



**Submission to Australian Energy Regulator
Developing the incentives based on the
Market Impact of Transmission Congestion**

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This submission was prepared by the EUAA with assistance from McLennan Magasanik Associates Pty Ltd (MMA). Funding assistance was provided by the National Electricity Consumers' Advocacy Panel

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FOREWORD

This submission from the Energy Users' Association of Australia (EUAA) is made in response to the Australian Energy Regulator's (AER's) consultation process into developing the incentives based on the Market Impact of Transmission Congestion, released in June 2007. The EUAA welcomes the opportunity to comment on the issues raised by the AER as part of its review.

The EUAA is a non-profit organization focused entirely on energy issues. Members determine the EUAA's policy and direction, and our activities cover both national and state issues. The membership represents a wide spectrum of end users located in all states. Currently, the EUAA has over 85 members, which are predominantly large business end users with activities across all states and many sectors of the economy. Some are directly connected to the transmission system and all have a strong interest in the efficiency and effectiveness of transmission within the National Electricity Market (NEM).

EXECUTIVE SUMMARY

The Australian Energy Regulator (AER) aims to improve the transmission service standards regime by linking service standards incentives more directly to market outcomes. The AER has undertaken considerable work towards development of such an incentive scheme and published an Issues Paper in June 2007 for consultation purposes.

The valuation of the proposed measures has been undertaken in conjunction with NEMMCO to provide a basis for developing suitable performance standards and benchmarks. This has resulted in valuations of the constraint measures for the last three financial years.

This submission examines the selection criteria and compares the proposed cost and marginal price based schemes against those criteria.

The EUAA's conclusion arising from this submission is that the AER's assessment of the options for reforming transmission service performance incentives is generally sound.

We consider that there are some material implementation risks with respect to the design of the Marginal Constraints Cost scheme relating to the definition of the benchmark level for determining the level of incentive. It would not seem appropriate to base the scheme solely on the performance over the last three years as that would mute the incentives. The benchmark should be stable and founded on principles of good electricity practice. The benchmark could be based upon the level of performance achieved in respect of asset reliability but adjusted to remove the impact of periods of exceptionally poor or high performance.

In order for the scheme to achieve the NEM Objective, the parameters must be founded on economic principles and specifically the reliability and security elements of that objective. This requires that the weighting given to high or low impact constraints should be based upon a relative measure of their economic impact, not merely the magnitude of the marginal cost of the constraint. This might be informed by some outage cost analysis or a qualitative assessment of whether the constraints are intra-zonal, inter-zonal, or interconnector based in accordance with the network models used in the Annual National Transmission Statement (ANTS). For example, scaling the marginal constraint cost by the load on the high priced side of the constraint may provide a more robust measure of relative economic value.

It will be more difficult to assess the value of notice of future outages, as there are currently no traded hedge products that relate to maintenance outcomes. The change in the value of contracts under different market conditions may provide some indication of where there is a clear market value of giving notice for transmission outages. However, such data would be difficult to interpret because so many events happen together in the NEM.

Overall, the approach is supported with further consideration of ensuring that the final scheme provides relevant economic drivers to TNSPs.

Our analysis concludes that:

- The design criteria are suitable for making a practical assessment of the relative value of the alternative schemes.
- The design criteria could be enhanced by considering the extent to which Transmission Network Service Providers (TNSPs) could have confidence in the measures and make firm assessments about whether changes to maintenance practices would lead to improved business performance.
- The measures based on the marginal cost of constraints are more suitable in meeting the selection criteria.
- The benchmark performance level should be based on performance averaged over a longer period than 3 years, more like 10 years and should be based on long-term trends in transmission asset reliability informed by the observed results from good industry practice. This means that periods of poor performance would not degrade the benchmark and periods of out performance would not raise the benchmark.
- The weighting of the constraint events in deriving an overall measure should have regard to the relative economic cost of the constraints and therefore some cost analysis should be applied to inform the derivation of the weightings to be adopted. The marginal cost of the constraint alone is not a consistent indicator of economic value because it does not include a measure of the magnitude of the impact on customers.

1. INTRODUCTION

The Australian Energy Regulator (AER) aims to improve the transmission service standards regime by linking service standards incentives more directly to market outcomes. The AER has undertaken considerable work towards development of such an incentive scheme and published an Issues Paper in June 2007 for consultation purposes. The valuation of the proposed measures has been undertaken in conjunction with NEMMCO to provide a basis for developing suitable performance standards and benchmarks. This has resulted in valuations of the constraint measures for the last three financial years.

McLennan Magasanik Associates has been engaged by the EUAA to assist in preparing its response. This submission examines the selection criteria and compares the proposed cost and marginal price based schemes against those criteria.

2. NETWORK RELIABILITY IMPACTS

2.1 Current Scheme

The current transmission performance regime is based on rewarding regulated network service providers according to network reliability measures. Specifically these relate to:

- transmission circuit availability
- average outage duration
- frequency of 'off supply' events.

From an electricity customer's perspective:

- Transmission circuit reliability often does not have a direct impact on customers because, for most bulk supply points, there is network redundancy. Outages within the meshed network often do not affect the access of low cost generation to the energy market and have no significant impact on energy prices or customer supplies.
- Similarly, the duration of an outage of a transmission element has no direct customer impact on continuity of supply unless other network elements are also out of service. Of course, many extended outages will eventually create a disconnection, but that is a risk rather than a deterministic eventuality.
- An outage duration may have a spot price impact but, for most customers, that has no immediate impact because they are fully contracted through a retailer. However, spot price impacts do affect investment and contract prices in the long term through the perception of risk and therefore constraints may increase customer costs if they cannot be readily managed through economic investment in generation, transmission or demand side capacity.
- Frequency of 'off supply' events have a direct consequence for customers and generators and are always a matter of major concern. In this respect, the concept of tying performance incentives to measures of supply disconnection is very relevant to the economic consequences for the energy market.

The first two matters are discussed in more detail below.

2.2 Economic benefits of transmission

The economic benefits of a transmission system are affected by:

- The supply reliability afforded to customers through its impact on the costs of disruption to otherwise continuous high quality electricity supply;
- The reliability of access provided to generators, especially low marginal cost generators that can otherwise be displaced by higher marginal cost generators;

- A higher degree of power losses in moving electricity from one place to another;
- The arbitrage of competing power resources and the extent to which it reduces price gaming in the market and brings prices closer to short-run marginal costs. This contributes some minor economic benefits, but these may be less in magnitude than the economic transfers from generators to customers in the form of access to lower-priced power.

The intention of the current review is to examine how economic incentives may be provided to TNSPs in the form of adjustments to revenue that depend on their effective management of operational resources to economically maximise the availability of transmission assets at times and places where they have the greatest impact on the energy market.

Ideally, the resources devoted to:

- regular maintenance of transmission assets;
- control systems to manage contingencies and resources;
- contingency plans for recovery from plant damage or failure; and
- planning of network development

should be aligned to the economic benefits of a transmission system. This requires that TNSPs revenue is a function of the performance of the transmission system as it affects customers and generators through the energy market and continuity of supply.

2.3 Alternative Schemes

Alternative schemes are being considered by the AER that will improve the economic linkage between the revenue to transmission network service providers (TNSPs) and the impact of their management of the network on customers. Methods are being sought that link the occurrence and value of constraints to the revenue of TNSPs. The features of the proposed schemes are summarised in Table 2-1, together with the main advantage and disadvantage of the schemes. It is not intended to provide a full description of the schemes in this response. The reader may refer to the AER Issues Paper¹.

2.4 Evaluation Criteria

The AER has provided the following evaluation criteria for the purposes of selecting a preferred scheme. Incentive options should:

- promote the NEM Objective for reliable supply and efficient prices to customers

¹ Australian Electricity Regulator, "Service Target Performance Incentive Scheme: Developing incentives based on the Market Impact of Transmission Congestion, Issues Paper", June 2007 <http://www.aer.gov.au/content/index.phtml/itemId/712413/fromItemId/655986>

- relate the economic benefit of the TNSP's action to the cost;
- depend, as far as possible, on the TNSP's action;
- be constructed on objective information and analysis that can be audited;
- apply consistently across TNSPs; and
- minimise administrative costs.

These criteria are all suitable in that they address the key issues of the cost of implementation, transparency, the practicality of implementation and the assessment of the fundamental economic value of any alternative scheme.

In particular, for TNSPs to be able to respond to an incentive scheme in an efficient manner must be able to:

- understand the scheme's rules and intended application;
- be confident that the scheme is viable, credible and sustainable in the future so that any evaluation of cost and future benefits of responding to the scheme is robust and not discounted by risk assessment;
- understand the options it has to reduce its costs, increase its revenue or adopt a combination of costs and revenues which increase its profits; and
- foresee the future consequences of its actions in improving planning, design and operations and maintenance practices so that a TNSP can develop robust business cases for its intended response to the new scheme.

If a TNSP cannot foresee the consequences of a strategy that requires incurring capital costs, then any potential long term benefits will be discounted, particularly if the rules seem arbitrary, or not well founded in economic reality. In such a case there would remain a heightened appreciation of regulatory risk in that, if the rules are not well founded, they may be changed to be more or less cost effective from the TNSP's viewpoint.

Table 2-1 Summary of Alternative Schemes

Option	Name	Key Features	Advantage	Disadvantage
0	Current Scheme	Related to the reliability of transmission circuits according to <ul style="list-style-type: none"> • transmission circuit availability • average outage duration • frequency of 'off supply' events. 	Simple to keep, easy to understand and implement.	Does not provide incentives to focus resources where they have most value to continuity of supply to customers and impact of production costs in the energy market.
1	Total cost of constraints	The difference in production costs caused by constraints taking bids as costs.	Offers a global economic value of the constraints, providing that a adequate basis for costs can be established.	Does not distinguish between costs arising from outages and cost of constraints that are inherently economic. It is difficult to measure objectively because bids do not necessarily match costs, and underlying costs are not accurately known to AER. Allocating the cause of costs to TNSPs is not objective.
2	Outage cost of constraints	The difference in production costs caused by constraints due to outages taking bids as costs.	Focuses on the costs of the outages rather than all conditions. This removes the impact of constraints which are uneconomic to remove or relax.	It is difficult to measure objectively because bids do not necessarily match costs. Identifying who is responsible for outages is difficult as for the total costs.
3	Marginal cost of constraints	Identifying the number of time periods when transmission assets caused constraints.	Easier to implement and understand objectively.	Does not bear any strong relationship to the underlying economic costs. Constraints with high economic impact are treated the same as those with low economic impact.

Option	Name	Key Features	Advantage	Disadvantage
4	Marginal cost of constraints with Impact Weighting	Option 3 plus weighting the time periods as low or high impact events based on the marginal cost of the constraint.	As for Option 3; recognises difference between high and low value constraints.	It will be difficult to consistently classify many constraints as high or low value because the energy market is dynamic. Does not bear a strong relationship to the underlying economic costs unless the weightings are developed and maintained on an economic basis.
5	Marginal cost of constraints with Impact Weighting and Notice	Option 4 with additional weighting according to the notice given to the (scheduled) outages.	As for Option 4; gives some weighting to the fact that an outage with notification has less cost to manage than an unforeseen outage.	Consistently valuing the impact of notice will be a challenge. The dynamic nature of the market will change the value of notice by time and place.

2.5 Ranking of Schemes

In Appendix A of the AER paper, the schemes are compared against these stated criteria to confirm that the conclusions drawn in the Issues Paper are valid. The conclusion is that the Marginal Constraint Cost based options do demonstrate superior performance relative to the design criteria.

2.6 Potential weaknesses to be addressed

There are four weaknesses which may undermine the effectiveness of the proposed methodology:

1. The relative weighting of high and low impact events is a means to approximate the economic impact of the constraints. Any uncertainty about changes to future weightings that have an impact on marginal investments may undermine the effectiveness of the incentive for marginal investments.
2. The economic impact of a constraint is proportional to the marginal price of the constraint, the volume of energy exposed to this marginal value and the cost of other investment options that could mitigate the cost of the constraint. Thus, the value of a response by the TNSP is not solely determined by the constraint marginal price. Hence, the weighting scheme should be informed by an economic analysis which identifies the relative economic impact of certain classes of constraints. This would help to reduce the regulatory risk identified in item (1) above by strengthening the economic foundations of the scheme. This economic analysis would be the same type of analysis as underpins the regulatory test for investments that improve reliability.
3. The method relies on an historical benchmark of performance. This could erode the strength of the incentive if the benchmark is too responsive to past performance, especially as some of the consequences of the scheme do not arise directly from TNSP actions, such as resulting from strong wind and storms. What could happen is that losses due to poor performance would be soon recovered if the benchmark level is reduced in the future which would make out performance easier. Similarly, if out performance raises the standard, the long-term benefits of an investment would soon be eroded.
4. The benchmark reference level for the Marginal Constraint Cost (MCC) may be subject to too much inherent variation, due to the volatility of constraint impacts. That this may be a problem is implied in the Issues Paper where it says (on page 22) that "The OCC measure is also volatile, with a small number of events contributing the majority of the total for the year"; and (on page 26) "(a)nalysis of the MITC data shows that the location and timing of congestion is difficult to predict. Congestion driven by network outages occurs at various times of the day and at all times of the year, with no obvious daily or seasonal pattern." If this is true for the OCC and the MCC based methods where outages occur apparently randomly in each TNSP's region, we would expect this process to contribute volatility to the measure of how many constraints occur and their relative value, however that might be assessed.

2.7 Approaches to mitigating the weaknesses

To mitigate the potential adverse impacts of these weaknesses:

- In the absence of an economic analysis which justifies a reclassification of a constraint, the relative weighting should therefore remain stable for a period of say at least 5 years, so as to reduce the risk of adverse changes following a TNSP investment that is intended to reduce exposure to constraints arising from transmission plant outages.
- The weighting for high value constraints should not be solely based on the constraint marginal price. The classification should examine the magnitude of the load or generation exposed to the price difference. This would require an enhanced process which involves examining outage costs for selected outages where the price differences might be moderate but the amount of load or generation would be large. This would be more appropriate for the constraints arising between regions and between major generation and load centres within regions.
- The benchmark reference level for the Marginal Constraint Cost methods that relies on historical cost performance for an individual TNSP should not be overly dependent on the MCC indices so that the benefits achieved in one period are washed out subsequently. This could be achieved by establishing an initial benchmark that would achieve balanced incentives and would change slowly.
- A three year moving average measure for the MCC benchmark may be too volatile to provide a stable reference level. Volatility in the benchmark could be removed by using a longer term reference period such as 10 years. It could be adjusted over time according to an industry wide measure of network asset reliability, weighted by capacity of the elements over the whole NEM. It should not strongly depend on the incidence or intensity of constraints that would be more volatile. Short periods of under performance or out performance would not alter the benchmark, only statistically significant long-term trends would move the benchmark.

The benchmark level should be based upon an economic level of performance referenced from long-term industry performance across the NEM or a technical assessment based on an acceptable level of network reliability. Whilst such modelling may be somewhat difficult and subjective, it would be necessary to establish a stable and realistic baseline.

3. CUSTOMER IMPACTS

To achieve the NEM Objective, the scheme will have to encourage TNSPs to achieve an efficient level of performance of the transmission systems. This requires minimising the total cost of the capital and operating investment in performance improvement plus the value that is created or lost through changes in the performance of the transmission system. Providing that TNSPs can forecast the benefits they might receive from the new scheme and quantify the relationship between their business decisions and investments (and this is in itself an issue), then there is a prospect that having TNSP revenue vary with the impact of outages on the energy market would contribute to improving the efficiency and reliability of the transmission system.

The proposed schemes based on Marginal Constraint Costs (MCC) seem to offer distinct advantages over the current arrangements, especially in that the MCC can provide an approximation to the economic benefits of improved network performance including reduced exposure to forced outages. The MCC method offers transparency in method and simplicity in application. However, the focus on higher value outages will be needed to ensure that TNSP resources are used wisely. The proposal to add weighting for the level of impact and the giving of notice for outages should help retailers to lower their risk exposure in the spot market through trading contracts and entitlements to interconnection settlement residues.

These proposals are expected to benefit customers by:

- lowering volatility in the spot markets with reduced impact from forced and scheduled network outages
- lowering contracting premiums as a consequence of a more stable spot market
- reducing network charges to a small degree to compensate for adverse network performance.

Whether or not this reform actually leads to real benefits is dependent on the TNSPs believing that they can create benefits for their businesses by responding to the new schemes. The implementation process will need to ensure that the parameters applied do provide a good approximation to an economic relationship between the actions of TNSPs and their subsequent revenue adjustments. It may be useful to develop economic models of how additional expenditure would improve network performance and market impact to confirm that real benefits could be achieved.

4. RESPONSE TO QUESTIONS

The following Table contains the responses to the questions raised in the Issues Paper.

Table 4-1 Response to Questions from Issues Paper

No	Question	Response
1A	Is the proposed approach of increasing transparency about line rating methodologies and calculations an appropriate approach to system normal constraints?	Yes. It will help to maintain focus on maximising the performance and utilisation of the existing transmission assets.
1B	Is a financial incentive scheme warranted?	Yes. It will be helpful to provide TNSPs a commercial incentive to maximise performance to maximise profits and thereby economic efficiency.
2	If a financial incentive scheme is warranted, what TNSP actions should the scheme target?	<p>The actions to be targeted cover the whole range of TNSP activities that affect the reliability of service:</p> <ol style="list-style-type: none"> 1. Technology development. 2. Network planning and design to minimise exposure to outages on an economic basis. 3. Scheduling outages to minimise energy market impacts. 4. Contingency response planning including the holding of spare equipment and provision of personnel to respond to outages. 5. Maintenance of equipment as it affects exposure to failure. 6. Regular testing and maintenance of secondary equipment. <p>The primary focus would be on activities related to the minimisation of forced outages and the control of timing of scheduled plant outages that affect the energy market.</p>

No	Question	Response
3	Are the criteria proposed for assessing incentive options appropriate? Are there any other criteria that should be used?	<p>Some additional perspectives could be gained by testing whether a capable and well informed TNSP would be readily able to:</p> <ol style="list-style-type: none"> 1. understand the scheme's rules and intended application; 2. be confident that the scheme is viable, credible and sustainable in the future so that any evaluation of cost and future benefits of responding to the scheme is robust and not discounted by risk; 3. understand the options it has to reduce its costs, increase its revenue or adopt a combination of costs and revenues which increase its profits; and 4. foresee the future consequences of its actions in improving planning, design and operations and maintenance practices so it that can develop robust business cases for its intended response to the new scheme. <p>These questions go the heart of technical and commercial feasibility. Some case studies would be valuable to show what actions might be developed and how they would be evaluated to yield a change in behaviour.</p>
4	Is it appropriate to base an incentive on the current TCC measure?	<p>No. The Total Cost measure confuses too many issues, in that it includes the impact of constraints that would be economic even if the transmission system were perfectly reliable. The measures used have very limited relevance to customers. Its evaluation is also subject to gaming by market participants and inherently subjective.</p> <p>Even if the total economic benefits could be assessed fairly, there remains the question as to whether all of the benefits should be ascribed to customers. Surely some benefits would accrue to generators and not necessarily be passed on the customers through lower energy market prices.</p>
5	If not, are there amendments that could be made to the TCC to make it an appropriate measure on which to base an incentive? What could these amendments be?	<p>No. The Total Cost methodology does not adequately represent the economics of transmission system management or the role of transmission within a power market like the NEM.</p>

No	Question	Response
6	Is it appropriate to base an incentive on the current OCC measure?	Yes. It would not be used solely but it could inform the allocation of weightings to constraints based upon the measure of the Marginal Constraint Cost and the economic impact of constraints under Options 4, 5 and 6. The ranking of constraints should be primarily based on relative economic impact which would be estimated from outage costs. For practicality, it may be necessary to characterise the significance of outages according to time of the week or seasons to account for the seasonal pattern of load, generation and the utilisation of the transmission system. Even though the outcome of constraints in the market is volatile, market models would be able to inform analysis as to which constraints have the higher economic impact given the uncertainties about generator plant performance and load profiles.
7	If not, are there amendments that could be made to the OCC to make it an appropriate measure on which to base an incentive? What could these amendments be?	Yes. By using it to inform the weightings used by the MCC methods 4 and 5.
8	Is it appropriate to base an incentive on an MCC measure?	Yes. The measure would provide some limited value in signalling appropriate behaviour to TNSPs. However, Options 4 and 5 seem to be potentially superior if economically efficient weighting factors can be assigned to outage types.
9	If not, are there amendments that could be made to the MCC to make it an appropriate measure on which to base an incentive? What could these amendments be?	Yes. Options 4 and 5 offer advantages.
10	Should an MCC incentive scheme distinguish between high impact and low impact events?	Yes. It is important to make the scheme economically efficient. The marginal constraint cost is only a partial measure of economic impact. The other factors relate to how much generation and load would be better off and by how much if the outage did not occur. The Outage Cost method should be employed to create efficient weightings that would be robust over time.

No	Question	Response
11	Is the proposed threshold of \$10/MW appropriate for distinguishing high impact events? What weighting should be applied to the different thresholds?	<p>No necessarily. A further classification would be based upon whether or not particular constraints are generally high or low impact with the marginal constraint price used as scaling factor on that underlying assessment. Rather than thresholds to assign a penalty, the marginal constraint cost should be multiplied by a severity factor based on studies that indicate the relative magnitude of possible economic outcomes that would be expected.</p> <p>This may have the disadvantage of substantially adding to costs. However, a simplified scheme could be developed focusing on the main generation to load corridors and interconnections. The ANTS zones could provide an initial ready made basis for classifying constraints with three classes: interconnection, inter-zonal and others. The size of the load and generation in the zones could provide a basis for initial weightings, perhaps proportional to the load or generation volume affected for each outage. The maximum of the load and generation on the high priced side of a constraint multiplied by the constraint marginal price would provide a more direct measure of relative impact.</p>
12	Should the incentive scheme provide financial rewards for outage notification?	<p>Yes. However, there may be practical limitations in correctly valuing the notification. This would be more highly valued where the outage affects higher value constraints.</p>
13A	If so should the incentive place greater weight on the notification of the outage or the impact of the outage?	<p>Impact is likely to be dominant over notice in nearly all cases and this is consistent with the proposed weightings in the Issues Paper.</p>
13B	Are the proposed weightings applied to various notification periods in table 4 appropriate?	<p>We do not have any information that would confirm or invalidate the proposed weightings. There is no economic analysis presented to support the weightings. They appear to be arbitrary.</p> <p>It will be more difficult to assess the value of notice, as there are currently no traded hedge products that relate to maintenance outcomes. The change in the value of contracts under different market conditions may provide some indication of where there is a clear market value of giving notice for transmission outages. However, such data would be difficult to find and interpret because so many events happen together in the NEM.</p>

No	Question	Response
14	Is it appropriate to refine the existing service standards incentive scheme drawing on the MITC data?	Apparently this does not seem to be regarded by AER as a viable plan. The complexity of the interactions of the NEM and the multiplicity of outage combinations makes this a difficult and impractical task.
15	Is an incentive of up to 1% appropriate, or should the scheme be higher or lower powered?	In all previous revenue cap decisions, the ACCC/AER has placed 1% of allowed revenue at risk for under performances. The AER proposes a similar level of incentive for this proposed scheme. In Powerlink's latest submission to the AER for its revenue reset, it states that 1% of revenue translates to about 5% of its controllable opex. Of its controllable opex of about \$113M as approved by the AER, it is likely that in the short term most of this is not variable. The discretionary component in the short terms is likely to only amount to perhaps \$5M-\$10M per annum. 1% of revenue is thus a significant proportion of their likely short term discretionary costs and is of a comparable order of magnitude. Accordingly, it appears that <i>prima facie</i> , based on these ratios, 1% of revenue should provide TNSPs sufficient incentive to examine ways to minimise the cost of transmission congestion with a view to a three year pay back period. However, as we do not know the actual cost-benefit relationship, we cannot be definitive about the appropriateness of this incentive.
16A	Should baseline performance be based on past performance?	Not strongly. Otherwise it will erode the incentives. A period of poor performance may reduce the benchmark level and then result in out performance later without any change in operational behaviour. Similarly, the benefits of a good performance period would be eroded as the benchmark moves up muting the value of the incentives. The baseline should rather be based on an economic level of performance which may be based upon long-term industry performance across the NEM, or a technical assessment based on acceptable network reliability. Whilst such modelling may be somewhat difficult and a little subjective, it would be better to establish a stable baseline. It could be adjusted every five years or so to match increasing performance achievements across the transmission industry. If based on actual performance, then periods of exceptionally high and low performance should be removed from the assessment.

No	Question	Response
		<p>We note that the current performance incentive scheme aims to achieve “revenue neutrality”, over the regulatory period. Revenue is unaffected if the TNSP meets its historical performance levels as the scheme is designed so that full revenue is achieved by meeting average historical performance levels. With consistently increasing capex and opex, TNSP’s performance can be expected to generally be improving. The performance incentive scheme thus serves to provide up to a 1% increase in revenue to the TNSP on the back of investments that consumers are already paying for, with little downside.</p> <p>This can be seen in the latest <i>TNSP Electricity Regulatory Report for 2005/06</i> dated June 2007. Table 7.1 shows that with the exception of Murraylink (and PowerNet in 2003), all other TNSPs have achieved positive incentive payments in every year that the scheme has been operating. Basing performance on historical rates without meaningful “stretch factors” leads to performance targets that are too easily achieved. These “stretch factors” need to be applied to ensure that consumers are not simply paying an incentive bonus for the better performance that the increased investments would, in any event, bring.</p>
16B	If so is the AER’s proposal of using the last three years as a base case appropriate?	No. It would be subject to sampling error and it would mute the strength of the incentives.
16C	If not, what alternative would be appropriate?	It should be based on an objective standard and only change infrequently or very slowly. Basing the benchmark on broader network performance indices gathered from across the industry would provide a better reference level.

No	Question	Response
16D	Should the incentive be symmetric?	<p>Yes. Ideally, it should be biased in the long-term and have responsiveness either side so that the random influences average out over time. If it is asymmetric or non-linear then the benefits of the scheme may be muted by confusing the incentives or by having the losses not offset by the improvements. In relation to symmetry, the EUAA considers that TNSPs should be punished for not performing, not rewarded for only delivering what they are supposed to and (possibly) rewarded for out performance. Generally, it can be argued that transmission is already very reliable and that the issue is to stop it from deteriorating plus how to ensure that it is delivering what customers actually want and are prepared to pay for.</p>
17	Should an MITC based incentive scheme supplement or replace the existing scheme?	<p>The MITC scheme should supplement the existing scheme and transition over a period of say 5 years, with 20%/80% new/old performance contribution in the first year with gradual progression towards the new arrangements. This would enable the benefits of the two schemes to be compared and any implementation issues could be resolved before it has a full impact on TNSPs' revenue. In the event of adverse impacts, the new scheme could be amended before the full effect is experienced.</p> <p>If the new scheme provides robust incentives, then it could be accelerated to make sure that the incentives have full and immediate impact on network performance.</p>

5. CONCLUSIONS

The conclusion arising from this submission is that the AER's assessment of the options for reforming transmission service performance incentives is generally sound. There are some material implementation risks with respect to the design of the Marginal Constraints Cost scheme relating to the definition of the benchmark level for determining the level of incentive. It would not seem appropriate to base this solely on the performance over the last three years as that would mute the incentives. The benchmark should be stable and founded on principles of good electricity practice. The benchmark could be based upon the level of performance achieved in respect of asset reliability but adjusted to remove the impact of periods of exceptionally poor or high performance.

In order for the scheme to achieve the NEM Objective, the parameters must be founded on economic principles and be directed at the reliability and security elements of that objective. This requires that the weighting given to high or low impact constraints should be based upon a relative measure of their economic impact, not merely the magnitude of the marginal cost of the constraint. This might be informed by some outage cost analysis or a qualitative assessment of whether the constraints are intra-zonal, inter-zonal, or interconnector based in accordance with the network models used in the ANTS. For example, scaling the marginal constraint cost by the load on the high priced side of the constraint may provide a more robust measure of relative economic value.

It will be more difficult to assess the value of notice of future outages, as there are currently no traded hedge products that relate to maintenance outcomes. The change in the value of contracts under different market conditions may provide some indication of where there is a clear market value of giving notice for transmission outages. However, such data would be difficult to interpret because so many events happen together in the NEM.

Overall, the approach is supported with further consideration of ensuring that the final scheme provides relevant economic drivers to TNSPs.

Specific conclusions are:

- The design criteria are suitable for making a practical assessment of the relative value of the alternative schemes.
- The design criteria could be enhanced by considering the extent to which TNSPs could have confidence in the measures and make firm assessments about whether changes to maintenance practices would lead to improved business performance.
- The measures based on the marginal cost of constraints are more suitable in meeting the selection criteria.

- The benchmark performance level should be based on performance averaged over a longer period than 3 years, more like 10 years and should be based on long-term trends in transmission asset reliability informed by the observed results from good industry practice. This means that periods of poor performance would not degrade the benchmark and periods of out performance would not raise the benchmark.
- The weighting of the constraint events in deriving an overall measure should have regard to the relative economic cost of the constraints and therefore some cost analysis should be applied to inform the derivation of the weightings to be adopted. The marginal cost of the constraint alone is not a consistent indicator of economic value because it does not include a measure of the magnitude of the impact on customers.

APPENDIX A: EVALUATION OF SCHEME AGAINST CRITERIA

This Appendix attempts to provide a summary of how the schemes are perceived to rate against the stated evaluation criteria established by the AER. Table A- 1 provides a qualitative analysis of the relative performance of the schemes. Table A- 2 attempts a simple quantitative rating based on a weighting of the criteria.

The NEM Objective is stated as: “The national electricity market 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 evaluation of this criterion is primarily in terms of whether an efficient response can be expected from the operation of the scheme.

Two other criteria have been added to the analysis:

- Whether the measures themselves can be adequately forecast by the TNSP; and
- Whether the value of the measures in terms of TNSP revenue can be adequately forecast by the TNSP.

Both of these criteria go to the heart of the question as to whether the scheme will be expected to provide a realistic incentive to change behaviour where it is economic to do so.

The simplified assessment confirms that the Options 3, 4 and 5 are prospectively more valuable than the current arrangements and the Cost based methods. However, this does not constitute a full economic feasibility analysis, so it is only indicative.

On this basis:

- The Marginal Cost based Options 3, 4 and 5 are attractive and have a similar ranking
- The benefits of giving weighting to impact and the value of notice for the Marginal Cost based scheme creates uncertainty if the parameters are to be reviewed from time to time. The higher value of option 4 and 5 may only be realised if the scheme parameters remain stable for a number of years.
- The Total and Outage Cost schemes do seem to be disadvantaged by the problem of allocation of responsibility for outages
- The current scheme has some advantages which would justify a transition period while the new scheme is implemented and phased in to identify any major problems before it is fully accepted.

One potential problem that has been identified is the reliance on a benchmark of past performance over three years for the Marginal Cost options. This will dilute the value of the option unless it overcomes the effect of increasing revenue after a period of poor performance. The benchmark should not be adjusted downwards after a period of poor performance, otherwise the value taken away would be restored three years later. This means that the dominant effect would be the time value of money only. Methods to stabilise the benchmark should be sought, perhaps by means of a simulation of theoretical performance based on good industry practice and standard forced outage rates for transmission elements and generators.

Table A- 1 Qualitative Evaluation of Schemes by criteria

Options ►	No change	Total Cost	Outage Cost	Marginal Cost	Marginal Cost with Weighting	Marginal Cost with Weighting and Notice
Criteria ▼	Option 0	Option 1	Option 2	Option 3	Option 4	Option 5
Promote the NEM Objective	Low to Moderate as the current scheme does not target availability when it matters most. It does encourage higher plant availability generally	Low as the Total cost does not accurately assess the economic value of transmission constraints. Value is confused by bid gaming and the idealised reference point with no constraints.	Moderate as it better accounts for the costs of outages which are detrimental to the economic value of transmission.	Moderate to High as it identifies the outages that have a market impact.	Moderate to High as it signals the impact of higher cost outages more effectively	Moderate to High as it signals the impact of higher cost outages more effectively and values notice.

Options ►	No change	Total Cost	Outage Cost	Marginal Cost	Marginal Cost with Weighting	Marginal Cost with Weighting and Notice
Criteria ▼	Option 0	Option 1	Option 2	Option 3	Option 4	Option 5
Relate economic benefit to TNSP's costs	Low to Moderate as it drives TNSP revenue according to plant reliability only and not the timing and severity of events affecting the energy market.	Low to Moderate as it overstates the economic value of constraints and the cost base is questionable.	Moderate as it values the impacts of outages but the assessment cost base is questionable as it is exposed to bid price gaming.	Low to Moderate as it creates a value which is related to significant marginal cost of constraints. It does not explicitly relate to the economic value of outages	Moderate as it creates a value which is better related to the marginal cost of constraints. It does not explicitly relate to the economic value of outages The impact weighting may not be sufficiently dynamic.	Moderate as it creates a value which is better related to the marginal cost of constraints. It does not explicitly relate to the economic value of outages The impact and notice value weighting may not be sufficiently dynamic.
Depend on TNSP's action	Low to Moderate as action to improve plant reliability has a direct impact on revenue <i>if those improvements are achieved.</i>	Low as much of the cost is related to the design of the transmission and generation system and therefore independent of TNSP action, unless it performs poorly.	Moderate as most of the cost is related to outages which depend on TNSP action apart from extreme weather impacts.	Moderate to High as many of the outage constraints that create a marginal market value depend on TNSP action.	Moderate to High as many of the outage constraints that create a marginal market value depend on TNSP action.	Moderate to High as many of the outage constraints that create a marginal market value depend on TNSP action.

Options ►	No change	Total Cost	Outage Cost	Marginal Cost	Marginal Cost with Weighting	Marginal Cost with Weighting and Notice
Criteria ▼	Option 0	Option 1	Option 2	Option 3	Option 4	Option 5
Be constructed on objective information	High as plant availability and ownership is readily collected and audited.	Moderate to High as cost information is derived from bidding data. However the value of this information as a cost measure is limited.	Moderate to High as cost information is derived from bidding data. However the value of this information as a cost measure is limited.	High as cost information is derived from market constraint data.	Moderate to High as cost information is derived from market constraint data but the weightings would be arbitrary.	Moderate to High as cost information is derived from market constraint data but the weightings would be arbitrary.

Options ►	No change	Total Cost	Outage Cost	Marginal Cost	Marginal Cost with Weighting	Marginal Cost with Weighting and Notice
Criteria ▼	Option 0	Option 1	Option 2	Option 3	Option 4	Option 5
Apply consistently across TNSPs	High as plant ownership is objectively defined.	Low as it does not distinguish the actions of individual TNSPs.	Low to Moderate as it does not distinguish the actions of individual TNSPs, although many outages could be uniquely ascribed to asset owners. During multiple outages, the assessment of the relative responsibility of TNSPs may be subjective.	High to the extent that the contribution of an outage to a constraint that has a material market value can be objectively defined. This would occur when the status of a transmission element affects the RHS or coefficient of a constraint equation.	High to the extent that the contribution of an outage to a constraint that has a material market value can be objectively defined. This would occur when the status of a transmission element affects the RHS or coefficient of a constraint equation.	High to the extent that the contribution of an outage to a constraint that has a material market value can be objectively defined. This would occur when the status of a transmission element affects the RHS or coefficient of a constraint equation.

Options ►	No change	Total Cost	Outage Cost	Marginal Cost	Marginal Cost with Weighting	Marginal Cost with Weighting and Notice
Criteria ▼	Option 0	Option 1	Option 2	Option 3	Option 4	Option 5
Minimise administrative costs	High as the processes already exist.	Low to Moderate as the modelling of the no constraint position can be objective. It requires centralised support (NEMMCO).	Low to Moderate as the modelling of the no constraint position can be objective. It requires centralised support (NEMMCO).	Moderate to High as the input data are readily available and the evaluation process can be standardised.	Moderate to High as the input data are readily available and the evaluation process can be standardised.	Moderate to High as the input data are readily available and the evaluation process can be standardised.
Supplementary Criteria						
Measures can be forecast by TNSP	Moderate as the outcomes are difficult to predict but the measures themselves are well defined.	Low as the outcomes are difficult to predict with any certainty.	Low as the outcomes are difficult to predict with any certainty.	Low to Moderate as the occurrence of outages and constraint value is difficult to predict	Low to Moderate as the occurrence of outages and constraint value is difficult to predict	Low to Moderate as the occurrence of outages and constraint value is difficult to predict

Options ►	No change	Total Cost	Outage Cost	Marginal Cost	Marginal Cost with Weighting	Marginal Cost with Weighting and Notice
Criteria ▼	Option 0	Option 1	Option 2	Option 3	Option 4	Option 5
Impact of Measures on TNSP revenue can be forecast	High due to the clear relationship between performance and revenue.	Moderate as a cost once defined can be translated into a revenue adjustment, but the TNSP share may be uncertain.	Moderate as a cost once defined can be translated into a revenue adjustment, but the TNSP share may be uncertain.	Moderate to High as the share of value in revenue can be based upon constraint equation terms which change slowly over time.	Moderate to High as the share of value in revenue can be based upon constraint equation terms which change slowly over time.	Moderate to High as the share of value in revenue can be based upon constraint equation terms which change slowly over time.

Table A- 2 Quantitative Evaluation of Schemes by criteria

Options ►	Weighting of Criteria	No change	Total Cost	Outage Cost	Marginal Cost	Marginal Cost with Weighting	Marginal Cost with Weighting and Notice
Criteria ▼	▼						
Weighted Score ►		125	81.5	97	142	142	142

Options ►	Weighting of Criteria	No change	Total Cost	Outage Cost	Marginal Cost	Marginal Cost with Weighting	Marginal Cost with Weighting and Notice
Criteria ▼	▼						
Promote the NEM Objective	5	2	2.5	3	4	4.3	4.5
Relate economic benefit to TNSP's costs	5	2	2	3	3	3.3	3.5
Depend on TNSP's action	5	2	2	3	4	4	4
Be constructed on objective information	5	5	4	4	5	4.7	4.5
Apply consistently across TNSPs	3	5	1	2	5	5	5
Minimise administrative costs	3	5	2	2	4	4	4
Supplementary Criteria							
Measures can be forecast by TNSP	5	3	1	1	3	2.7	2.5
Impact of Measures on TNSP revenue can be forecast	5	5	3	3	4	4	4

