AUSTRALIAN ENERGY REGULATOR

Issues Paper

Pricing Methodology Guidelines

April 2007

Contents

Glossary and definitions

AARR	Aggregate Annual Revenue Requirement
ASRR	Annual Service Revenue Requirement
AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator
CRNP	Cost Reflective Network Pricing
EDST	Eastern Daylight Saving Time
kVA	Kilovolt Ampere
kVAh	Kilovolt Ampere Hour
kW	Kilowatt
kWh	Kilowatt Hour
MAR	Maximum Allowed Revenue
MW	Megawatt
NEMMCO	National Electricity Market Management Company
NER	National Electricity Rules
TNSP	Transmission Network Service Provider
TUOS	Transmission Use Of System

In this issues paper, the words and phrases presented in italics *such as this* have the meaning given to them in the National Electricity Rules (NER).

In this issues paper, any mention of clauses, such as ‘clause 6A.25.1’, refers to clauses in the NER unless otherwise stated.

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 NER.

Under the NER, the AER is required to publish transmission *Pricing Methodology Guidelines*. The development of *Pricing Methodology Guidelines* and the assessment of TNSP's proposed *pricing methodologies* is a new role for the AER conferred upon it by the AEMC.

The AER has prepared this issues paper as the first step in its consultation process in developing the *Pricing Methodology Guidelines*. Interested parties are requested to review the issues raised and provide written submissions. Interested parties are also welcome to provide submissions on relevant issues not discussed in the paper.

After consideration of submissions the AER will publish its proposed *Pricing Methodology Guidelines* and request submissions on that document prior to publishing its final *Pricing Methodology Guidelines*.

2 NER requirements

In accordance with clause 6A.25.1, the AER is required to publish the *Pricing Methodology Guidelines* by 31 October 2007. Clause 6A.25.1(a) states that the *Pricing Methodology Guidelines* must be formulated in accordance with the *transmission consultation procedures*.

The *transmission consultation procedures* outline the process to be followed by the AER in developing the *Pricing Methodology Guidelines*. They require the AER to publish proposed guidelines with an explanatory statement and invite written submissions on the proposed guidelines. Within 80 *business days* of publishing the proposed guideline, the AER must publish the final guidelines. The AER may also publish any issues, consultation and discussion papers in relation to the proposed guideline as it considers appropriate.

In accordance with clause 11.8.4, the AER has developed and published agreed interim requirements that apply to the pricing methodologies of ElectraNet, SPAusNet and VENCorp.[1] The agreed interim requirements have been developed for those *TNSP*s that will lodge a proposed *pricing methodology* prior to the AER publishing its *Pricing Methodology Guideline*. The agreed interim arrangements are not discussed in this issues paper.

[1] The agreed interim arrangements for ElectraNet, SPAusNet and VENCorp, are available on the AER website, see www.aer.gov.au.

Clause 6A.24.1 requires that in making a transmission determination,[2] the AER must include a decision to approve a *TNSP*'s proposed *pricing methodology* and that proposed *pricing methodology* must comply with the requirements of, and contain, or be accompanied by, information required by the *Pricing Methodology Guidelines*.

Clause 6A.25.1(b) states that the *Pricing Methodology Guidelines* must give effect to and be consistent with the *Pricing Principles for Prescribed Transmission Services* contained in clause 6A.23 of the NER.

3 Consultation process

The AER will engage in the following consultation process:

- publish this issues paper and invite written submission on it
- consider any submissions
- publish the proposed *Pricing Methodology Guidelines*, an explanatory statement and invite submissions on the proposed *Pricing Methodology Guidelines*
- consider submissions on the proposed *Pricing Methodology Guidelines*
- publish the final *Pricing Methodology Guidelines* by 31 October 2007.

4 Invitation for written submissions

Interested parties are invited to make written submissions to the AER in relation to the issues outlined in this issues paper and, where possible, include examples which assist in clarifying aspects of the submission. Interested parties are also invited to make written submissions on relevant issues not canvassed in this paper.

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.

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[2] In accordance with clause 6A.10.1, a *TNSP* must submit to the AER a proposed *pricing methodology* relating to *prescribed transmission services* which are subject to a *transmission determination*, 13 months prior to the end of the current regulatory period. If a *TNSP*'s prescribed transmission services are not subject to a transmission determination, the proposed *pricing methodology* must be submitted to the AER three months after being required to do so by the AER.

Any submissions must be received by close of business 16 May 2007 and should be addressed to:

Mr Mike Buckley
General Manager
Network Regulation North
Australian Energy Regulator
GPO Box 1199
Dickson ACT 2602
Email: AERInquiry.PMG@aer.gov.au

5 Transmission pricing under Part J of Chapter 6A

The AEMC published the National Electricity Amendment (Pricing of Prescribed Transmission Services) Rule 2006 No.22 on 21 December 2006. The rule commenced on 28 December 2006 and resulted in an addition to Chapter 6A of the NER, referred to as 'Part J – Prescribed Transmission Services – Regulation of Pricing'. Part J of Chapter 6A replaces Part C of Chapter 6, (version 9) of the NER.

The new Part J of Chapter 6A shifts to a principles-based framework, reflecting a reduction in the level of prescription included in the old Part C of Chapter 6 in relation to transmission pricing. In developing the new Part J of Chapter 6A, the AEMC expressed an intention to ensure the rules for transmission pricing promote good regulatory practice by enhancing stability and predictability of transmission pricing and promote transparency and consistency with the NEM objective.

Part J of Chapter 6A requires the AER to develop and publish guidelines to be used by *TNSP*s when preparing a proposed *pricing methodology*. The *Pricing Methodology Guidelines* must give effect to, and be consistent with, the *Pricing Principles for Prescribed Transmission Services* as outlined in clause 6A.23 of Part J of Chapter 6A.

5.1 Overview of the Pricing Principles for Prescribed Transmission Services

Transmission prices and pricing structures are set such that *TNSP*s recover their *maximum allowed revenue* (MAR) for *prescribed transmission services* for each *financial year*. The *aggregate annual revenue requirement* (*AARR*) for *prescribed transmission services* provided by a *TNSP* is the MAR, adjusted in accordance with clause 6A.22.1. The *AARR* for a *TNSP* must be allocated to each category of *prescribed transmission service* in accordance with the *attributable cost share*[3] for each category of *prescribed transmission service*. The *categories of prescribed transmission service* are:

- *prescribed entry services*
- *prescribed exit services*
- *prescribed common transmission services*
- *prescribed TUOS services* – locational component
- *prescribed TUOS services* – adjusted non-locational component.

The process for allocation of the *AARR* must be such that every portion of the *AARR* is allocated and allocated only once. If, while allocating the *AARR* to each *category of prescribed transmission services*, a portion of the *AARR* is attributable to more than one *category of prescribed transmission service* a priority ordering process is applied. The priority ordering process, set out in clause 6A.23.2(d), is as follows:

1. Costs must be allocated to the provision of *prescribed TUOS services* to the extent of the *stand alone amount* only.[4]
2. Following the allocation of costs to the provision of *prescribed TUOS services* (as outlined immediately above), costs are to be allocated to *prescribed common transmission services*, to the extent of the *stand alone amount* only.
3. Any portion of costs that remain are to be allocated to *prescribed entry services* and *prescribed exit services*.

The result of this allocation process is an *annual service revenue requirement* (*ASRR*) for each category of *prescribed transmission service*. The *ASRR* for each *category of*

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[3] As outlined in clause 6A.22.3, the *attributable cost share* must substantially reflect the ratio of the costs of the assets directly attributable to the provision of that *category of prescribed transmission service* to the total costs of all the *TNSP*'s *transmission system* assets directly attributable to the provision of prescribed services. The costs of the assets refer to the optimised replacement cost or an accepted equivalent to optimised replacement cost that is referable to values contained in the accounts of the TNSP.

[4] The *stand alone amount* refers to the costs of a *transmission system* asset that would have been incurred had the asset been developed exclusively to provide that *category of prescribed transmission assets.*

prescribed transmission service must then be allocated to *transmission system connection points*.

5.2 Allocation of the ASRR to connection points and associated price structures

The principles for the allocation of ASRR to *transmission network connection points* are defined in clause 6A.23.3, while price structure principles are defined in clause 6A.23.4. These two requirements are discussed together for the defined *categories of prescribed transmission service* in the following subsections.

5.2.1 Prescribed entry services

The *ASRR* for *prescribed entry services* is allocated to *connection points* in accordance with the *attributable connection point cost share*[5] for *prescribed entry services* at each *connection point*. The prices for *prescribed entry services* must be a fixed annual amount.

5.2.2 Prescribed exit services

The *ASRR* for *prescribed exit services* is allocated to *connection points* in accordance with the *attributable connection point cost share* for *prescribed exit services* at each *connection point*. The prices for *prescribed exit services* must be a fixed annual amount.

5.2.3 Prescribed common transmission services

The *ASRR* for *prescribed common transmission services* and the operating and maintenance costs incurred in the provision of those services is allocated to *connection points* and recovered via prices calculated on a *postage stamp basis*.

5.2.4 Prescribed TUOS services - locational component

The *ASRR* for *prescribed TUOS services* is allocated to *connection points* on a locational and non-locational basis. The separation of the ASRR for prescribed TUOS services into these two components is described in clause 6A.23.3(d).

The *ASRR* for *prescribed TUOS services* is to be allocated as follows:

- 50 per cent for the locational component and 50 per cent for the pre adjusted non-locational component or,

[5] In accordance with clause 6A.22.4, the *attributable connection point cost share* must substantially reflect the ratio of the cost of the *transmission system* assets directly attributable to the provision of *prescribed entry or exit services* at a *connection point* to the total costs of all the *TNSP*'s assets directly attributable to *the provision of prescribed entry or exit services*. The costs of the assets refer to the optimised replacement cost or an accepted equivalent to optimised replacement cost that is referable to values contained in the accounts of the TNSP.

- an alternative allocation based on a reasonable estimate of future network utilisation and that has the objective of providing more efficient locational signals to users and market participants.

Clause 6A.23.3(c)(1) deals with the locational component of the *ASRR*. The locational component of the *ASRR* is adjusted by subtracting any *auction amounts* expected to be distributed to the *TNSP*, from the *connection points* for each relevant *directional interconnector*.[6] This adjusted share of the locational component of *prescribed TUOS services* is then allocated to *connection points* on the basis of estimated proportionate use of the relevant *transmission system* assets at nominated times by each customer. Cost reflective network pricing (CRNP) and modified CRNP represent two means of estimating proportionate use.[7]

In accordance with clause 6A.23.4(e), prices for recovering the locational component of *prescribed TUOS services* must be demand based at times of greatest utilisation of the transmission network and for which network investment is most likely to be contemplated.

5.2.5 Prescribed TUOS services - non-locational component

Clause 6A.23.3(c)(2) deals with the non-locational component of the ASRR for *prescribed TUOS services*. This element of the *ASRR*, the pre-adjusted non locational component, is to be adjusted in the following manner:

- If the adjustment of the locational component (in respect of *auction amounts*) results in a negative locational component for the *connection points* of the relevant *directional interconnector*, the locational component will be deemed to be zero and the absolute value of that negative amount must be subtracted from the pre-adjusted non-locational component.

- By subtracting or adding any remaining *settlements residue* expected to be distributed to or recovered from the *TNSP* in accordance with clause 3.6.5(a).

- For any *over recovery amount* or *under recovery amount* in relation to a previous *financial year*.

- For any under recovery or over recovery of the locational component of the *ASRR* due to the *TNSP* being unable to increase the locational component of *prescribed TUOS services* above the 2 per cent side constraint outlined in clause 6A.23.4(f)-(i).

- For any amounts resulting from a prudent discount in accordance with clause 6A.26.1.

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6 NEMMCO must distribute to *Network Service Providers* auction proceeds in respect of *directional interconnectors* in accordance with clause 3.18.4.

7 For a detailed description of CRNP and modified CRNP see Schedule 6A.3 of the NER.

The result of this process is the determination of the *ASRR* for the adjusted non-locational component of *prescribed TUOS services*, this amount must be recovered on a *postage stamp basis*.

5.3 Transmission Pricing Methodology Guidelines

The requirements for the *Pricing Methodology Guidelines* are set out in clause 6A.25.2.

> The pricing methodology guidelines must specify or clarify:
>
> (a) the information that is to accompany a proposed pricing methodology being information that is necessary to allow the AER to form a view as to whether the proposed methodology is consistent with and gives effect to, the Pricing Principles for Prescribed Transmission Services and the requirements of this Part J;
>
> (b) permitted pricing structures for recovery of the locational component of providing prescribed TUOS services under clause 6A.23.4(e), having regard to:
>
> (1) the desirability of consistent pricing structures across the NEM; and
>
> (2) the role of pricing structures in signaling efficient investment decisions and network utilisation decisions;
>
> (c) in relation to prices set on a postage-stamp basis, permissible postage stamping structures for the prices for prescribed common transmission services and the recovery of the adjusted non - locational component of providing prescribed TUOS services having regard to;
>
> (1) the desirability of a consistent approach across the NEM, particularly for Transmission Customers that have operations in multiple participating jurisdictions; and
>
> (2) the desirability of signaling to actual and potential Transmission Network Users efficient investment decisions and network utilisation decisions.
>
> (d) the types of transmission system assets that are directly attributable to each category of prescribed transmission services, having regard to the desirability of consistency of cost allocation across the NEM;
>
> (e) those parts (if any) of a proposed pricing methodology or the information accompanying it, that will not be publicly disclosed without the consent of the Transmission Network Service Provider.

A discussion of each of these five issues follows.

6 Discussion of issues

6.1 Information requirements

Clause 6A.24 requires that the proposed *pricing methodology* submitted as part of a revenue determination will outline the *TNSP*'s *pricing methodology* for the next regulatory period. The *Pricing Methodology Guidelines* must specify the information that is to accompany a proposed *pricing methodology*. The information to be provided by *TNSP*s will need to include information required to allow the AER to form a view as to whether the *TNSP*'s proposed *pricing methodology* is consistent with the *Pricing Principles for Prescribed Transmission Services* and the requirements of Part J of Chapter 6A of the NER.

The AER has not formed a view as to the information to be provided with a *TNSP*'s proposed *pricing methodology*. However this information is likely to include:

- A detailed explanation of the proposed *pricing methodology*, including worked examples.
- A description of any differences between the *pricing methodology* applied during the current regulatory period and that proposed for the next regulatory period.
- How the *attributable cost shares* will be calculated and how the *attributable connection point cost shares* will be allocated to *prescribed entry services* and *prescribed exit services*.
- Details on how the locational component *of prescribed TUOS services* will be allocated to *connection points*.
- Details of how the *TNSP* intends to apply the priority ordering approach outlined in clause 6A.23.2(d).
- Details of how prices and charges will be calculated in order to comply with the pricing structure principles (clause 6A.23.4) and the *Pricing Methodology Guidelines,* including worked examples.
- Details of how the TNSP intends to gross up any *under-recovery amount* or *over-recovery amount* using an annual interest rate approved by the AER.
- Information relating to how prudent discounts for *prescribed transmission services* offered to users are proposed to be included in prices.
- Details of billing arrangements with transmission network users and transfers between *TNSP*s conducted in accordance with clause 6A.27.

- Details of any prudential requirements as outlined in clause 6A.28.

- Details of the appointment of a *Co-ordinating Network Service Provider* in accordance with 6A.29.1 of the NER.

- An explanation of the criteria applied to identify and allocate assets which operate at voltages below the transmission voltage.

- If the *TNSP* is not intending to allocate 50 per cent of the *ASRR* to each of the locational and pre-adjusted non-locational components of *prescribed TUOS services*, the *TNSP* may be required to provide information justifying how the alternative allocation complies with clause 6A.23.3(d).

The AER will monitor, report on and enforce compliance with a *TNSP*'s approved *pricing methodology* in accordance with the NER. The information provided by the *TNSP* must be sufficient to allow the AER to assess a *TNSP*'s compliance with the NER.

Q1. What additional information should be sought by the AER to assist it in determining whether a *TNSP*'s proposed *pricing methodology* is consistent with the *Pricing Principles for Prescribed Transmission Services* and Part J of Chapter 6A of the NER?

Q2. Is any of the information contained in section 6.1 unnecessary to determine whether a *TNSP*'s proposed *pricing methodology* is consistent with the *Pricing Principles for Prescribed Transmission Services* and Part J of Chapter 6A of the NER?

6.2 Permitted pricing structures (locational)

The *Pricing Methodology Guidelines* must specify the permitted pricing structures for the recovery of the locational component of providing *prescribed TUOS services*. In specifying the permitted pricing structures, the AER must have regard to the desirability of consistent pricing structures across the NEM and consider the role of pricing structures in signalling efficient network investment and network utilisation decisions.

Clause 6A.23.4(e) states:

> Prices for recovering the locational component of providing prescribed TUOS services must be based on demand at times of greatest utilisation of the transmission network and for which network investment is most likely to be contemplated.

The AER notes that the AEMC, in its rule determination, states:[8]

> …the Rules should be explicit that pricing for the locational TUoS charge should be based on demand (rather than consumption) of times of peak system conditions. The Commission

[8] AEMC, Rule Determination, *National Electricity Amendment (Pricing of Prescribed Transmission Services) Rule 2006 No. 22*, 21 December 2006, p.44.

considers that demand provides a better and clearer signal to users of the network. Therefore, the Final Pricing Rule has been amended to reflect this position.

The AER has developed this issues paper on the assumption that the AEMC's intention is to allow *demand based pricing* structures only, that is, the use of *energy based prices* and fixed prices are not permitted for the locational component of *prescribed TUOS services*.

6.2.1 General considerations regarding locational pricing

As required by clause 6A.23.4(e) prices are to be structured so as to be based on demand at times of greatest utilisation of the transmission network and for which network investment is most likely to be contemplated. However clause 6A.23.4(e) does not provide guidance on two key issues in relation to *demand based pricing* for the locational component of *prescribed TUOS services*.

Firstly, the precise meaning of demand has not been specified, particularly as it relates to network utilisation. The terms maximum demand or average peak demand may relate to the NEM as a whole, to individual regions or jurisdictions, or to the demand at a *connection point*. The demand on a part of the *transmission network* that results in a requirement to contemplate *network* investment will sometimes be coincident with one of these different demands, but not necessarily so. This is because the balance between generation output determined by dispatch and local demand can result in higher *network* power transfers at off-peak periods. Further the time diversity in the occurrence of peak demand at various *connection points* can be substantial. Contract demand is an alternative measure, which can apply at *connection points*.

The second issue relates to the timeframe for measuring demand. For example, demand could be measured in one half hour period, over a day, a month or a longer period. The methodology for the CRNP allocation of network asset costs to *connection points* assumes that sampling of a number of *network* conditions, which reflect the conditions that result in most stress on the *transmission network*, is required to capture high loading on each part of the *network*.

6.2.2 Current situation regarding TUOS allocation

Under Part C of Chapter 6 (version 9) of the NER, *TNSP*s determined the variable structure for customer TUOS usage prices (now referred to as the locational component of *prescribed TUOS services* in Part J of Chapter 6A of the NER) at their discretion. *TNSP*s were required to consider the conditions in the network which influence *network* investment and the objective of recovering costs allocated to the *connection point* (via customer TUOS usage prices), assuming the level and pattern of use was the same as in the *survey period*.[9] The pricing structure for customer TUOS usage prices could include combinations of one or more of the following:

[9] Version 9 of the NER defines a *survey period* as an agreed sample period used to determine the allocation of costs and prices for use of *transmission network* or *distribution network assets*.

- *demand based prices* ($/maximum kW measured as the average kW over a metered half hour or $/maximum kVA measured as the average kVA over a metered half hour)

- *energy based prices* (cents/kWh or cents/kVAh)

- fixed charges.

The customer TUOS usage prices determined were applied to use of the *transmission network* as measured by a *meter* or to a level of use which was agreed between the *TNSP* and the *transmission customer*.

The AER has gathered information on the major *TNSP*'s methodology for recovering the customer TUOS usage component of the *AARR*.[10] This information is detailed in Table 1.

Table 1 Application of customer TUOS usage prices

TNSP	**Period**	**Customer TUOS usage prices**		
		Demand based price	Energy based price	Fixed price
ElectraNet	2006-07	$/MW/day		
Powerlink	2006-07	$/kW/month	c/kWh	
Transend	2006-07	$/MW/month		
TransGrid	2006-07	$/kW/month	c/kWh	$/day
VENCorp	2006-07	$/MW pa		

ElectraNet levy usage charges based on contract demand ($/MW/day). ElectraNet state:[11]

> TUOS Usage Charges will be determined for each exit point by applying the TUOS Usage Capacity Price to the maximum contract demand (agreed maximum demand) for that exit point determined in accordance with the customer's connection agreement and multiplying this amount by the number of days in the billing period.

Powerlink publish both a capacity and an energy price and state that:[12]

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10 A number of smaller *TNSP*s have been excluded from this discussion as they have nominated another *TNSP* as the co-ordinating *TNSP*. A co-ordinating *TNSP* is responsible for allocating the *AARR* within a region in accordance with clause 6.4 of Part C of Chapter 6 (version 9) of the NER.

11 http://www.electranet.com.au/images/pdfs/Transmission_Price_Schedule_2006-07.pdf

12 http://www.powerlink.com.au/data/portal/00005056/content/93174001156469620840.pdf

Both the Capacity and the Energy prices are applicable.

The capacity price is based on historical nominated demand and the energy price is based on historical energy usage. Powerlink provide the following definitions:[13]

Historical Energy is energy metered during the most recent full financial year.

Historical Nominated Demand is the average of the top 10 half-hourly peak demands between November and March, nominated by customers and agreed by Powerlink during the most recent full financial year.

In publishing transmission prices, Transend state that:[14]

The customer's maximum demand for the charging month is used to determine the charge.

TransGrid also publish a schedule of transmission prices on its website, providing the following additional information.[15]

The Usage Charge at each connection point is based on the rates in the above schedule applied to the customer's energy use and demand during the billing period. Two rates apply – an energy price that is set at the same rate for peak and shoulder periods and a rate based on the maximum demand during the month, as follows:

• Energy (peak and shoulder) price: The price is applied to the energy consumed in peak and shoulder periods with the peak period being between 07:00 – 09:00 and 17:00 – 20:00 on working weekdays and the shoulder period being between 09:00 – 17:00 and 20:00 – 22:00 on working weekdays. These times are set on Eastern Daylight Saving Time when daylight saving is in force as, on advice from NSW distributors, this more accurately reflects the higher demand period.

• Demand price: The price in the schedule for each connection point is applied to the maximum half hourly demand in the billing period at that point in order to bill the customer for that month.

• Fixed price: For some connection points where there are special circumstances a fixed price is applied as a daily rate.

In publishing transmission prices, VENCorp state:[16]

The TUOS Usage price is a locational price based on summer demand, which is reflective of the long run marginal cost of transmission at each connection point, and is calculated using the cost reflective network pricing methodology.

Summer demand prices are on a dollar per MW basis, applied to the average of the top ten summer peak demands at a point of supply, measured on weekdays from 1 November 2006 to 31 March 2007 from 7am to 11pm EST.

Currently there appears to be little consistency across the NEM in terms of how the TUOS usage component is set. Some *TNSP*s use a capacity-based price only, whereas others use a combination of the approved methods.

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13 http://www.powerlink.com.au/data/portal/00005056/content/77363001146628155930.pdf

14 http://www.transend.com.au/portals/0/Publications/2006-07%20prices%20for%20website.pdf

15 http://www.transgrid.com.au/trim/trim210273.pdf

16 http://www.vencorp.com.au/index.php?pageID=8235&action=filemanager&folder_id=435&sectionID=8246

6.2.3 Possible pricing structures for the TUOS locational component

The NER requires the AER to consider the desirability of consistency across the NEM when specifying permitted pricing structures for recovery of the locational component of *prescribed TUOS services*. In complying with this requirement, the AER will consider whether to specify a *demand based pricing* structure which applies to all *TNSP*s in the NEM, or whether some flexibility should be permitted.

In the following section, the AER has postulated a number of *demand based price* structures for the recovery of the locational component of *prescribed TUOS services*. At this stage, the AER has no view on appropriate pricing structures.

The following section also discusses *billing periods* and those *billing periods* have the meaning described in the NER, which is a period of seven *days*. The AER is aware that *TNSP*s may not currently bill their customers on a similar seven day cycle and therefore the recovery of charges may include several *billing period*s.

Demand based option 1

Charges can be set based on the maximum half-hourly demand at each *connection point* in the *billing period*. For a *billing period* of seven *days*, demand would be recorded at each *connection point* a total of 336 times in each *billing period* (seven *days* multiplied by 48 half-hourly periods). These measurements would be applied to a pre-determined (and published) price to arrive at a charge for the locational component of *prescribed TUOS services*. Demand measured in this manner would capture maximum half-hourly demand across the entire *billing period*, and would likely include the demand at the time of greatest network utilisation in that *billing period*. However it would also capture demand at times when the network is not fully utilised both within the *billing period*, and across *billing period*s throughout the year. This option may not meet the requirements of the NER, or the intent of the AEMC in drafting the new Part J of Chapter 6A.

Demand based option 2

Charges may be set based on measurements of maximum demand recorded during specified periods of the days when high demand may be expected, that is, a variant on the above option. These would be referred to as ‘peak’ periods within a day. This option does not significantly improve the ability to target periods when the network is heavily utilised. This option may not meet the requirements of the NER, or the intent of the AEMC in drafting the new Part J of Chapter 6A.

Demand based option 3

Another pricing structure option would be to measure demand across the *billing period*, but to select only the maximum half-hour demand recorded for each *connection point* in that period. This value would be applied to the pre-determined price to arrive at a charge.

This option would capture the maximum demand for the *billing period* and would result in levying charges based on times of high utilisation of the transmission network in that *billing period*. However, it does not consider whether the maximum demand in that

billing period is, in fact, a driver of network investment. The driver for network investment is likely to be a small number of billing periods which coincide with peaks in demand, for example in summer when air-conditioning load is high.

Demand based option 4

Charges can also be based on determining the average of the daily maximum demand over a number of days during a specified period that is nominated as driving transmission network investment. For example, maximum demand for each *connection point* could be sampled over a three month period that spans the months which typically experience maximum demand for the relevant network. The highest maximum demand values measured on a specified number of different days (for example, ten days) of that three month period would be averaged to arrive at a value for chargeable maximum demand.

Measurement could take place during the most recent full *financial year* and the allocation to TUOS so determined would apply in the following financial year. The AER is aware that at least one *TNSP* currently uses a similar structure to this option. One issue with this option is that, being based on historical demands, it does not cater for new network users, or network users that significantly alter their demand patterns.

A demand based pricing structure based on this option is likely to capture users' demand patterns and identify users with consistently high demand at times that drive transmission network investment.

Demand based option 5

A further pricing structure option could be based on an agreed maximum demand at a *connection point*. This option would require *TNSP*s to negotiate an annual maximum demand for each customer, and the terms of the agreement could reflect demand at times of greatest utilisation of the network. A charge levied on a fixed and agreed maximum demand could be interpreted as a fixed charge rather than a charge which reflects the fluctuations in demand and the peaks in demand which drive network investment. However, to the extent the definition of the contract demand is structured to reflect the investment drivers it may satisfy the NER requirements. The AER considers that if this option were adopted, substantial disincentives, possibly in the form of a tiered progressive pricing structure, might need to apply for demands exceeding the agreed maximum demand. In the absence of such measures, users may be inclined to understate expected maximum demand during the negotiation process.

Demand based option 6

A demand based pricing structure might also be based on the actual carrying capacity of the network at a connection point. If there were surplus unused capacity then the rate may be lower providing signals for efficient investment and network utilisation decisions, potentially encouraging new downstream investment.

6.2.4 Practical considerations

The AER seeks comment on the practicality of the options discussed above and whether a combination of options might be an appropriate approach. Further, submissions are sought on alternative *demand based pricing* structures and on variants of the basic structures discussed in this section.

Finally, the AER notes that a *demand based price* is defined in the current version of the NER as:

> A price expressed in dollars per kilowatt per time period or dollars per kilovolt ampere per time period.

The use of kVA in specifying *demand based prices* may be more appropriate in capturing demand at times of greatest network utilisation. Apparent power (kVA) may represent a better measure as it reflects true asset utilisation whereas real power (kW) is a measure of apparent power adjusted by the power factor for the variable reactive component. However, the AER is also aware that adopting the use of kVA (as opposed to kW) may be impractical and costly for *TNSP*s if it requires additional metering or calculation to arrive at a figure for kVA.

Further, clause 6A.27.1(d) specifies:

> Where charges are to be determined for *prescribed transmission services* from *metering data*, these charges must be based on kW or kWh obtained from the *metering data* managed by NEMMCO.

If charges are to be determined by the use of *metered data*, the NER requires those charges be based on kW and kWh only.

6.2.5 Desirability of a consistent approach to the pricing structure of prescribed TUOS services

Section 6.2.2 described the structures for prescribed TUOS usage prices currently in place in the NEM. Those structures afford more flexibility than structures based solely on demand as required under the new Part J of Chapter 6A. It is likely that structures based solely on demand would lead to the possibility of step changes to the charges faced by many network customers, either on a *billing period* basis (and therefore for each bill issued by *TNSP*s) or in aggregate. Inevitably, there would be winners and losers amongst network customers, as the MAR to be recovered by a *TNSP* would not change.

The AER notes that clause 6A.23.4(f) refers to limits in the change of locational component prices. It states:

> Subject to paragraphs (g), (h), and (i), prices for recovering the locational component of the ASRR for the provision of prescribed TUOS services must not change by more than 2 per cent per annum compared with the load weighted average price for this component for the relevant region.

Step changes to the charges for the locational component of prescribed TUOS services may be complex and widespread following the introduction of a new pricing structure.

The AER is seeking submissions on implementation and transitional issues if a consistent or harmonised pricing structure were to be adopted.

Submissions are also sought on the value for any or all classes of network user of a common approach to the pricing structure for *prescribed TUOS services*.

6.2.6 Role of pricing structures in signalling efficient investment and utilisation decisions

The AER must consider the role of pricing structures in signalling efficient network investment and network utilisation decisions.

The AER seeks general submissions on the success of the current pricing structure arrangements in signalling efficient network investment and network utilisation decisions, and on any modifications that would improve efficiency in this regard. Additionally, the AER seeks comment on the extent to which the options proposed might deter efficient investment and utilisation decisions.

Q3. Given the requirement to signal efficient investment and utilisation decisions, which of the pricing structure options discussed would be most appropriate for the recovery of the locational component of *prescribed TUOS services*?

Q4. To what extent would the pricing structure options discussed deter efficient investment and utilisation decisions?

Q5. How could the pricing structure options canvassed be modified to better reflect the requirements of the NER.

Q6. Can a price based on demand at times of greatest utilisation of the transmission network include an *energy based price* or a fixed price?

Q7. Are there any implementation issues which might impede the use of the pricing structure options canvassed?

Q8. If the *demand based pricing* structure options are not appropriate, or are impractical, what *demand based pricing* structures could be implemented?

Q9. To what extent is consistency across the NEM required when specifying a *demand based pricing* structure for this component of *prescribed TUOS services*? To what extent are the various options compatible with each other?

Q10. Would additional costs be incurred by TNSPs in adopting any of the *demand based pricing* options discussed, and if so, can these costs be quantified?

Q11. What is the likely impact of the *demand based pricing* structure options canvassed on all classes of network users?

Q12. What is the benefit of consistency in pricing structure to network users in general, and to specific types of users in particular?

Q13. To what extent do the current pricing structure arrangements provide signals for efficient network investment and utilisation decisions?

Q14. What implications arise in considering whether *demand based prices* might be better expressed in dollars per kVA per time period, as opposed to dollars per kW per time period?

6.3 Permitted pricing structures (postage stamp)

The *Pricing Methodology Guidelines* must specify the permitted pricing structures for *prescribed common transmission services* and the recovery of the adjusted non-locational component of providing *prescribed TUOS services*. In specifying the permitted pricing structures, the AER must consider the desirability of a consistent approach across the NEM, particularly for customers operating in multiple jurisdictions. The AER must also specify pricing structures with regard to the desirability of

signalling to actual and potential transmission customers efficient investment and network utilisation decisions.

Clause 6A.23.4(d) states:

> Prices for *prescribed common transmission services* must be on a *postage stamp* basis.

Clause 6A.23.4(j) states:

> Prices for recovering the adjusted non-locational component of prescribed TUOS services must be on a *postage stamp* basis.

Postage stamping involves setting the same price per unit, irrespective of the location or level of consumption of the network user. The NER does not specify whether *postage stamp* pricing structures are to be based on demand or energy consumption, and in either case on what definition of that measure. However, in its pricing rule determination, the AEMC expressed the view that:[17]

> In the Commission's view, the appropriate type of postage-stamping needs to reflect a balance of both:
>
> - the importance of minimising the disincentive on Transmission Network Users to utilise the (existing sunk) network; and
> - the importance of signalling the potential future impact of load growth on the need to invest in transmission or transmission alternatives.
>
> In other words, the pricing structure needs to balance the demands of static efficiency and dynamic efficiency.

The postage stamping structures specified in the *Pricing Methodology Guidelines* should promote usage of the existing transmission network while signalling the impact of load growth on transmission infrastructure investment.

6.3.1 Current situation regarding postage stamp pricing structures

Part C of Chapter 6 (version 9) of the NER specified that the TUOS general price (now referred to as the non-locational component of *prescribed TUOS services* in Part J of Chapter 6A of the NER) and the transmission customer common service charge be recovered through postage stamped prices. A *TNSP* was required to calculate an *energy based price* and a capacity based price and apply the price that resulted in the lowest TUOS general charge and common service charge for each *connection point* in the *financial year*.

Energy based charges were calculated by multiplying the energy price for that *financial year* by the metered energy offtake at a *connection point* in the same period in the *financial year* that ended 12 months prior to the commencement of the *financial year* for which the charge was to apply.

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[17] AEMC, Rule Determination, *National Electricity Amendment (Pricing of Prescribed Transmission Services) Rule 2006 No. 22*, 21 December 2006, p.45.

Capacity based charges were calculated by multiplying the capacity price by the maximum contract demand for the *connection point* in the *financial year*, divided by *billing period*s in the *financial year*.

A capacity price was to be used only if the transmission customer had a connection agreement that nominated a fixed maximum demand for that *connection point* and the agreement in place specified substantial penalties for exceeding that agreed fixed maximum demand.

The AER has gathered information on the major *TNSP*'s current methodologies for applying the customer TUOS general charge and the common service charge. This information is contained in Table 2.

Table 2 Current customer TUOS general charges and transmission customer common service charges

TNSP	**Period**	**Common service charge**		**TUOS general charge**	
		Energy price	Capacity price	Energy price	Capacity price
ElectraNet	2006-07	$/MWh	$/MW/day	$/MWh	$/MW/day
Powerlink	2006-07	c/kWh	$/kW/month	c/kWh	$/kW/month
Transend	2006-07	$/MWh	$/MW/month	$/MWh	$/MW/month
TransGrid	2006-07	c/kWh	$/kW/month	c/kWh	$/kW/month
VENCorp	2006-07	$/MWh	$/MW pa	$/MWh	$/MW pa

Part C of Chapter 6 (version 9) of the NER prescribes the process for calculation of TUOS general charges and transmission customer common service charges. The AER has reviewed TNSP's common and general service charges. While the pricing units differ between *TNSP*s, the methodologies appear to be broadly consistent.

6.3.2 Possible future postage stamping price structures

The AER is aware of the need to ensure that the *postage stamp* structures specified in the *Pricing Methodology Guidelines* do not cause participants to adjust their consumption of energy in order to avoid or minimise charges.

The AER notes that *energy based prices* are defined in the NER as:

> A price expressed in cents per kilowatt hour of energy.

Based on this definition, it does not appear that kVA or kVAh can be used as an alternative measure.

Postage stamp option 1

Postage stamping could follow a similar structure to that in Part C of Chapter 6 (version 9) of the NER whereby energy based and capacity based prices and charges were calculated and the one most favourable to the user was applied. Under Part C of Chapter 6 (version 9) of the NER capacity based prices were not to be used unless the *TNSP* and the user had an agreement capping the users' maximum demand. Users without an agreement were restricted to an *energy based price* based on consumption in a previous *financial year*. Should this option be selected a similar arrangement may be required.

One issue pertaining to this option is that the *TNSP* is entitled to receive the total ASRR for each *category of prescribed service* (and therefore the total AARR) irrespective of the pricing structure. The AER is unsure whether the arrangement under Part C of Chapter 6 (version 9) disadvantages users without an agreement which caps maximum demand. Those users are charged an energy based charge and do not have the benefit of being charged either a capacity or an energy based charge.

Postage stamp option 2

The AER also wishes to evaluate an energy based only pricing structure for the adjusted non-locational component of *prescribed TUOS services* and *prescribed common transmission services*. It therefore seeks submissions on the most appropriate method of applying an *energy based price* and charge, and whether prices should be based on historical or current energy consumption. Users with high levels of energy consumption are requested to comment on whether they may be disadvantaged by an energy based *postage stamp* structure.

Postage stamp option 3

The AER also wishes to evaluate a pricing structure using only capacity based pricing. One option for this structure would be that for all connection agreements a contract capacity would be negotiated and included in the connection agreement with the *TNSP*. The agreement would include an agreed maximum demand for the *financial year* in which the charge is to apply. Under these circumstances a penalty would be applied for exceeding the agreed maximum demand. Alternatively, the AER may consider basing the capacity charge on the most recent full *financial year*'s actual maximum demand (as opposed to an agreed maximum demand).

Postage stamp option 4

A demand based postage stamping structure is another potential option. Demand might be used in a similar manner to that discussed in respect of the locational component of *prescribed TUOS services*. A number of options for determining demand were discussed in section 6.2.3. Submissions are sought on whether any of those demand based options might be appropriate in considering postage stamp pricing structures.

6.3.3 Practical considerations

Postage stamping is based on a price per unit of energy or demand. If the price is reset on an annual basis across the whole network operated by a *TNSP* it would result in

charges for *prescribed common transmission services* and the adjusted non-locational component of *prescribed TUOS services* being the same at each of a *TNSP*s *connection points*. A number of options discussed require the use of historical demand or energy consumption data. A methodology based on data for historical consumption may not be applicable in some circumstances, such as following the commissioning of a new *connection point* or the addition of a new large customer at an existing *connection point*. The use of current *metering data* may be an alternative under these circumstances. Submissions suggesting other alternatives are requested.

The AER must ensure that the pricing structures specified in its *Pricing Methodology Guidelines* are practical and able to be implemented by *TNSP*s without *TNSP*s incurring significant additional cost. The AER therefore seeks submissions in relation to the practicality and additional costs of the *postage stamp* structures discussed. The AER also seeks comment on whether a combination of the options discussed above may be more appropriate.

6.3.4 The desirability of consistency across the NEM, particularly for customers operating across multiple jurisdictions

Clause 6A.25.2(c)(1) requires the AER to specify permissible *postage stamp* structures with regard to the desirability of consistency across the NEM, particularly for *transmission customers* that have operations in multiple *participating jurisdictions*. The AER is particularly interested in receiving submissions from *transmission customers* with operations in multiple jurisdictions so that specific issues relevant to those customers might be considered.

6.3.5 The desirability of signalling network investment and network utilisation decisions

Clause 6A.25.2(c)(2) requires the AER to have regard to the desirability of signalling to actual and potential *transmission network users'* efficient investment and network utilisation decisions.

Section 6.2.6 of this paper considers the suitability of the current TUOS usage pricing structures in signalling efficient network investment and network utilisation decisions. The AER also seeks submissions in relation to efficient network investment and utilisation decisions and the current postage stamp pricing structures for TUOS general charges and transmission customer common service charges. The AER is interested in receiving comments on how the current postage stamp pricing structures might be used to address actual and potential investment and utilisation decisions and it is particularly interested in how alternative postage stamp structures might provide additional signals for both investment and utilisation decisions.

Q15. Which of the *postage stamp* pricing structures discussed would be most appropriate, taking into consideration the desirability of consistency across the NEM, particularly for customers with operations in multiple jurisdictions and the desirability of signalling efficient investment and network utilisation decisions?

Q16. Are there any implementation issues which might affect the adoption of any of the postage stamp pricing structure options discussed?

Q17. To what extent would any of the postage stamp options disadvantage any group of market participants?

Q18. If the options for the postage stamp pricing structures are not appropriate, practical, or create excessive additional implementation costs, what alternative postage stamp structures could be considered?

Q19. If a capacity based price structure was used to recover costs associated with the adjusted non-locational component of *prescribed TUOS services* and *prescribed common transmission services*, is the use of kVA or MVA (as opposed to kW or MW) appropriate and practical?

Q20. If the use of historical usage or demand data is required and is not available or the data has changed significantly would it be appropriate to use current data?

6.4 Attribution of transmission system assets to categories of prescribed transmission services

The *Pricing Methodology Guidelines* must specify the types of transmission assets that are directly attributable to each *category of prescribed transmission services* having regard to the desirability of consistency of cost allocation across the NEM. Clause 6A.23.4(b) requires that separate prices be developed for each *category of prescribed transmission service*. The *categories of prescribed transmission services* defined in the NER are:

- *prescribed entry services*
- *prescribed exit services*
- *prescribed common transmission services*
- *prescribed TUOS services* – locational component
- *prescribed TUOS services* – adjusted non-locational component.

Clause 6A.23.2(c) requires that the allocation of the AARR must be such that every portion of the AARR is allocated, and that the same portion of the AARR must not be allocated more than once.

Clause 6A.23.2(d) recognises that components of the *AARR* may be attributable to two or more *categories of prescribed transmission services*. For example, the AER understands that land and substation establishment costs may be attributable to several or all *categories of prescribed transmission services* and that some sub-transmission circuit breakers may be attributable to *prescribed exit services* and *prescribed TUOS services*. Under these circumstances, the *AARR* must be allocated to categories according to the priority ordering approach outlined in clause 6A.23.2(d)(1)-(3).

6.4.1 Prescribed entry services

The NER defines prescribed entry services as:

> *Entry services* that are *prescribed transmission services* by virtue of the operation of clause 11.6.11.

The AEMC has decided that generators should only pay 'shallow connection' costs which are the costs associated with connecting generators to the shared network.[18] The AER has considered the types of transmission assets directly attributable to *prescribed entry services*. The following list includes assets which may be directly attributable to *prescribed entry services*:

1. Land, buildings and fences.
2. All switchgear and plant associated with generators' connection, generator transformers and bus-tie circuit breakers associated with entry services.
3. Meters associated with *prescribed entry services* and owned by the *TNSP*.
4. Protection equipment directly attributable to *prescribed entry services.*

Q21. What additions or deletions should be made to the list of transmission asset types directly attributable to *prescribed entry services*?

[18] 'Deep connection' charges would result in a connecting generator paying for the transmission network augmentations required to transmit its output.

6.4.2 Prescribed exit services

The NER defines prescribed exit services as:

> *Exit services* that are *prescribed transmission services* by virtue of the operation of clause 11.6.11 and *exit services* provided to *Distribution Network Service Providers*.

The AER has considered the types of transmission assets which may be directly attributable to *prescribed exit services*, and they are listed below:

1. Switchgear used to switch voltages below the transmission voltage level including feeder circuit breakers, bus-tie circuit breakers and isolators and associated plant used for connection of transmission customers.

2. All transformers supplying voltages below the transmission voltage level and their associated switchgear.

3. Land, buildings and fences.

4. Meters associated with *prescribed exit services* and owned by the *TNSP*.

5. Protection equipment directly attributable to *prescribed exit services*.

Q22. What additions or deletions should be made to the list of transmission asset types directly attributable to *prescribed exit services*?

The AER notes that the AEMC states in its rule determination that:[19]

> In recognition of the problems associated with applying the causer pays principle in a shared network with economies of scale and scope the Commission considers that where assets are being used for multiple purposes that it is appropriate to allocate costs on the basis of use. This principle acknowledges that it is often more efficient to utilise existing sunk assets rather than duplicating assets when they are required.

The AER understands that entry assets and exit assets may, at times, be used interchangeably, that is, at some times an asset may be used for *prescribed entry services* and at other times the same asset may be used for *prescribed exit services*. The AER queries whether there should be a mechanism to share the costs of entry and exit assets under these circumstances.

Q23. Should a cost sharing mechanism be established for assets which are used as both *prescribed entry services* and *prescribed exit services*?

[19] AEMC, Rule Determination, *National Electricity Amendment (Pricing of Prescribed Transmission Services) Rule 2006 No. 22*, 21 December 2006, p.22.

6.4.3 Prescribed common transmission services

Prescribed common transmission services provide equivalent benefits to all *transmission customers* which have a *connection point* with the relevant transmission network regardless of their location within the *transmission system*. The AER considers the transmission assets directly attributable to *prescribed common transmission services* may include:

1. Power system communication networks.
2. Protection and control equipment and systems not directly attributable to *prescribed entry services* or *prescribed exit services*.
3. Network switching centres (excluding generation and system control functions).
4. Reactive compensation plant providing equivalent benefits to all transmission customers.
5. Spare plant and equipment.
6. Non-system assets.
7. Easements associated with *prescribed common transmission service* assets.
8. Fixed assets such as buildings and land not associated with substation or line easements (e.g. head office buildings and land for future substations).
9. Motor vehicles and construction equipment.

Q24. What additions or deletions should be made to the list of transmission asset types directly attributable to *prescribed common transmission services*?

6.4.4 Prescribed TUOS services - locational and non-locational components

The revenue for *prescribed TUOS services* is recovered in two parts, and the allocation of the ASRR to the locational and non-locational components is defined in clause 6A.23.3(d). This is done in recognition of the fact that the shared transmission network performs two functions: a means of transporting energy from generators to customers, and a common good function of providing security and a means of facilitating competition in the broader energy market.

Clause 6A.23.2(d) recognises that the types of assets attributable to the locational component of *prescribed TUOS services* may also be attributable to other *categories of prescribed transmission services* such as *prescribed entry services* and *prescribed exit services*. In these circumstances, the method specified in clause 6A.23.2 (d) must be applied to the relevant components of the AARR.

The AER considers the following list of assets may be directly attributable to both components of *prescribed TUOS services*:

1. Switchgear at the transmission voltage level including feeder circuit breakers and bus-tie circuit breakers and isolators.
2. All transmission transformers and their associated switchgear.
3. All transmission lines unless identified by the *TNSP* as directly attributable to another *category of prescribed transmission service* only.
4. Land, buildings and fences.
5. Reactive plant assigned to *prescribed TUOS services*.
6. Meters associated with *prescribed TUOS services* and owned by *TNSP*s.

Q25. What additions or deletions should be made to the list of transmission asset types directly attributable to *prescribed TUOS services*?

6.5 Disclosure of information

The *Pricing Methodology Guidelines* must clarify the parts (if any) of a proposed *pricing methodology* or the information accompanying it, that will not be publicly disclosed without the consent of the *TNSP*.

At this stage of the process, the AER considers that it would not publicly disclose information supplied by a *TNSP* as part of a proposed *pricing methodology*, which is identified by the *TNSP* as *confidential information*. *Confidential information* might

include information such as the details surrounding agreements for prudent discounts for *prescribed transmission services* or details of commercial arrangements with third parties.

A *TNSP* may request that information be classified as *confidential information*. The AER would consider any such request. However, it may encourage *TNSP*s to develop proposed *pricing methodologies* in a manner that avoids confidentiality issues.

Q26. What information, associated with a pricing methodology, is likely to have confidentiality issues, and how can the information be presented to maximise transparency of the process in relation to these matters?