case by case assessment.

Third, a notification incentive sets up the potential for gaming. Rewards for early notification of outages may provide an incentive for a TNSP to notify excessive outage numbers or durations to provide insurance against unplanned outage requirements. The TNSP can then cancel many of the outages as it gets closer to the event.

If it works well, the AER believes the notification obligation will operate as follows:

- TNSPs will identify low market impact times to take outages, and notify 13 months ahead in good faith.
- The notification ahead of time will stay in place unless there are legitimate reasons for changing it – which can be assessed on an ex-post basis as part of the AER's enforcement program.
- New information which points to high market impacts could be a legitimate reason to change the notification – but only if clear triggers for re-scheduling are provided ahead of time. This would address the possibility of a TNSP moving outages at very short notice and in the process affecting contract and other outcomes that participants had adopted in response to the initial outage notification.

4.5.4 AER conclusion

The AER does not propose to include a notification weighting.

The preferred approach for the incentive scheme is to provide a reward if the number of outages causing an MCC impact of more than $10/MWh is less than the TNSP's benchmark performance. This scheme will be complemented by an actively enforced notification obligation.

The AER will be targeting this obligation in the AER's compliance monitoring and enforcement program, and will review outcomes as part of the review of the effectiveness of this new market impact scheme, ahead of the broader application of the scheme to other TNSPs.

4.6 Performance target

4.6.1 AER issues paper

In the issues paper, the AER proposed setting baseline performance targets by averaging performance over the past three years.

4.6.2 Issues raised in submissions

ETNOF raised concern with the proposal to set baseline performance targets by averaging performance over the past three years. It argued that a fairer base lining method is needed, perhaps the projection of a historical trend with a safety margin.

TransGrid similarly argued that MCC trends may not be constant over time so performance targets based on average historical performance are not appropriate.

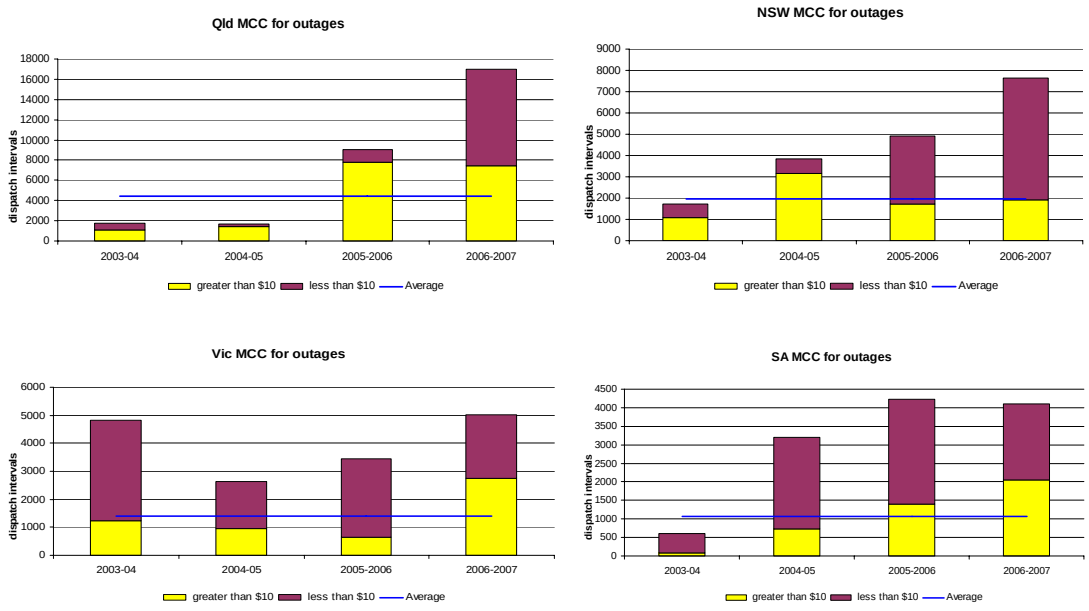
The NGF/ERAA argued that baselines based on past performance are the best measures available at this stage.

The EUAA argued that the baseline should relate to long term performance or acceptable network reliability. Periods of exceptionally high and low performance should be removed.

4.6.3 AER considerations

Figure one shows the performance of the market impact parameter for the four years 2003–2004, to 2006–2007 for each mainland region. For each region the graph shows the number of dispatch intervals where the MCC of outage constraints is positive. The results are split between dispatch intervals with an MCC of outage constraints of over $10 and the remaining dispatch intervals (with an MCC of outage constraints of under $10). Also shown is the average for the four years of available data.

Figure 1: Market impact parameter—historical performance



The data shows the number of dispatch intervals in which outages had a market impact is generally increasing. This is consistent with trends to higher TCC and OCC over time. When MCC events of $10/MW or less are excluded the trend is more variable with increases and reductions over the period. Nevertheless the trend is also upwards.

In its issues paper the AER suggested using historic data as the basis for setting performance targets. The TNSPs would then be rewarded for outperforming, and penalised for underperforming against past performance.

As ETNOF points out, calculating a performance target by averaging historical performance may prove a tough target given the upward trends to date. There are three possible options for addressing this:

- forecast trends using modelling
- include a 'safety margin' on top of historical performance
- set performance targets based on historical performance, but introduce a reward only incentive scheme.

Forecasting trends is an appealing option in principle, but is difficult to implement in practice for two reasons. First, forecasting the market impact of outages is complex and sensitive to a number of assumptions including the number and timing of outages, demand growth and generation operation. Second, the complexity reduces transparency and opens the way for gaming by TNSPs. The TNSPs would have an incentive to provide modelling which maximises the performance target.

Introducing a safety margin introduces similar problems to modelling. An informed estimate of the safety margin requires modelling. Without modelling the selection of a safety margin becomes arbitrary.

The AER's preferred approach is to introduce a reward only scheme with performance targets based on historical performance. This approach has the advantage of simplicity and transparency as the TNSPs' performance target is based on publicly available data. If the performance targets turn out to be too difficult for the TNSPs to beat, the TNSPs are not penalised.

The underlying assumption in opting for performance targets based on historical performance is that there is scope for the TNSPs to improve performance with appropriate incentives.

The AER proposes to continue to monitor the use of historical data for setting performance targets as TNSPs approach their next regulatory control periods and become subject to the market impact parameter under the scheme. The AER may consider amending the scheme to provide an alternative method for setting performance targets where it becomes apparent that a TNSP is performing poorly against the market impact parameter in an attempt to achieve a relatively soft target in its next regulatory control period.

4.6.4 AER conclusion

The AER considers that historical data is the best available benchmark for setting a performance target. By adopting a reward only scheme the AER would address the downside risks for the TNSPs.

Outcomes could be reviewed as part of the review of the service target performance incentive scheme to see whether modelling or other alternatives to set a benchmark are warranted in future.

4.7 Reward / penalty or reward only scheme

4.7.1 AER issues paper

The AER's issues paper proposed a two way incentive regime which provided rewards for beating performance targets and penalties for failing to meet these targets. The AER also sought feedback on the option for the regime to only provide for a reward and not impose any penalties.

4.7.2 Issues raised in submissions

ETNOF argued that the scheme will not be sufficiently tested to provide a robust basis for the application of financial penalties in upcoming revenue determinations. ETNOF and TransGrid argued that the scheme should be implemented initially as a bonus only scheme.

The EUAA and NGF/ERAA argued that a two way scheme of financial rewards and penalties is appropriate.

4.7.3 AER considerations

This market impact scheme is to some extent experimental and unproven. As a result it is somewhat difficult to predict TNSPs' performance against the AER's proposed market impact parameter . This raises a risk to TNSPs of the scheme imposing inappropriate penalties. As discussed in section 4.5 above, the AER proposes addressing the risk by introducing a reward only scheme.

4.7.4 AER conclusion

The AER proposes a one-way or reward-only incentive scheme.

4.8 Level of the incentive

4.8.1 AER issues paper

In the issues paper, the AER proposed a linear incentive level of 1 per cent of the TNSP's MAR.

4.8.2 Issues raised in submissions

There was some difference of opinion in submissions on the appropriate level of the incentive. ETNOF argued that unless a bonus only scheme was adopted, an incentive level of less than 1 per cent of MAR is appropriate. The EUAA argued that an incentive of 1 per cent seems appropriate. The NGF/ERAA submission argued that an incentive of at least 1 per cent of the MAR is appropriate.

4.8.3 AER considerations

In its issues paper the AER proposed a linear incentive scheme with rewards of up to 1 per cent of a TNSP's MAR. This can be implemented in a number of ways. Figures two to five shows some of the options. In each case the TNSP is rewarded for beating the performance target, with larger rewards for larger improvements.

Figure two shows a relatively low powered incentive scheme. The maximum reward for the TNSP is 1 per cent, which is only achieved if the TNSP eliminates all outage events with a market impact of over $10/MWh.

Figure three shows a relatively high powered alternative, where the TNSP receives a 1 per cent reward if it reduces the number of outage events with a market impact of over $10/MWh by 25 per cent and a 2 per cent reward if it reduces these events by 50 per cent.

Figure 2: Low powered incentive

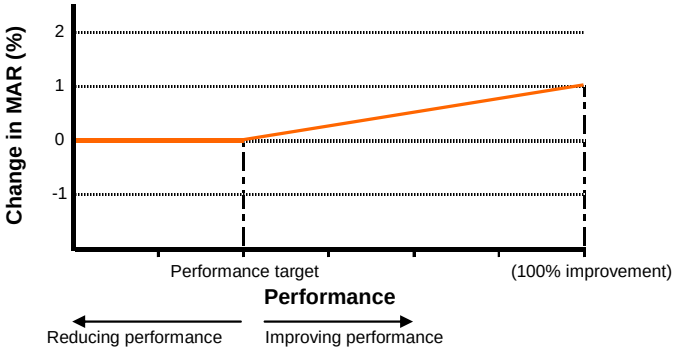


Figure 3: High powered incentive

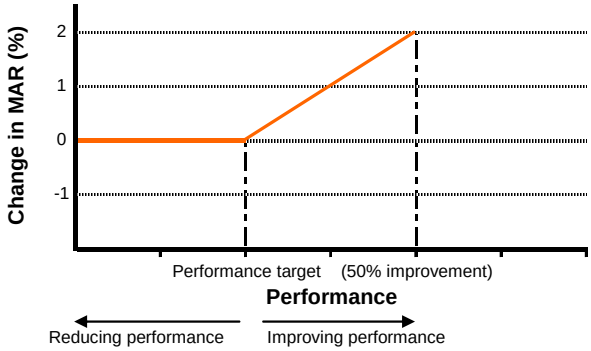


Figure 4: Incentive capped at 1%

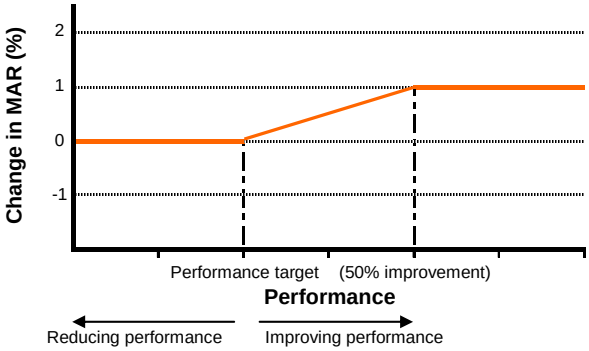
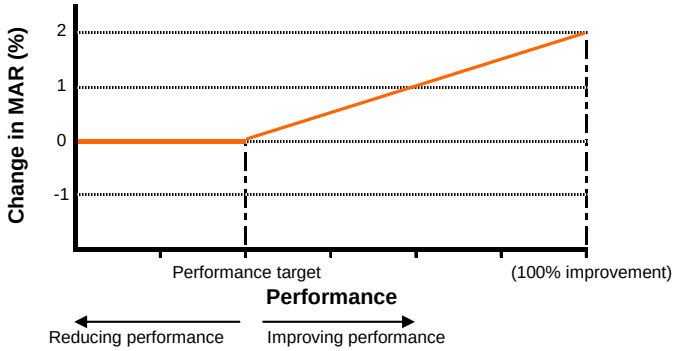


Figure 5: Linear incentive regime to 2%



In figure four the incentive is capped at 1 per cent. In this scenario the maximum reward is achieved by reducing the number of outage events with a market impact of over $10/MWh by 50 per cent. The TNSP is not rewarded for any further improvements. This scenario most closely resembles the initial service target performance incentive scheme, which rewards and penalises the TNSPs for relatively small changes in the number and duration of outages and circuit availability, but caps the rewards and penalties at 1 per cent.

Ideally the AER would select the incentive setting based on an analysis of the improvements the TNSPs could realistically achieve and the costs of achieving the improvements. This may be possible once the incentive scheme has been introduced and the AER can observe the response of the TNSPs to the incentives. At this stage, however, the AER does not have access to such data.

The OCC data published in its *Indicators of market impact of transmission congestion reports*[10] indicates that the OCC (which is an indicator of the efficiency losses as a result of network outages) has increased from $9 million in 2003-04 to $60 million in 2006-07. The magnitude and increasing trend in the OCC supports the AER's view that the market impact parameter should be subject to a moderately powered incentive regime.

The AER proposes adopting a linear incentive of up to 2 per cent of revenues as illustrated in figure five. An incentive payment of 2 per cent of TNSP revenues, if applied to all TNSPs, equates to around $30 million per annum, or half the 2006-07 OCC. To achieve this, the TNSPs must eliminate all outage events with a market impact of over $10/MW. A more realistic scenario is that the TNSPs will reduce outage events with a market impact of over $10/MW by up to 50 per cent, in which case the maximum likely reward is likely to be no higher than 1 per cent.

4.8.4 AER conclusion

The AER proposes a linear incentive level of up to 2 per cent of a TNSP's MAR. A TNSP will receive a 1 per cent bonus if performance against the market impact parameter can be reduced by half and 2 per cent if it can be reduced to zero.

4.9 Application of the scheme

4.9.1 AER issues paper

The issues paper noted that the AER intended to initially apply market impact parameters to Transend and TransGrid for their next regulatory control period. While EnergyAustralia's revenue determination is due to coincide with the Transend and TransGrid processes, the AER argued that it was inappropriate to apply a market impact parameter to EnergyAustralia, as none of its assets affect MITC outcomes.

4.9.2 Issues raised in submissions

There were no comments raised in submissions on this issue.

4.9.3 AER considerations

The AER is developing the market impact parameter with the intention that it be applied to all TNSPs. However, as noted earlier, the service target performance incentive scheme must be in place at least 15 months prior to the commencement of a TNSP's regulatory control period. Therefore, the service target performance incentive scheme, including the market impact parameter, could initially apply to TransGrid, EnergyAustralia and Transend, whose next regulatory control periods commence in 2009.

There is however the question of whether it is appropriate to apply a market impact parameter to each of these TNSPs.

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[10] AER, *Indicators of the market impact of congestion—Decision*, 9 June 2006.

The AER remains of the view that it is inappropriate to apply a market impact parameter to EnergyAustralia, as none of its assets affect MITC outcomes.

The AER considers that whether it is appropriate to apply a market impact parameter to TransGrid and Transend largely depends on the availability of data. Consistent with the existing service target performance incentive scheme, over the longer term the AER proposes that the performance target for the market impact parameter be based on a five year average where available. This average will be calculated before the commencement of each regulatory control period. However, there is only four years of market impact data available for TransGrid and just two years for Transend. The AER considers that the four years of data is sufficient to allow the development of a benchmark for TransGrid. However, the AER considers that two years of data is not a sufficient basis on which to develop a robust benchmark for Transend.

The AER proposes that the market impact parameter apply to all TNSPs at the time of their next revenue reset with the exception of EnergyAustralia and Transend. In other words the scheme would apply to TransGrid in 2009, Powerlink in 2012, SPAusnet in 2013 and Electranet in 2013.

Revenue reset processes for SPAusnet and Electranet are currently underway and will be finalised in the first half of 2008. The data needed to establish a performance target for the two businesses (based on four years of data) is available, but prevented by notification requirements in clause 6A.7.4(f) of the NER.

The AER proposes that the performance target for TransGrid be equal to the average number of dispatch intervals where outage constraint marginal values are greater than $10/MW for the four years 2003–2004 to 2006–2007. For the other TNSPs the performance target would be equal to the average number of dispatch intervals where outage constraint marginal values are greater than $10/MW for the previous five years. The scheme will provide a reward for improvement if the actual number of dispatch intervals per annum of high impact outages is less than the performance target.

The AER intends to conduct a review of the initial operation of the market impact parameter in 2010. This will enable a consideration of whether any changes to the parameter are warranted in time for the next TNSP revenue determinations.

4.9.4 AER conclusion

The AER proposes that the market impact parameter apply to all TNSPs during their next regulatory control period with the exception of EnergyAustralia and Transend. The scheme would apply to TransGrid in 2009, Powerlink in 2012, SPAusnet in 2013 and Electranet in 2013.

The AER proposes that the performance target for TransGrid be equal to the average number of dispatch intervals where outage constraint marginal values are greater than $10/MW for the four years 2003–2004 to 2006–2007. For the other TNSPs the performance target would be equal to the average number of dispatch intervals where outage constraint marginal values are greater than $10/MW for the previous five years.

4.10 Other issues—the impacts of system normal constraints

4.10.1 AER issues paper

The issues paper noted that the majority of network congestion is related to system normal limitations. The AER proposed improving transparency about the TNSPs management of system normal constraints.

4.10.2 Issues raised in submissions

ETNOF supported increasing line rating transparency but noted that line ratings should not be considered in the scheme since they are being appropriately addressed by ETNOF's existing methodology which is progressively being implemented.

The NGF/ERAA submission supported both a financial incentive scheme and increasing line rating transparency. It noted that measuring ambient conditions, adoption of short-term ratings and greater use of seasonal ratings should be targeted.

The EUAA supported both a financial incentive scheme and increasing line rating transparency. It argued that technology development, network planning, outage scheduling, contingency response planning and equipment maintenance and testing should be targeted.

NEMMCO suggested that the AER develop some measure of the physical capability of transmission networks, to determine "whether the network is actually delivering the levels of transport capability that were used to justify its construction at the times when the market needs it." No details were, however, provided by NEMMCO.

4.10.3 AER considerations

The AER remains of the view that an incentive regime should focus on outages, not system normal constraints. The primary reason is implementation issues, and in particular the difficulty of separating system normal factors that the TNSPs can control from external factors.

However, system normal constraints and in particular line ratings can have significant implications for market outcomes. The TNSPs have recently finalised a report discussing operational line rating methodologies. The AER proposes to promote transparency about system normal constraints by publishing this TNSP report on operational line rating methodologies on its website.

4.10.4 AER conclusion

The AER will continue to monitor the MCC data to identify patterns and emerging patterns of congestion. The AER proposes to periodically select transmission lines showing significant congestion, review the TNSPs' approach to line ratings on those lines and publish the results. The AER will draw on external independent advice where appropriate. The AER's objective in conducting the reviews is to further promote transparency about the TNSPs' approach to line ratings.

5 Consultation process

In its 2003 service standards guideline, the ACCC committed to explore a market based incentive measure. It established a working group in 2004 and later that year released a draft decision to develop the TCC and MCC measures.

On 13 June 2006, after extensive consultation with industry, the AER released its final decision to publish indicators of the impact that transmission networks can have on NEM. The AER has worked with NEMMCO to calculate performance against these measures and has released data on these measures for 2003–04, 2004–05, 2005–06 and 2006–07. This has facilitated a better understanding of the causes of congestion, how significant congestion is and to identify congestion trends over time.

On 27 June 2007 the AER published an issues paper associated with the development of an incentive regime for TNSPs, with consultation closing on 17 August.

The AER's next steps will include the following consultation process:

- publish this explanatory statement, the proposed scheme and invite submissions on the proposed scheme
- consider submissions on the proposed scheme
- publish the final scheme in early March 2008.

6 Invitation for written submissions

Interested parties are invited to make written submissions to the AER on the proposed scheme. In particular, comments are sought on the parameters based on the MITC work. Other aspects of the proposed scheme have been recently consulted upon.

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

- clearly identify the information that is the subject of the confidentiality claim
- provide a non-confidential version of the submission, in addition to a confidential one.

All non-confidential submissions will be placed on the AER's website.

Any submissions must be received by close of business 4 January 2008 and should be addressed to:

Mr Sebastian Roberts
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