Australian Energy Market Commission

Transmission Pricing Review

June 2009

This Report contains 60 pages

Contents

1 Executive Summary

This Report responds to an Australian Energy Market Commission (AEMC) request to:

1. Review and summarise the existing methodologies and arrangements for setting Transmission Use of System (TUOS) charges for each Transmission Network Service Provider (TNSP) in the National Electricity Market (NEM);

2. Identify any differences between the NEM TNSP and jurisdictional approaches and evaluate reasons for those differences;

3. Identify any issues around the transparency and accessibility of these arrangements, particularly for customers; and

4. Propose options for improving the transparency and accessibility of these arrangements.

Attachment 1 provides a step by step summary of the methodologies applied by TNSPs across Australia to allocate their revenue requirements to transmission prices.

The review found that:

- For direct connected transmission customers:
    - There do not appear to be any material issues with the transparency of transmission pricing for TNSPs which are either subject to Part J of the National Electricity Rules (NER), or in Western Australia. The pricing information contained within the various approved pricing documents meets regulatory requirements and provides a reasonable level of detail about the basis of revenue allocation and price formulation for educated users. Further, in the event that the publicly available information does not provide a sufficient level of explanation for users, we understand that TNSPs are willing to meet with users to work through issues of detail in relation to prices; and
    - There are issues with the transparency of transmission pricing for TNSPs which are not subject to Part J of the NER. These are caused by the differences between the old Chapter 6 and the new Chapter 6A, in particular that there is no requirement under the Old Chapter 6 for TNSPs to publish a Pricing Methodology (as is required under Chapter 6A). There are several options for improving transparency, all of which would involve Rule Changes to require more information to be produced by TNSPs.
- For large users and potential users, there are issues with the transparency of transmission pricing arrangements:
    - For those customers supplied by Distribution Network Service Providers (DNSPs) which do not pass through TUOS charges for large customers. These customers are not able to use the information published by TNSPs in relation to transmission pricing

because they are not charged on the same basis as the published transmission prices. Possible options for resolving this are to:

- Introduce a requirement in Chapter 6 for DNSPs to pass-through transmission prices for large customers, or alternatively to align Chapter 6A and Chapter 6 of the NER, such that DNSPs are required to charge TUOS to large customers on the same basis as they themselves are charged; and

- Re-introduce the requirement from the old Chapter 6 of the NER which required DNSPs to provide information to customers using over 40GWh per annum or 10MW about the way in which transmission prices have been passed through.

- For those customers supplied by DNSPs which pass through TUOS charges for large customers, but where the DNSP is supplied by a TNSP which is not subject to Part J of the NER. This is because even though these customers see the true transmission tariffs, they do not have access to published Pricing Methodologies setting out how they have been developed. The option for resolving this issue is the same as for direct connection transmission customers, being to pursue a Rule Change.

- For small users and potential users, there are issues with the transparency of transmission pricing, but these relate to the Chapter 6 (Distribution) pricing arrangements rather than TNSPs:

  - Small users do not pay transmission charges at the connection points at which they take supply. Instead, these charges are paid by DNSPs and charges are then re-packaged to recoup the total amount chargeable in line with jurisdictional pricing requirements and principles; and

  - While the DNSP pricing principles do contain economic signals, for example between large and small customers and across different categories of users, these are not the same signals that were established by the TNSP. This means that these customers are not users of the transmission pricing information provided by TNSPs, and therefore that the extent of transparency of this information is of no current relevance to them.

  This particular issue relates to the way in which Chapter 6A (concerning transmission) and Chapter 6 (concerning distribution) operate together. Chapter 6 does not require DNSPs to pass through TUOS charges levied on the DNSP by the TNSP to end users. This means that even if the most transparent pricing arrangements for transmission are put into effect, the majority of users will still be no more informed about the nature of the transmission portion of their charges because they will not actually be paying these charges.

  Before options are developed to address this issue, it is necessary to carefully assess the importance of transparency in pricing for customers supplied from

the distribution system. If it is considered important that transparency be pursued, for locational signalling reasons, then it is crucial to define the size of the customer to which it should efficiently be applied. When this has been resolved, the appropriate options can be considered. These will almost certainly involve Rule changes to coordinate Chapter 6 and Chapter 6A of the NER.

2 Introduction

2.1 Background

The AEMC undertook a detailed review during 2005 and 2006 of the future regulation of the pricing of prescribed transmission services. This review culminated in it issuing Rule Number 22 on 21 December 2006, which then became Part J of Chapter 6A of the NER. This replaced Part C of Chapter 6 of the NER, which had previously regulated the pricing of prescribed transmission services.

Part J of Chapter 6A details a series of pricing principles for prescribed transmission services. Among other things, it requires the AER to develop Pricing Methodology Guidelines to give effect to these pricing principles, by 31 October 2007. The AER published its final "Pricing Methodology Guidelines" in October 2007. These specify and clarify:

- The information that is to accompany a Proposed Pricing Methodology;
- Permitted pricing structures for the recovery of the locational component of providing prescribed TUOS services;
- Permitted postage stamp pricing structures for prescribed common transmission services and the recovery of the adjusted non-locational component of providing prescribed TUOS services;
- The types of transmission system assets that are directly attributable to each category of prescribed transmission service; and
- Those parts of a proposed pricing methodology, or the information accompanying it, that will not be publicly disclosed without the consent of the TNSP.

Under Part J, a TNSP must prepare a Proposed Pricing Methodology that gives effect to, and is consistent with, the Pricing Principles and that complies with the requirements of the AER's Pricing Methodology Guidelines. A TNSP must submit its Proposed Pricing Methodology to the AER with its Revenue Proposal for the forthcoming regulatory control period and must apply the Approved Pricing Methodology for the duration of that period.

Since the release of the Pricing Methodology Guidelines, a number of TNSPs have submitted Proposed Pricing Methodologies to the AER as part of their revised Revenue Proposals. These Proposed Pricing Methodologies describe in detail the process for calculating prices for prescribed transmission services. Clause 6A.24.2 of the NER requires that a TNSP must publish a current copy of an Approved Pricing Methodology on its website.

As a result of Clause 11.8.3 of the NER, a TNSP is not required to submit a Proposed Pricing Methodology to the AER until the lodgement of its Revenue Proposal; under Part J of Chapter 6A this date is around 13 months before the expiry of the current regulatory control period. Accordingly, a number of TNSPs regulated by the AER have yet to submit their Proposed Pricing Methodologies and are therefore not required to meet the AER's Pricing Methodology Guidelines. Given

there are no existing explicit requirements on those TNSPs to provide details of their Pricing Methodologies, any information provided to users on the way in which those TNSPs' price is at their discretion.

The TNSPs that have submitted a Proposed Pricing Methodology to the AER under Part J of Chapter 6A of the NER are:

- ElectraNet, which submitted a Proposed Pricing Methodology in January 2008 that was approved by the AER in April 2008;

- VENCorp, which submitted a Proposed Pricing Methodology in December 2007 that was approved by the AER in April 2008;

- Transend Networks, which submitted a Proposed Pricing Methodology in January 2009 which is yet to be approved by the AER;

- TransGrid, which submitted a Proposed Pricing Methodology in January 2009 which is yet to be approved by the AER; and

- EnergyAustralia, which under a Rule Change in 2007 must prepare its Pricing Methodology under Chapter 6A but as part of its distribution regulatory proposal. It has submitted this document as Attachment III.4A of its Regulatory Proposal and (at end April 2009) is yet to be approved by the AER.

The TNSPs that have not submitted a Pricing Methodology to the AER under Part J of Chapter 6A of the NER are:

- Powerlink, which is not subject to Chapter 6A of the NER, but rather to Chapter 6 of the previous version of the NER. Powerlink is not due to propose a Pricing Methodology under Part J until it submits a Revenue Proposal for the regulatory control period commencing on 1 July 2012;

- SP AusNet, which is subject to a jurisdictional derogation under Chapter 9 of the NER for its current pricing arrangements. SP Ausnet is not due to propose a Pricing Methodology under Part J until it submits a Revenue Proposal for the regulatory control period commencing on 1 July 2014;

- Western Power, which is not subject to Chapter 6A and is instead subject to the Western Australian Electricity Networks Access Code (Access Code);

- Murraylink, which is not due to propose its Pricing Methodology under Part J until it submits a Revenue Proposal for the regulatory control period commencing on 1 January 2013; and

- Directlink, which is not due to propose its Pricing Methodology under Part J until it submits a Revenue Proposal for the regulatory control period commencing on 1 July 2015.

There is therefore currently a range of information requirements on TNSPs in relation to transmission pricing, although this will reduce over time as TNSPs progressively lodge Pricing Methodologies under Part J of Chapter 6 of the NER.

2.2 Purpose and Scope of the Review

The AEMC was asked by the Ministerial Council on Energy (MCE) in 2008 to undertake a review of energy market frameworks to determine whether the frameworks should be amended to accommodate the introduction of the Carbon Pollution Reduction Scheme (CPRS) and the 20 per cent Renewable Energy Target (RET). The AEMC's 1st Interim Report, consequent to that request, identified a number of "stress points" in the market frameworks that require further attention. In particular, the Report identified the need to improve the existing inter-regional transmission pricing arrangements to better reflect transmission investment in adjoining regions and to support greater inter-regional trade.

In early 2009, the AEMC sought assistance from advisors to review existing arrangements and methodologies for determining TUOS charges used by TNSPs in the NEM, and to identify areas and options for improving the transparency and accessibility of the pricing arrangements. The AEMC's Terms of Reference were that this work should:

1. Review and summarise the existing methodologies and arrangements for setting TUOS charges for each TNSP in the NEM;

2. Identify any differences between the NEM TNSP and jurisdictional approaches and evaluate reasons for those differences;

3. Identify any issues around the transparency and accessibility of these arrangements, particularly for customers; and

4. Propose options for improving the transparency and accessibility of these arrangements.

The purpose of this Report is to respond to the Terms of Reference.

2.3 Meeting the Terms of Reference

The review and consequent drafting of this Report occurred in three phases.

In the first phase, a summary of national transmission pricing processes was developed and presented to the AEMC. This summary is set out in Attachment 1. This information meets items (1) and (2) of the Terms of Reference.

In the second phase, meetings were held with stakeholders:

- On 18 March 2009, a meeting was held between the AEMC and the Energy Users Association of Australia;

- On 20 March 2009, a meeting was held between the AEMC and Grid Australia, which was attended by representatives of TransGrid, ElectraNet, Transend and Powerlink Queensland; and

- On 20 March 2009, a meeting was held between the AEMC and the Major Energy Users Group.

The purpose of these meetings was to verify certain aspects of the information that had been compiled in the first phase and to discuss the transparency of pricing arrangements. These meetings provided the information set out in Section 5 of this Report.

Section 6 of this Report sets out issues and options for possible improvements to the transparency of transmission pricing arrangements, which is the final requirement for items (3) and (4) of the Terms of Reference.

2.4 Structure of this Report

The remainder of this Report is structured as follows:

- Section 3 sets out the framework for transmission pricing and provides a summary of the users of transmission pricing information in Australia;
- Section 4 (and Attachment 1) summarises existing methodologies and arrangements used by TNSPs to set transmission prices and identifies differences between the NEM TNSPs and jurisdictional approaches;
- Section 5 sets out the outcomes of consultation with TNSPs and user groups;
- Section 6.1 identifies issues in relation to the transparency and accessibility of transmission pricing arrangements; and
- Section 6.2 proposes options for improving the transparency and accessibility of these arrangements.

2.5 Disclaimer

This Report has been prepared for the AEMC to meet the Terms of Reference and has been developed based on publicly available materials, and discussions with TNSPs, user representatives and the AEMC. The conclusions drawn in this Report may not be valid if there is any change in the facts, circumstances or assumptions that have been made available to Network Advisory Services. Accordingly, while we believe that the statements made in this Report are accurate, no warranty of accuracy or reliability is given.

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3 Frameworks for Transmission Pricing

3.1 Transmission Pricing Regulatory Requirements

3.1.1 Background

There are five different types of TNSPs in Australia. These are:

- Western Power in Western Australia, which is subject to the Western Australian Access Code. It is not subject to the NER. Its transmission pricing activities are regulated by the Economic Regulation Authority of Western Australia (ERA) (Type 1);

- TNSPs which operate in the NEM and are subject to the NER. While all NEM TNSPs are regulated by the AER, they can be further separated into:

    - Those regulated under the new Chapter 6A of the NER (Type 2);

    - Those regulated under the previous version of Chapter 6 of the NER, which were "grandfathered" by virtue of being within a regulatory control period when Chapter 6A was introduced (Type 3); and

    - Those regulated under Agreed Interim Requirements pursuant to Rule 11.8 of the NER, which were made to deal with TNSPs' lodging their Revenue Proposals around the time that Chapter 6A was introduced (Type 4); and

- Power and Water Corporation in the Northern Territory, which does not own any transmission assets, with its largest asset being a 132kV line from Darwin to Katherine and all other assets being 66kV and below. For this reason, Power and Water is not dealt with in this Report.

These five classifications are discussed further below. Specific pricing methods are dealt with in section 4 of this Report and Attachment 1.

3.1.2 Western Australia (Type 1)

Only Western Power is included in this category.

Western Power is regulated by the ERA under the framework of the Access Code.

Section 8.1 of the Access Code requires Western Power to submit "Price List Information" to the ERA when it submits an Access Arrangement. The Access Code defines "Price List Information" as

> *A document which sets out information which would reasonably be required to enable the Authority, users and applicants to:*
>
> - *Understand how the service provider derived the elements of the proposed price list; and*

- *Assess the compliance of the proposed price list with the access arrangement.*[1]

3.1.3 NEM TNSPs Regulated under Chapter 6A of the NER (Type 2)

The TNSPs in this category are TransGrid, Transend, and EnergyAustralia.

Chapter 6A provides for a range of requirements in relation to transmission pricing. Clause 6A.10.1(a) of the NER requires that "a TNSP must submit to the AER a Revenue Proposal and a Proposed Pricing Methodology" prior to the commencement of a regulatory control period. Clause 6A.10.1(e) requires that the Proposed Pricing Methodology must give effect to and be consistent with the Pricing Principles in Part J of the NER and with the AER's Pricing Methodology Guidelines.

The Pricing Principles are set out in clause 6A.23 of the NER and are a series of prescriptive steps for the allocation of the TNSP's Annual Aggregate Revenue Requirement (AARR) which has been determined by the AER to transmission prices. These Pricing Principles provide TNSPs with the methodology for determining transmission prices and once approved by the AER, operate for the full regulatory period without revision. All of these steps, together with an explanation of how they are met through the price setting process, must be set out in the Proposed Pricing Methodology.

Matters of interpretation relating to the AER's approval of a TNSP's Proposed Pricing Methodology are set out in the AER's Pricing Methodology Guidelines which have been produced by the AER under Clause 6A.25.1 of the NER.

3.1.4 TNSPs Regulated under the Old Chapter 6 of the NER (Type 3)

The TNSPs in this category are Directlink, Murraylink and Powerlink, by virtue of having commenced their regulatory control periods prior to the introduction of the new Chapter 6A.

The regulatory requirements for transmission pricing in the Old Chapter 6 are in Part C of that Chapter. While these are prescriptive in terms of the steps required to construct prices, they do not require that a Pricing Methodology be produced by a TNSP.

3.1.5 TNSPs Regulated Under Agreed Interim Requirements (Type 4)

The TNSPs in this category are VENCorp, ElectraNet and SP Ausnet.

Clause 6A.10.1(e) of Chapter 6A requires a TNSP to submit a Proposed Pricing Methodology which is consistent with the Pricing Principles and the AER's Pricing Methodology Guidelines. Given that the AER developed its Pricing Methodology Guidelines in October 2007, and the dates for lodgement of the Regulatory Proposals for VENCorp, ElectraNet and SP Ausnet were before this date, Rule 11.8

[1] Sourced from Western Australian Electricity Networks Access Code and restated in "Western Power 2008/09 Price List Information", April 2009

of the NER required the AER to develop transitional arrangements (referred to as the 'agreed interim requirements').[2]

The agreed interim requirements require that:

- Each relevant TNSP was to submit a Proposed Pricing Methodology to the AER;
- Once the AER published its final Pricing Methodology Guidelines, the relevant TNSP could, within ten business days, elect to be subject to the Final Pricing Methodology Guidelines instead of the agreed interim requirements;
- In the event that the TNSP elected to be subject to the Final Pricing Methodology Guidelines, a Pricing Methodology would need to be prepared in accordance with Part J;
- In the event that the TNSP elected to be subject to the agreed interim requirements, Part C of the old Chapter 6 would apply, however a Pricing Methodology would still be required that:
    - Demonstrated the allocation of the AARR and the delineation of assets to classes of transmission services, in accordance with clause 6.3 of the old Chapter 6;
    - Demonstrated the allocation of the AARR among all assets used in the provision of transmission services in order that the allocation of the costs involved in the provision of transmission services is consistent with clause 6.4 of the old Chapter 6;
    - Demonstrated that the conversion of the allocated costs in clause 6.4 of the old Chapter 6 into prices and charges is consistent with clause 6.5 of the old Chapter 6;
    - Included a detailed explanation of the Proposed Pricing Methodology including, where appropriate, worked examples; and
    - Included a description of the differences between the Pricing Methodology applied during the current regulatory control period and the Proposed Pricing Methodology.

Of the three TNSPs in this category:

- ElectraNet and VENCorp elected to be subject to the Final Pricing Methodology Guidelines instead of the agreed interim requirements; and
- SP AusNet elected to be subject to the agreed interim requirements.

[2] Taken from AER "Agreed Interim Requirements for Relevant Providers Pursuant to Rule 11.8 of the NER", February 2007, page 1 – Explanatory Statement

3.2 Users of Transmission Pricing Information in the NEM and Western Australia

The direct users of transmission services (from which TNSPs earn their revenue) fall into three categories:

- Generators, which pay connection charges and entry and exit charges (not TUOS) in the NEM, and in Western Australia pay all four types of charges;

- Direct connected customers, which are connected to the transmission network and who generally deal through retailers for supply (who in turn pass-through transmission charges to the customers); and

- DNSPs, which supply customers connected to their network.

Generators and direct connected customers both pay transmission charges for supply at the connection point at which they take supply. They are therefore users of the pricing information that TNSPs provide on their websites, in particular, Pricing Methodologies. There are very few of these types of customers, as noted by the MCE Network Policy Working Group[3] when it stated that:

> *Transmission service providers have relatively few customers (up to five distributors and a small number of direct-connected customers e.g. aluminium smelters) and fewer connection points (transmission node interfaces – TNIs) than distribution service providers. Distributors have many customers and many connection points. There are approximately 7 million national metering identifiers (NMIs) across the NEM.*

The remaining customers taking electricity supply in Australia do so from supply points within the electricity distribution system. DNSPs, like direct connected customers and generators, pay TNSPs for transmission services at each transmission connection point, in accordance with the TNSP's pricing schedules, and distribute electricity to customers, typically through retailers, within the distribution network. In this way, DNSPs are users of the pricing information that TNSPs develop and publish, because they pay the transmission charges and pass the costs through to customers.

The way in which DNSPs on-charge to customers (via retailers) transmission charges, however, differs from the way in which DNSPs pay TNSPs for transmission services. This is discussed in the following sub-sections.

3.2.1 Transmission and Distribution Pricing Under the Old Rules

In order for end-users to receive the pricing signals that TNSPs have constructed within their prices, they would need to be charged these prices. This is not always the case.

[3] NPWG Paper "Policy Position on the Pricing of Electricity Distribution Services", page 2

While it did not require that distribution connected customers be charged the transmission prices at their connection points, the Old Chapter 6 did link transmission charges and distribution charges for large customers.

Clause 6.10.2 of the old Chapter 6 set out "Objectives of the distribution service pricing regulatory regime to be administered by the Jurisdictional Regulators". In particular, subsection 6.10.2(4) stated that:

> *The distribution service pricing regulatory regime to be administered under Part D of this Chapter must seek to*[4]*…..provide for the recovery by Distribution Network Service Providers of Customer TUOS usage charges from those Distribution Customers that have a metering installation capable of capturing relevant transmission system and distribution system usage data, in a way that preserves the location and time signals of the Customer TUOS usage prices.*

Clause 6.18A of the Old Chapter 6 further stated that:

> *A Distribution Customer:*
>
> *(1) with a load of greater than 10MW or 40GWh per annum; or*
>
> *(2) which has metering equipment which is capable of capturing relevant transmission and distribution system usage data,*
>
> *may request a Distribution Network Service Provider to whose network the Distribution Customer is connected (a "TUOS/DUOS disclosure request") to provide the Distribution Customer with a statement identifying the separate components of the transmission use of system and distribution use of system charges which the Distribution Customer has been charged for electricity supplied to its connection points (a "TUOS/DUOS disclosure statement").*

These requirements led to DNSPs establishing separate tariff classes for customers using greater than 10MW or 40GWh per annum where transmission charges were passed through either unaltered[5] or slightly altered[6]. For the remaining customers using less than these amounts, transmission charges were charged on a non-locational basis, often averaged between all customers or between types of customers. For example:

- ETSA's 2008/09 prices allow explicitly for the pass-through of TNSP charges by connection point;

[4] This quotation pulls together the header sentence and subsection (4) into one sentence.

[5] See Energex Network Pricing Principles Statement 2008/09, Table 1 in section 8, which notes that ICC customers (using more than 40GWh per annum) are charged individually calculated TUOS prices based on demand electricity at connection points. See also ETSA "Proposed Tariffs for 2008/09", page 5, which notes that individual TUOS prices are established for customers using more than 40GWh per annum.

[6] See Ergon Energy "Pricing Principles" document issued in 2008. Section 5.7.1 which notes that all customers above 4 GWh per annum are charged for TUOS on the basis on an average of 4 connection points, not on their individual connection points.

- Ergon Energy's Pricing Principles provides that it uses a weighted average methodology for four locations so that all customers who are to be supplied via the meshed distribution network from more than one connection point have their TUOS price calculated on the same weighted average TUOS rates;

- Energex's Pricing Principles provides that TUOS charges are passed through based on the TNSP's prices;

- EnergyAustralia's 2008/09 Annual Prices Report notes that TUOS charges are directly reflected in the prices for these customers;

- It is not clear from publicly available information how Citipower charges its very large customers for TUOS;

- It is not clear from publicly available information how Integral Energy charges its very large customers for TUOS charges;

- SP AusNet does not pass TUOS charges to large customers – instead, it has its own TUOS tariffs;

- Aurora Energy passes through TUOS charges to large customers; and

- Country Energy notes that it may, at its discretion, categorise a customer as a cost reflective network pricing customer and allow TUOS pass-through.

3.2.2 Transmission and Distribution Pricing Under the New Rules

The previous requirements to link TUOS and DUOS pricing for large customers are not present either in the new Chapter 6A of the NER for transmission or in the new Chapter 6 of the NER for distribution, nor have any new requirements been established which might link prices at the transmission and distribution level.

All DNSPs currently set prices under the Old Chapter 6 with the exception of the NSW DNSPs which had Pricing Proposals approved by the AER in June 2009. . In the future, in particular, DNSPs will all (with the exception of Western Power) be regulated under Chapter 6 and clause 6.18 of the NER.

Clause 6.18.2 of the NER requires that

> *A DNSP must submit to the AER, as soon as practicable, and in any case within 15 business days, after publication of the distribution determination, a Pricing Proposal for the first regulatory year of the regulatory control period, and submit to the AER, at least 2 months before the commencement of the second and each subsequent regulatory year of the regulatory control period, a further pricing proposal (an "annual pricing proposal') for the relevant regulatory year.*

With the exception of the NSW DNSPs, the AER has not received any Pricing Proposals as it has not yet made its first final Distribution Determinations.

The provisions of 6.18 do not appear to require a pass-through of TUOS charges nor do they contain the previous requirements of the Old Chapter 6 to provide

information on transmission charges to large customers. There are two explicit requirements relating to TUOS.

The first in clause 6.18.7 which provides that:

> *(a) A pricing proposal must provide for tariffs designed to pass on to customers the charges to be incurred by the Distribution Network Service Provider for transmission use of system services;*
>
> *(b) The amount to be passed on to customers for a particular regulatory year must not exceed the estimated amount of the transmission use of system charges for the relevant regulatory year adjusted for over or under recovery in the previous regulatory year;*
>
> *(c) The extent of the over or under recovery is the difference between:*
>
> 1. *The amount actually paid by the Distribution Network Service Provider by way of transmission use of system charges in the previous regulatory year; and*
>
> 2. *The amount passed on to customers by way of transmission use of system charges by the Distribution Network Service Provider in the previous regulatory year.*

The second is in clause 6.20.1(d) of Chapter 6 which requires that DNSPs must

> 1. *calculate transmission service charges and distribution service charges for all connection points in their distribution network; and*
>
> 2. *pay to Transmission Network Service Providers the transmission service charges incurred in respect of use of a transmission network at each connection point on the relevant transmission network.*

The AER has not made clear how it intends to interpret these requirements, in particular those in 6.20.1(d). It is noted, however, that 6.20.1(d) requires only that charges be calculated for each connection point – not charged on that basis.

It therefore appears that there is no current requirement that large distribution connected customers be charged on the basis of transmission prices or continue to provide information identifying the separate components of TUOS and DUOS charges.

This means that, currently, locational transmission pricing is provided to very large customers but is not provided to the majority of customers, and in the future when the new Chapter 6 applies to all DNSPs, even the largest customers may not be charged on a locational basis.

4 Existing Transmission Pricing Arrangements and AER Pricing Regulation

4.1 Existing Transmission Pricing Arrangements

Attachment 1 provides a step by step summary of the methodologies applied by TNSPs across Australia to allocate their AARRs determined by the AER to transmission prices. Attachment 1 makes clear that:

- Some TNSPs use a "jurisdictional co-ordinating network service provider" to allocate their AARR, in accordance with the requirements of Chapter 6A of the NER. In NSW, TransGrid undertakes this role for Directlink and for EnergyAustralia, in South Australia ElectraNet undertakes this role for Murraylink (for the South Australian portion of that asset), and in Victoria VENCorp undertakes this role for SP Ausnet and for the Victorian portion of Murraylink. The "co-ordinating network service provider" is responsible under 6A.29.1 for including the respective AARRs for all TNSPs in the co-ordinating network service provider's prices and for collecting the consequent revenue and returning it to the TNSPs. The "appointing provider" is not required to address the pricing principles because clause 6A.29.1(d) provides that "an appointing provider is not required to address the matters specified in clause 6A.24.1(c)(1) when preparing its pricing methodology". Rather, it is required under clause 6A.29.1(f) to replicate the allocation of the AARR provided for by the co-ordinating network service provider. This means that while a TNSP may have a Pricing Methodology, it may not itself undertake the calculations described in the Pricing Methodology – rather these calculations are undertaken for them by the co-ordinating network service provider;

- For those TNSPs which are subject to Part J of Chapter 6A and the AER's Pricing Methodology Guidelines, there are few differences between the pricing methodologies adopted. The main differences relate to areas where the AER's Pricing Methodology Guidelines provides flexibility – most notably in:

    - The calculation of the locational component of prescribed TUOS services. Section 2.2(c) of the AER's Pricing Methodology Guidelines provides two permitted measures that may be used to convert the lump sum dollar amounts at each connection point into prices. Transend and ElectraNet (including Murraylink SA) use contract agreed maximum demand, and it is not clear from publicly available information what TransGrid (and therefore EnergyAustralia and DirectLink) use; and

    - The use of modified Cost Reflective Network Pricing (CRNP) and un-modified CRNP. Transend and ElectraNet (and therefore Murraylink SA) use modified CRNP while TransGrid (and therefore EnergyAustralia and Directlink), and VENCorp (and therefore SP Ausnet and Murraylink Vic) use un-modified CRNP. The public information does not make clear which method is used by Powerlink; and

- Western Power uses a modified CRNP approach using the same software (TPrice) as that used by the NEM TNSPs.

4.2 Regulation of Transmission Pricing

The AER's regulation of transmission prices is set out in the NER.

Section 34(3)(e) of the National Electricity Law (NEL) enables the AEMC to confer a function on the AER to make guidelines. Chapter 6A of the NER requires the AER to make a number of guidelines, including Pricing Methodology Guidelines.

Clause 6A.25.1 of the NER provides that:

> *(a) The AER must, in accordance with the transmission consultation procedures, make guidelines (the pricing methodology guidelines) relating to the preparation by a Transmission Network Service Provider of a proposed pricing methodology.*
>
> *(b) The pricing methodology guidelines:*
>
> *(1) must give effect to, and be consistent with, the Pricing Principles for Prescribed Transmission Services;*
>
> *(2) may be amended or replaced by the AER from time to time in accordance with the transmission consultation procedures; and*
>
> *(3) must be published by the AER.*
>
> *(c) The AER must develop and publish the first pricing methodology guidelines by 31 October 2007 and there must be pricing methodology guidelines in force at all times after that date.*

Clause 6A.25.2 of the NER details the required contents of the Pricing Methodology Guidelines. This clause provides that:

> *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 signalling 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.

While detailing specific matters that the AER must address in the Guidelines, Chapter 6A does not provide a general discussion of the role of the Guidelines and the way in which they should be applied by the AER.

Once a Pricing Methodology has been submitted by a TNSP and approved by the AER through the revenue proposal approval process, the AER is then responsible for annual monitoring. Clause 6A.17.1(d) of the NER provides that:

The certified annual statements and additional information provided by a Transmission Network Service Provider to the AER under this rule 6A.17 may be used by the AER only for the following purposes:

(1) to monitor, report on and enforce the compliance of the provider with the total revenue cap for the provider for a regulatory control period, the maximum allowed revenue for the provider for each regulatory year, and any requirements that are imposed on the provider under a transmission determination.

Clause 6A.2.2(4) of the NER provides that a Transmission Determination includes "a determination that specifies the Pricing Methodology that applies to the provider".

These provisions suggest that there are two aspects of transmission pricing regulation by the AER, being:

- To ensure that each TNSP's Pricing Methodology meets the Pricing Methodology Guidelines when a Revenue Proposal is submitted; and

- To monitor, report on and enforce a TNSP's compliance with its Pricing Methodology in accordance with Clause 6A.2.2(4) of the NER.

It is important to note that the above only applies to TNSPs, which have a Pricing Methodology which has been approved by the AER. For those TNSPs that are not subject to Part J of Chapter 6A, the AER has no explicit involvement in annual price setting. Importantly, clause 6.2.5 of the Old Chapter 6 does not require a TNSP to

provide information on pricing to the AER as part of the Annual Financial Statement process.

In Western Australia, the ERA annually reviews the compliance of network prices with the price control and pricing methods in the approved Access Arrangement.[7]

Clause 3.10 of the Access Arrangement requires Western Power to submit to the ERA a proposed price list, together with price list information at least 45 business days before the start of each pricing year (except for the first pricing year). Clause 8.2 of the Western Australian Network Access Code states that:

> *If the Authority considers that a service provider's proposed price list complies with:*
>
> - *The price control in the service provider's access arrangement; and*
> - *The pricing methods in the service provider's access arrangement,*
>
> *then the Authority must:*
>
> - *Approve and publish the service provider's proposed price list which has effect from a date specified by the Authority; and*
> - *Publish the service provider's price list information.*

[7] See http://www.era.wa.gov.au/cproot/6565/2/20080509%20Determination%20on%20the%20Proposed%202008-09%20Price%20List%20for%20the%20South%20West%20Interconnected%20Network.pdf

5 Review and Consultation

As discussed in section 2.3of this Report, stakeholder consultations were held in order to clarify the views of TNSPs and user groups in relation to the availability and transparency of transmission pricing information. The issues raised in these consultations are set out in this section.

Attachment 1 highlights the differences in the transparency and accessibility of pricing arrangements between TNSPs, which appear to be consequent to the regulatory requirements on each TNSP.

Prior to the consultation phase, we conducted a review of the transparency and accessibility of transmission pricing information based on criteria agreed with the AEMC. The review found that:

- The information published by ElectraNet, VENCorp, TransGrid, Transend, and EnergyAustralia under Part J of Chapter 6A of the NER and consistent with the AER's Pricing Methodology Guidelines, is very detailed. We consider that it is possible for an interested party to obtain a reasonable understanding of the transmission cost allocation and pricing arrangements from these documents;

- The information published by SP AusNet under the agreed interim requirements is less detailed but also provides sufficient information for interested parties to understand how the agreed interim requirements have been met;

- The information published by Directlink, Murraylink and Powerlink under the old Chapter 6 is not sufficient for an interested party to clearly understand how prices have been developed:

    - In the case of Directlink and Murraylink, the 'lay' user may not be aware of the role of Co-ordinating Network Service Providers and would therefore not be aware of where to find information on pricing for these TNSPs; and

    - In Powerlink's case, we consider that an educated reader could not form a reasonable understanding of the transmission cost allocation and pricing arrangements that underpin Powerlink's published prices, if the reader only had access to the information contained in the published Information Sheet. Powerlink's Information Sheet contains 6 sections, being (1) Introduction, (2) Allocation of Charges to Transmission Service, (3) Transmission Service Prices, (4) Billing, (5) Metering, and (6) Additional Information. Importantly, section (2) does not explain how costs are allocated or prices derived. In coming to this finding, we understand that Powerlink does meet with users to discuss and explain the basis of charges on request.

- The information published by Western Power in its Price List Information provides a large amount of information for users. We consider that it would be possible for an interested party to obtain a reasonable understanding of transmission cost allocation and pricing arrangements from these documents.

5.1 Views of User Groups

User groups which made several points during the course of consultations in relation to the complexity of the transmission pricing regime and the way in which incentives were structured, specifically that:

- There is a low understanding of the regulatory regime for transmission services generally among major users across Australia. Most major users are focussed on transmission services as part of a bundled electricity supply service, which is only one part of many business costs, and contract through retailers for their supply;

- There is not a clear understanding of the regulatory regime under which TNSPs are regulated or how and what pricing information TNSPs are required to provide to users. The user groups felt that even if information was to be available to major users, it is unlikely that they would be able to readily understand it given the complex and varying nature of the regime;

- A small number of major users actually pay transmission charges as calculated by the TNSP. As noted in section 3.2, almost all large users take supply through the distribution system with DNSPs charging (for customers using less than 40GWh per annum) on the basis of combined transmission and distribution services which removes any locational signals from within the transmission prices; and

- There are no clear avenues for distribution connected customers to query the basis of their transmission charges once these are passed on by the distributor and retailer. User groups advised that to query their retail bills, which comprise wholesale, networks and retail components, they must first contact the retailer which may in turn refer them to the DNSP in the case of network pricing. User groups perceive that the retailers that they contract through to receive supply, do not have a clear understanding of the way in which transmission services are allocated and priced, and further that retailers have little incentive to learn given that such charges are a pass-through. User groups also stated that they consider there to be little incentive in the retail sector to seek to minimise these charges because they are simply passed through to users.

In relation to transparency and accessibility, User Groups confined their comments to direct connected customers which pay transmission charges based on prices published by TNSPs. The User Groups stated that:

- Information provided by TNSPs which are regulated under the AER's Pricing Methodology Guidelines is more informative than by those TNSPs that are not. They had a strong view that the only way to fully understand the basis of transmission pricing was to spend considerable periods of time with the TNSPs concerned;

- There appeared to be a low degree of involvement from the AER in the mechanics of transmission pricing other than to approve the Proposed Pricing Methodologies. In particular, Users Groups felt that there was a greater role that the AER could assume in approving transmission pricing annually and that they did not believe that the AER had audited the TPrice Model or any of

the pricing models used by the TNSPs for compliance. They expressed a view that Users would feel more comfortable with greater AER involvement given the complexity of the issues inherent in transmission pricing; and

- Pricing arrangements for Murraylink and Directlink were non-transparent and should be made more available to users.

5.2 Views of TNSPs

In relation to transparency and accessibility, TNSPs stated that:

- All TNSPs have a great deal of contact with direct connected customers, but little contact with customers that are connected via the distribution system;

- "Roadshows" and "one on one" meetings are conducted with direct connected customers who wish to gain more information about the basis of transmission pricing than is otherwise publicly available;

- TNSPs provide annual notices to direct connected customers (including DNSPs and generators) which provide information about the forthcoming year's transmission prices, and make themselves available to discuss or explain these;

- Contact from retailers on behalf of users querying transmission charges is rare; and

- DNSPs generally have sufficient knowledge about network pricing not to require further information from the TNSPs.

6 Issues and Options: Improving the Transparency and Accessibility of Arrangements

6.1 Issues in the Transparency and Accessibility of Transmission Pricing

6.1.1 Transmission Direct Connected Customers

There are a small number of customers directly connected to the transmission system across Australia. These customers are supplied via a retailer and pay separate charges comprising wholesale energy, transmission charges and retail charges (including margins). They do not pay distribution tariffs because they do not use the distribution system in order to take supply.

These customers pay the specific transmission charges for connection points at which they take supply. They are therefore users of the transmission pricing information that is provided by TNSPs.

Customers Taking Supply from TNSPs Regulated Under Part J of Chapter 6A

On the basis of our review and consultations, there does not appear to be any material issues with the transparency of transmission pricing for TNSPs which are subject to Part J of Chapter 6A and the agreed interim requirements under the NER, and in Western Australia under the Access Code. The pricing information contained within the various approved documents meets regulatory requirements and provides a reasonable level of detail about the basis of revenue allocation and price formulation for educated users and potential users.

Moreover, the consultation suggests that in the event that this information does not provide a sufficient level of information for users, TNSPs meet with users and potential users to work through issues of detail.

We also understand that TNSPs provide annual information to direct connected users in relation to changes in transmission prices for the forthcoming year and conduct “roadshows” to users to assist in explaining these prices to them. This information is not provided to potential users.

There do not appear therefore to be any material issues with the transparency of transmission pricing arrangements for these TNSPs.

Customers Taking Supply from TNSPs Regulated Under Chapter 6

On the basis of our review and consultations, there appears to be issues with the transmission pricing transparency for users supplied by TNSPs not subject to Part J of Chapter 6A. Specifically:

- Powerlink provides considerably less information to users and potential users on their website than is found in the Pricing Methodologies in other jurisdictions. We understand from consultations that this absence of information likely makes it difficult for users and potential users to understand the basis of their transmission charges; and

- Murraylink and Directlink do not provide any information by which users and potential users could understand the basis of the transmission charges for services by these entities that are paid by other TNSPs and passed to users. We understand from consultations that this absence of information makes it difficult for users and potential users to understand how charges from these TNSPs are allocated to parts of the network and passed on to users.

Our consultation suggests that in the event that this information does not provide a sufficient level of understanding for users or potential users, TNSPs meet with users to work through issues of detail (with co-ordinating TNSPs meeting on behalf of Directlink and Murraylink to clarify issues of detail in relation to charges from those entities). User groups did note, however, that this took considerable effort and that more publicly available information would avoid the need for some of these meetings.

On balance, the review indicates that there are issues with the transparency of transmission pricing arrangements for these TNSPs. These issues are caused by the differences between the Old Chapter 6 and the new Chapter 6A, in particular that the Old Chapter 6 does not require TNSPs to publish a Pricing Methodology document for the information of users and potential users that is equivalent to that required under Part J of Chapter 6A.

6.1.2 Distribution Connected Customers with a load of more than 40 GWh per annum or 10 MW

These customers are supplied via the distribution system and pay separate charges comprising wholesale energy, transmission charges, distribution charges and retail charges (including margins).

As noted in section 3.2 of this Report, some DNSPs allow for large customers to be charged on the basis of the TUOS prices that apply at their connection points. Where this occurs, these customers are users of the transmission pricing information provided by TNSPs, and therefore that these customers:

- Can access the transmission pricing information set out in the various Pricing Methodology documents; and

- May access the information voluntarily provided by TNSPs not regulated under Part J of the NER.

During our consultations, user groups noted that these large customers are not consulted by TNSPs each year in relation to transmission price movements nor do they generally seek to hold discussions with TNSPs about transmission prices. TNSPs also stated that they rarely had any contact with customers supplied from the distribution system, or with retailers.

The user groups also indicated that they regularly meet with TNSPs to discuss the basis of transmission charges on behalf of these types of customers, where existing information was not sufficient to understand prices. User groups did note, however, that this took considerable effort and that more publicly available information would avoid the need for some of these meetings.

The only difference between direct connected customers and large distribution connected customers appears to be the intermediary role played by DNSPs in the case of the latter. There are two issues in relation to this:

- Firstly, while most DNSPs pass TUOS charges through to large users, it appears that not all DNSPs do so and neither the Old Chapter 6 nor the new Chapter 6 require that this occur. This means that there does not appear to be any compulsion for DNSPs to ensure that the basis on which TUOS charges are levied on users is the same as the basis on which the TNSPs have constructed the charges; and

- Secondly, the current Chapter 6 which applies to distribution pricing contains fewer requirements than the Old Chapter 6. There does not appear to be any requirements on DNSPs to provide information to users in relation to transmission pricing similar to that which existed in the Old Chapter 6.

On balance, it could be argued that once DNSPs cease being regulated under the Old Chapter 6 and commence being regulated under the new Chapter 6, it is likely that the pass-through of TUOS will become increasingly optional for DNSPs and may therefore become less prevalent over time. This issue, whilst important, is beyond the scope of this Report.

Overall, the review for large distribution connected customers indicates that while there is an issue with transparency, this is beyond the power of the transmission sector to influence. For users and potential users supplied by DNSPs that do not pass through TUOS charges for large customers, the information published by TNSPs is not relevant. It does not appear that DNSPs are required to pass these charges through to users under Chapter 6 of the NER.

6.1.3 Other Distribution Connected Customers

These customers are supplied from the distribution system and pay charges made up of wholesale energy costs, transmission charges, distribution charges and retail margins. In some cases, such as where standard offer retail tariffs are in effect, customers pay bundled tariffs which further blur the separation between individual components of charges.

Customers with a load of less than 40 GWh per annum or 10 MW do not pay transmission charges at the connection points at which they take supply. Instead, these charges are paid by DNSPs and transmission charges are “re-packaged” by the DNSP which recoups the total amount chargeable in line with jurisdictional pricing requirements and principles. While these DNSP pricing principles do contain economic signals, for example between large and small customers and across different categories of users, they are not the same signals that were established by the TNSP. This means that these customers are not users of the transmission pricing information provided by TNSPs, and therefore the transparency of this information is of no current relevance to them.

There is therefore a material issue with the transparency of transmission pricing information to this customer segment, although it should be noted that this lack of transparency does not relate in any way to the extent of information provided by TNSPs. It is related to the way in which Chapter 6 applies to DNSPs.

6.2 Options for Improving Transparency

Item (4) of the Terms of Reference detailed in Section 2.3 of this Report requires proposing options for improving the transparency and accessibility of transmission charging arrangements.

A number of issues impacting the transparency and accessibility of these arrangements are beyond the scope of this review, including:

- The basis of transmission pricing – this is set out in the Pricing Principles, in Chapter 6A of the NER, through the operation of the AER's Pricing Methodology Guideline and through the approval processes for the Proposed Pricing Methodologies;

- The way in which transmission and distribution pricing work together within an environment of price bundling at the distribution and retail level. This reflects the way in which Chapter 6A and Chapter 6 (which covers distribution pricing) work cohesively together; and

- The way in which the AER interprets its requirements under the NER and establishes the Pricing Methodology Guidelines.

The scope of this Report is limited to the identification of options for improving the transparency and accessibility of transmission pricing. It is noted that as no problems were considered material for transmission pricing in Western Australia, no options have been included for that jurisdiction. All other issues are covered in the following sub-sections.

6.2.1 Transmission Direct Connected Customers

The review identified that there is an issue with the transparency of information provided by those TNSPs regulated under the old Chapter 6 of the NER. These TNSPs are not required to publish a Pricing Methodology document.

We note at the outset that the Terms of Reference for this Report did not include establishing detailed Rule changes that could accompany identification of issues relating to transparency. The below are high level options for the AEMC's consideration that will require detailed consideration and industry consultation prior to being taken further.

According to User Groups, the information provided by those TNSPs regulated under the old Chapter 6 of the NER is insufficiently transparent to enable users to form an understanding of the basis of their transmission charges, when compared to TNSPs regulated under Part J of Chapter 6A. This may not, however, require the application of Part J to these TNSPs – it may be sufficient that more information to be provided by TNSPs on the current pricing methods.

Such an option might be pursued by altering the requirements for annual information to be submitted to the AER, in order to include a demonstration of the way in which transmission prices had been constructed to meet the requirements of the Old Chapter 6 of the NER.

6.2.2 Distribution Connected Customers with a load of more than 40 GWh per annum or 10 MW

Our review identified that there are material issues with the transparency of current transmission pricing arrangements:

- For those customers (and potential customers to be) supplied by DNSPs which do not pass through TUOS charges for large customers, because these customers are not able to use the information published by TNSPs in relation to transmission pricing; and

- For those customers (and potential customers to be) supplied by DNSPs which pass through TUOS charges for large customers, but where the DNSP is supplied by a TNSP which is not subject to Part J of the NER, because these customers do not have access to the transmission pricing methodologies by which they could better understand their transmission charges.

We note that while these distribution pricing issues are barely within the scope of this Report, they are relevant to the extent that distribution pricing practices are limiting transmission pricing signals and thus removing the relevance of transmission pricing information to distribution connected customers.

The second issue has been addressed in the previous sub-section of this Report. There are several possible options for resolving the first issue, all of which involve significant changes to the way in which DNSPs construct and levy their prices and all of which would likely involve price shocks for individual customers within the distribution system, being:

- To introduce a requirement in Chapter 6 for DNSPs to pass-through transmission prices for large customers, or alternatively to align Chapter 6A and Chapter 6 of the NER, such that DNSPs are required to charge TUOS to large customers on the same basis as they themselves are charged. This would involve significant administrative costs for DNSPs which do not already charge on this basis and it is unknown what the impact on individual customer or geographical tariff segments might be; or

- To re-introduce the requirement in the old Chapter 6 of the NER which required that DNSPs provide information to customers with a load of more than 40 GWh per annum or 10 MW about the way in which transmission prices have been passed through. This is a less administratively burdensome option than the option detailed above and would avoid the need for tariff changes.

6.2.3 Other Distribution Connected Customers

The review identified that there is an issue with the transparency of transmission pricing information to this customer segment, although it should be noted that this lack of transparency does not relate in any way to the extent of information provided by TNSPs. It relates to the way in which DNSPs re-price transmission services for on-supply to this market, specifically that:

- The vast majority of customers are not charged prices that reflect the costs of supply at their transmission connection points. DNSPs (and also retailers) subsume transmission costs when they construct their tariffs and sell their services as part of a bundled service to small users; and therefore

- The transparency of transmission pricing arrangements is currently irrelevant for the vast proportion of customers because they are not charged on this basis.

There are several issues to be considered:

- Firstly, whether the transmission component of energy bills is sufficiently material for customers with a load of less than 40 GWh per annum or 10MW to take an interest in the basis of these charges; and

- Secondly, whether these customers should or could be considered together as one group. There is a significant difference between a small business customer using 20MWh per annum and a very large industrial customer using 40GWh per annum.

On the first issue, it is likely that the majority of customers are unaware of the proportion of transmission charges in their overall energy bill. This may not, however, reflect a lack of interest in these matters but could reflect the complexity involved in obtaining the information necessary to develop an understanding. As an example:

1. A residential customer using 10 MWh per annum in Brisbane, Queensland might pay the retailer Tariff 11 standard offer rate of 16.291 cents per KWh (GST inclusive) and service fee of $6.259 per month.[8] This would provide a total bill of $1,704.20 per annum;

2. The transmission component of this is not clear from the retail tariff schedule, hence the customer would need to (a) understand which DNSP services their particular area, (b) understand that transmission charges are re-packaged by the DNSP and therefore that the transmission prices as published by the TNSP did not apply to them and that these are instead found in the DNSP's network tariff schedule and (c) access the network tariff schedule published by that DNSP; and

3. The customer would then need to investigate which distribution tariff it pays. Using the above example, the network tariff schedule applicable in Brisbane is supplied by ENERGEX. Its 2008/09 tariff schedule notes that there are three definitions of "user groups", from which the customer could deduce that it is a Standard Asset Customer[9], and within this, that it is a "non-demand metered customer – domestic". ENERGEX provides separate TUOS and DUOS prices for domestic customers, although the TUOS prices are re-priced versions of the TNSP prices. The re-priced TUOS price comprises a service availability charge of $0.0396 per day and $0.01042 / KWh for energy usage[10]. The

[8] Tariff information available at http://www.energy.qld.gov.au/zone_files/Electricity/tariff_may_08.pdf

[9] Tariff grouping information and tariffs available at http://www.energex.com.au/network/network_prices/pdf/Network_Pricing_Schedule_2008_09_rev_29052008.pdf

[10] Inclusive of GST

customer could deduce that this comprised a total TUOS payment of $118.65 per annum. The total TUOS proportion of the bill is therefore 7.0%.

It is also very difficult (and ultimately meaningless) for the customer to re-calculate their "actual" transmission charge from the TNSP's website and then to understand the difference between the "real" transmission price and the "re-priced" transmission price. In the case of the above example, the user would need to access Powerlink's tariff information, deduce which connection point they were being charged from, assume their kW load, and do the calculations themselves.[11]

On the second issue, there is a very large range of customers under the 40GWh per annum or 10MW level, ranging from residential customers using 10MWh per annum to hotels and hospitals using 20GWh per annum, to large industrial facilities with a load near 40 GWh per annum or 10 MW. It is very likely that these larger customers would value information on the basis of transmission prices in order to query these prices from time to time.

Prior to establishing options for increasing the transparency of transmission pricing for this sub-set of customers, it is necessary to establish the importance of transparency and signalling for different sizes of customers. Once this has been established, future options may include aligning the distribution pricing parts of Chapter 6 and the transmission pricing parts of Chapter 6A of the NER such that many of the signals can be preserved for larger customers under this sub-set of customers, and requiring changes to the information requirements upon DNSPs to allow large customers to choose to pay their "real", rather than "re-priced" TUOS.

[11] Using the Rocklea connection point as an example, the total transmission charge for that customer would be $111 per annum, compared to $118 for the "re-priced" TUOS. to large industrial facilities with a load near 40 GWh per annum or 10 MW

Attachment 1: Review of Australian Transmission Use of System Price Setting Processes

This document contains two Parts:

- Part 1 (immediately below) sets out the processes under Part J of Chapter 6A of the NER for the establishment of transmission prices; and
- Part 2 contains the processes used by various Australian TNSPs under Part J. Any differences between the processes used by the TNSPs are identified.

Part 1

Part J of Chapter 6A of the NER is prescriptive about the approach that TNSPs must take to develop prices for each of the following prescribed transmission services:

- Entry services;
- Exit services;
- Prescribed TUOS services – locational;
- Prescribed TUOS services – non-locational; and
- Prescribed common transmission services.

In addition, the AER's Pricing Methodology Guidelines provide clarification of the Part J requirements in relation to the preparation of a TNSP's pricing methodology to be submitted to the AER.[12]

In summary, prices for the various types of prescribed transmission services are determined by:

1. Calculating the Annual Aggregate Revenue Requirement (AARR) the TNSP is permitted to recover for a financial year;
2. Apportioning the AARR to each category of prescribed transmission service to determine the Annual Service Revenue Requirement (ASRR);
3. Allocating the ASRR to individual connection points; and
4. Calculating prices for each category of prescribed transmission service.

Each of these steps are discussed below:

Step 1 - Deriving the AARR from the Maximum Allowed Revenue

A TNSP's Maximum Allowed Revenue (MAR) is set out in the TNSP's revenue determination.

The AARR is derived from the MAR by:

- Adjusting the MAR for any:
  - Re-opening of capex (clause 6A.7.1);
  - Network support pass through (clause 6A.7.2);
  - Cost pass through (clause 6A.7.3);
  - Service target performance incentive scheme amounts (clause 6A.7.4);

12 http://www.aer.gov.au/content/item.phtml?itemId=715796&nodeId=b11ecbd3be7e8f964d23910a6933bcec&fn=Final%20decision%20-%20Pricing%20methodology%20guidelines.pdf and http://www.aer.gov.au/content/item.phtml?itemId=715796&nodeId=47b8649831846c6f8fb1d7e767dbdbf7&fn=Appendix%20C%20-%20Pricing%20methodology%20guidelines.pdf

- Contingent projects (clause 6A.8); and
- Revocation / amendment for errors (clause 6A.15).

- Subtracting opex relating to prescribed common transmission services (clause 6A.22.1). (Clause 6A.23.3(f) of the NER requires that these costs be recovered through prices (without the allocations)).

Once Step 1 is complete, the TNSP has obtained the AARR which will be recovered from the sale of prescribed services.

Step 2 - Allocating the AARR to services to determine ASRRs

The ASRR is the portion of the AARR that is allocated to each category of prescribed transmission services – prescribed entry and exit services, prescribed common transmission services and prescribed TUOS services (locational and non-locational). It is the amount that can be recovered from each service.

Clause 6A.23.2 of the NER requires that:

- The AARR must be allocated to get ASRRs for each prescribed transmission service;
- The AARR must be allocated to services in accordance with the "attributable cost share" for each service. The attributable cost share reflects the ratio of costs of transmission system assets directly attributable to service to total cost of all system assets, where the assets are valued using optimised replacement cost (ORC) or equivalent; and
- That every portion of AARR must be allocated to a service, but only once.

Section 2.4 of the AER's Pricing Methodology Guideline sets out the assets that are directly attributable to each category of prescribed transmission services.

For costs that are not directly attributable to a single prescribed transmission service, the AARR is to be allocated by the TNSP on a priority basis by:
- Allocating costs to prescribed TUOS services up to a stand-alone amount for that service;
- Allocating residual costs to prescribed common transmission services up to a stand-alone amount for that service; and
- Allocating any other residual costs to entry and exit services.

Any such allocations are subject to the cost allocation arrangements and associated asset and service definitions set out in the transitional provisions under clause 11.6.11 of the NER.

Once Step 2 is complete, the TNSP has the ASRRs for each prescribed transmission service type which provide the amounts to be recovered from each service.

Step 3 - Allocating ASRRs for each service to each connection point

Step 3 involves allocating the ASRR for prescribed entry services, prescribed exit services and the locational component of prescribed TUOS services to individual connection points. This is important because the transmission prices are published

by connection points for the NEM TNSPs (there is a different approach in Western Australia and the Northern Territory).

As noted earlier, there are five services for which prices must be calculated at each connection point. These are:

- Entry services;
- Exit services;
- Prescribed TUOS services – locational;
- Prescribed TUOS services – non-locational; and
- Prescribed common transmission services.

The purpose of Step 3 is therefore to obtain the total amount to be recovered for each service at each connection point – but not to set the price (which is done in Step 4). Clause 6A.23.3 of the NER requires that "A TNSP must allocate the ASRR for each service to connection points using the "attributable connection point cost share".

For Entry and Exit services, the TNSP allocates the ASRR for prescribed entry and exit services to a connection point using the "attributable connection point cost share" reflecting the ratio of costs of assets directly attributable to the (entry or exit) service at the connection point to total cost of all system assets directly attributable to that service.

For Prescribed TUOS services, the TNSP derives locational and non-locational components, and then allocates these between connection points in accordance with clause 6A.23.3 of the NER which provides that:

- 50 per cent of the ASRR for prescribed TUOS services is to be allocated initially to each of the locational and non-locational components unless different allocation shares can be justified (clause 6A.23.3(d)). The TNSP may adjust the locational component for estimated auction amounts (clause 6A.23.3(c)(1));
- The locational component is to then be allocated to connection points by using either a cost reflective network pricing (CRNP) methodology or a modified CRNP methodology (clause 6A.23.3(c)(1));
- The remainder of the ASRR (the pre-adjusted non-locational component) is to be adjusted according to clause 6A.23.3(2) of the NER; and
- The adjusted non-locational component is to be recovered on a postage stamp basis as per clause 6A.23.4 of the NER (i.e. not allocated to connection points).

For prescribed common transmission services, the ASRR and relevant opex is to be recovered from customers and connection points on a postage stamp basis (clause 6A.23.4(d)). As per clause 6A.23.3(f) of the NER, the ASRR for prescribed common transmission services and the operating and maintenance costs incurred in the provision of those services, are recovered through prices charged to Transmission Customer and Network Service Provider transmission network connection points. This is dealt with in Step 4.

Once Step 3 is complete, the TNSP has calculated the total amount to be recovered for each service at each connection point

Step 4 - Derive prices at each connection point

Step 4 is the final stage in the development of prices at connection point for each service.

TNSPs must develop separate prices for each service category using principles in clause 6A.23.4 which requires that:

- For entry and exit services, prices must be a fixed annual amount;
- For prescribed common transmission services, prices must be on a postage stamp basis - i.e. same price / unit regardless of usage level of location;
- For prescribed TUOS services - locational:
  - Prices must be based on demand at times of greatest utilisation of transmission network and for which network investment is likely to be contemplated
  - Constraints on annual price movements under clause 6A.23.4(f)-(i); and
- For prescribed TUOS services – non-locational: prices must be on a postage stamp basis

Part 2: Approaches to Transmission Pricing by Australian Transmission Network Service Providers

This Part contains information relation to the following TNSPs:

1. Transend Networks (Transend);
2. Transgrid;
3. EnergyAustralia;
4. ElectraNet;
5. VENCorp;
6. SP Ausnet;
7. Directlink;
8. Murraylink;
9. Powerlink Queensland;
10. Western Power

1. Transend[13]

Step	Methodology
Background	Transend is the TNSP in Tasmania.
Step 1 - Deriving the AARR from the Maximum Allowed Revenue	As per NER requirements above.
Step 2 - Allocating the AARR to services to determine ASRRs	As per the NER above, the AARR is allocated to services on the basis of "attributable cost share". That is, the ratio of costs of transmission system assets directly attributable to service to the total cost of all system assets directly attributable to the provision of prescribed transmission services. The value of assets is determined using the optimised replacement cost (ORC) from Transend's statutory financial accounts. Section 2.4 of the AER's Pricing Methodology Guidelines sets out the categories of assets that are directly attributable to each of the categories of prescribed transmission services. For costs that are not directly attributable to a single prescribed transmission service (specifically substation infrastructure and establishment costs), the AARR is allocated on a priority ordering basis as per the NER above. With respect to the priority ordering process Transend uses high voltage circuit breakers as the allocation mechanism (to determine stand-alone costs). Transend assumes that substation infrastructure and establishment costs are proportionate to the number of high voltage circuit breakers in the substation. Based on this assumption, the appropriate allocator for substation infrastructure and establishment costs for a stand-alone arrangement is the ratio of the number of high voltage circuit breakers in the stand-alone arrangement to the number of high voltage circuit breakers in the whole substation. In relation to the allocation of residual costs to entry and exit services, Transend allocates costs to individual transmission network users on the basis of a negotiated agreement between the parties involved. In the absence of such agreement, any such assets are attributed on the basis of contract agreed maximum demand and the installed generator capacity of each transmission network user.
Step 3 - Allocating ASRRs for each service to each connection point	Transend allocates the ASRR for prescribed entry services, prescribed exit services and the locational component of prescribed TUOS services to individual connection points (the ASRR for prescribed common transmission services and the adjusted non-locational component for prescribed TUOS services are not allocated through this step, but directly through Step 4).

[13] http://www.transend.com.au/files/D09-46507.PDF

	Prescribed Entry and Exit Services: Transend allocated the ASRR for prescribed entry and exit services to a connection point using the "attributable connection point cost share" as per the NER. Prescribed TUOS Services: *Locational component* As per clause 6A.23.3(d) of the NER, costs are initially shared equally between the locational and non-locational components. The locational component is then allocated to connection points by a modified cost reflective network pricing (CRNP) methodology using the TPRICE software currently used by all TNSPs. (The modification of the standard CRNP process employed by Transend is to discount the charges to be recovered from radial transmission lines by the utilisation of those lines. The modification means that existing customers are not penalised for low utilisation of radial lines and it provides potential customers with a financial incentive to locate where the utilisation rate is low. Any part of the ASRR for the locational component that is not allocated due to the application of the modified CRNP is added to the non-locational component). In order to allocate the locational component to connection points using the TPRICE software a set of load and generation data is required. Transend uses the 30 minute data for each connection point for the most recently completed financial year. *Non-locational component* Transend allocates the adjusted non-locational component directly through the pricing step (Step 4). Network support costs: Clause 5.6.2(m) of the NER permits TNSPs to implement a generation option as an alternative to network augmentation. In situations where this network support option is pursued, the TNSP must make a network support payment to the generator. Clause 6A.7.2 of the NER describes how a TNSP can recover an AER-approved network support payment.

	The network support payment is made in lieu of network augmentation, an estimate of this payment is converted to an equivalent asset replacement cost and added to the cost of the prescribed TUOS service assets being supported. This conversion is performed using the same rate of return that is used to determine the locational component of the prescribed TUOS service prices using the TPRICE software.
Step 4 - Derive prices at each connection point	Price for Entry And Exit Services As per the NER, the ASRR for prescribed entry and exit services for each individual connection point is a fixed dollar amount. This amount is recovered by a fixed dollar amount per month. Prices For Prescribed Common Transmission Services. As per clause 6A.23.3(f) of the NER, the dollar amount used to determine the prices for prescribed common transmission services includes the ASRR for prescribed common transmission services and the operating and maintenance costs expected to be incurred in the provision of prescribed common transmission services. Prices for prescribed common transmission services are set on a postage-stamp basis as per clause 6A.23.4(d) of the NER. As per Section 2.3(b) of the AER's Pricing Methodology Guidelines, Transend has elected to apply either a historical energy or contract agreed maximum demand postage stamp pricing structure. Accordingly, each financial year Transend determines the following two prices: • an energy based price (price per unit of historical metered energy or current metered energy at a connection point); and • a contract agreed maximum demand price (price per unit of contract agreed maximum demand at a connection point). Either the energy based price or the contract agreed maximum demand price applies at a connection point (except where a transmission customer has negotiated reduced charges in accordance with clause 6A.26.1 of the NER). The energy based price is calculated by: • multiplying the energy based price by the metered energy off-take at that connection point in the corresponding billing period two years earlier (that is, historical metered energy off-take); or • multiplying the energy based price by the metered energy off-take at that connection point in the same billing period (current metered energy off-take) if the historical metered energy off-take is not available; or • multiplying the energy based price by the current metered energy off-take if the historical metered energy off-take is significantly different to the current metered energy off-take.

	Under the contract agreed maximum demand method, the charge for prescribed common transmission services for each connection point is calculated by multiplying the contract agreed maximum demand price by the maximum demand for the connection point in that financial year and then dividing this amount by the number of billing periods in the financial year. A contract agreed maximum demand price must only be used for the calculation of the prescribed common transmission services charge if the Transmission Customer's connection agreement or other enforceable instrument governing the terms of connection of the Transmission Customer: • nominates a contract agreed maximum demand for the connection point; and • specifies penalties for exceeding the contract agreed maximum demand. Transend states that a customer's connection agreement will specify the process required to adjust its contract agreed maximum demand. However, any requests to reduce a customer's contract agreed maximum demand will not see any reduction during the prevailing financial year in any charges calculated using contract agreed maximum demand. Any increases in contract agreed maximum demand will be applied immediately to the calculation of relevant charges. <u>Prescribed TUOS services – Locational Component</u> The locational component allocated to a connection point is converted into prices by dividing by a relevant demand figure. Section 2.2(c) of the Pricing Methodology Guidelines outlines two permitted measures of demand that may be used to convert the lump sum dollar amounts at each connection point into prices. Transend has chosen to use prevailing contract agreed maximum demand as the measure of demand to convert the lump sum dollar amounts at each connection point into prices. During each billing period, locational charges will be determined by multiplying the locational price applicable to each connection point by the relevant contract agreed maximum demand. As per the NER, Transend applies the 2 per cent rule (outlined below) to determine the final prescribed TUOS services locational component price for each connection point. Where the annual percentage change for the price at a given connection point is more than 2 percent above the average annual price change, the locational component price for that connection point will be reduced. This reduction in price will mean that the allocated lump sum dollar amount cannot be recovered from this connection point. This deficit will be added to the non-locational component to ensure that the ASRR for prescribed TUOS services is fully recovered. Where the annual percentage change for the price at a given connection point is more than 2 percent below the average annual price

	change, the locational component price for that connection point will be increased. This increase in price will mean that more than the allocated lump sum dollar amount will be recovered from this connection point. This surplus amount will be deducted from the non-locational component to ensure that the ASRR for prescribed TUOS services is fully recovered. Prescribed TUOS Services – Adjusted Non-Locational Component As per clause 6A.23.3 of the NER, Transend adjusts the 50 per cent share of the ASRR for prescribed TUOS services that was initially allocated to be recovered by the non-locational prices (the pre-adjusted non-locational component) to derive the adjusted non-locational component. These adjustments are: • by subtracting or adding any settlements residue due to intra-regional loss factors which is expected to be distributed or recovered (as the case may be) to or from the TNSP in accordance with clause 3.6.5(a) of the NER; • for any over-recovery amount or under-recovery amount that has not previously been recovered; • for any amount arising as a result of the application of the modified CRNP methodology rather than the CRNP methodology; • for any amount arising as a result of the application of NER clause 6A.23.4(h) and (i); that is, application of the 2 per cent rule; and • for any amount arising as a result of the application of prudent discounts in clause 6A.26.1(d)-(g) of the NER. Once the adjusted non-locational component has been determined, it is recovered in accordance with clause 6A.23.4(j) of the NER; that is, on a postage-stamp basis. The methodology used to determine prices for the non-locational component is identical to that used to determine prices for prescribed common transmission services - energy based price and contract agreed maximum demand price. As the two postage-stamp prices are determined on the same basis, an individual customer will face either energy based prices for both charges or the contract agreed maximum demand prices for both charges. A customer cannot face an energy based price for one charge and the contract agreed maximum demand price for the other.

2. TransGrid[14]

Step	Methodology
Information	TransGrid is the Co-ordinating Network Service Provider for New South Wales and collects prescribed revenue entitlements for TransGrid, EnergyAustralia's prescribed transmission services, and the Directlink Transmission Company (Directlink) via TransGrid's prescribed transmission service prices. EnergyAustralia and Directlink are required to advise TransGrid annually of the MAR for their transmission system assets which are used to provide prescribed transmission services within the New South Wales region. They are also required to provide any other information reasonably required by TransGrid to ensure the proper calculation of prescribed transmission prices in New South Wales.
Step 1 - Deriving the AARR from the Maximum Allowed Revenue	As per NER requirements.
Step 2 - Allocating the AARR to services to determine ASRRs	The allocation of the AARR to services (to determine ASRRs) is consistent with Transend's approach: • As per the NER above, the AARR is allocated to services on basis of "attributable cost share": • For costs that are directly attributable to more than one category of prescribed transmission service (specifically substation infrastructure and establishment costs), the AARR is allocated on a priority basis as per the NER above. • TransGrid determines the stand-alone arrangements for substation infrastructure and establishment costs as the ratio of the number of high voltage circuit breakers in a stand-alone arrangement to the number of high voltage circuit breakers in the whole substation.
Step 3 - Allocating ASRRs for each service to each connection point	As per Transend's approach, other than for the calculation of the locational components of TUOS. The adjusted share of the ASRR is allocated between connection points on the basis of the estimated proportionate use of the relevant transmission system assets by each connection point using the CRNP methodology, not a modified CRNP approach as used by Transend. TransGrid applies the CRNP methodology using the TPRICE cost reflective network pricing software used by most TNSPs in the NEM.
Step 4 - Derive prices at each connection point	As per the NER, the ASRR for prescribed entry and exit services for each individual connection point is a fixed annual amount. This amount is recovered as a fixed annual charge for each entry or exit point, which is recovered on the basis of a fixed $/day entry or exit price respectively. Prices for prescribed common transmission services are calculated in the same manner as for Transend.

[14] http://www.aer.gov.au/content/item.phtml?itemId=726025&nodeId=c448fe68589a7b2a2a09056997af44b6&fn=TransGrid%20Revised%20Pricing%20Methodology.pdf

	In relation to the locational component of prescribed TUOS services, the locational component allocated to a connection point is converted into prices by dividing by a relevant demand figure. Section 2.2(c) of the Pricing Methodology Guidelines outlines two permitted measures of demand that may be used to convert the lump sum dollar amounts at each connection point into prices. The publicly available pricing documentation states that TransGrid uses average of the monthly maximum demand. As approved by the AER, TransGrid expresses the rate in $/kW/month. Other issues of note in relation to the establishment of locational TUOS are that: • Where there are both customer loads and generator auxiliary loads at a connection point, rates are set on the basis of the full load at the point, even though the generator does not pay usage charges; and • TransGrid notes that in some cases, there is a back up supply to a particular load (e.g. a town or large industrial customer) and simple application of the pricing calculation could give very different prices for the two connections. Where it is assessed that this may create incentives to the customer to switch supply points, and that this would not be consistent with efficient operation of the network, the variable rates at the two points may be set to the same levels and a fixed charge used to obtain the balance of usage revenue allocated to the point. As provided for under clause 6A.23.4(f) of the NER, TUOS locational prices must not change by more than 2 percent per annum at connection points relative to the load weighted average TUOS locational price for the region. The balance of any revenue shortfall, or over recovery resulting from these price caps, is recovered or offset, as appropriate, by adjusting TUOS non-locational prices and charges. This approach is the same as that used by Transend. TransGrid calculates the adjusted non-locational component of prescribed TUOS services in the same manner as for Transend, on the basis of an energy based price and contract agreed maximum demand price. Once the adjusted non-locational component has been determined, it is recovered in accordance with clause 6A.23.4(j) of the NER; that is, on a postage-stamp basis. For those customers who have chosen to have their general and common service charges set on the basis of contract agreed maximum demand, TransGrid needs to calculate an excess demand charge that will apply if the nominated demand is exceeded. The calculation requires the revenue cap for the coming year and TransGrid's reasonable estimate of maximum demand in that year to be taken into account. The demand estimate is obtained from forecasts prepared for the Annual Planning Report and for NEMMCO's Statement of Opportunities. The figure used is the 50% probability of exceedence under the medium growth scenario. At present this is the winter demand figure for the first calendar year of the financial year period (e.g., winter 2009 for 2009-10). Once the rate has been calculated the relevant customers are advised by email or letter before 1 July each year.

3. EnergyAustralia[15] [16]

EnergyAustralia	Methodology
Information	In accordance with clause 6A.29.1 of the NER, TransGrid is the Co-ordinating Network Service Provider for NSW. TransGrid is therefore responsible for the allocation of all relevant AARR within NSW. EnergyAustralia is required to annually provide TransGrid with a revised model of EnergyAustralia's transmission network, with the approved AARR for its transmission system already allocated in accordance with this transmission pricing proposal. EnergyAustralia is also required to provide any other information reasonably required by TransGrid to ensure the proper calculation of prescribed transmission prices in New South Wales. Note also that: • the calculation of the postage stamp rates which form part of transmission prices referred to in the AER Guidelines at 2.1(h); and • prudent discounts referred to in the AER Guidelines at 2.1(k) are also calculated as part of the postage stamp allocation;
Step 1 - Deriving the AARR from the Maximum Allowed Revenue	This step is undertaken by EnergyAustralia in accordance with the NER and is the same as that described for Transend and ElectraNet.
Step 2 - Allocating the AARR to services to determine ASRRs	This step is undertaken by EnergyAustralia. EnergyAustralia provides prescribed exit services, prescribed common transmission services and prescribed TUOS services. EnergyAustralia does not currently provide entry services to a generator, but has proposed a methodology associated with these services in anticipation of this service being required. As per the NER, the AARR is allocated to each of the 4 services on the basis of "attributable cost share" by EnergyAustralia. For costs that are not directly attributable to a single prescribed transmission service (specifically substation infrastructure and establishment costs), the AARR is allocated on a priority basis as per the NER requirements. Where assets can be identified as both entry and exit services or are shared between several customers, the allocation of remaining costs is based on the simple proportion of circuit breakers that immediately connect that customer to the entry/exit point against the total number of circuit breakers of entry and exit services combined. As per Transend and TransGrid, EnergyAustralia determines the stand-alone arrangements for substation infrastructure and establishment costs as the ratio of the number of high voltage circuit breakers in a

[15] http://www.aer.gov.au/content/item.phtml?itemId=728110&nodeId=4f4df21a216baa4054a6f28966bcd40f&fn=NSW%20DNSPs%20final%20decision.pdf (Appendix T)

[16] http://www.energy.com.au/energy/ea.nsf/AttachmentsByTitle/FY2010+Network+Pricing+Proposal/$FILE/2010+Pricing+Proposal.pdf

	stand-alone arrangement to the number of high voltage circuit breakers in the whole substation. In the case of a connection asset attributable to multiple network users, such as a transformer, serving multiple transmission customers at a connection point (which may provide prescribed entry and/or prescribed exit services) the cost of the shared connection asset will be allocated between the network users in accordance with a demand related allocation or as negotiated between the connected parties.
Step 3 - Allocating ASRRs for each service to each connection point	This step is undertaken for EnergyAustralia by TransGrid. All steps are undertaken in accordance with the processes set out for TransGrid. In relation to locational TUOS, TransGrid makes relevant adjustments to account for auction amounts in its pricing methodology consistent with clause 6A.23.3(c)(1) of the NER. Allocation of the locational component of prescribed TUOS services is carried out by TransGrid using the CRNP methodology, which assigns a proportion of shared network costs to individual customer connection points. TransGrid does this using the TPRICE Cost Reflective Network Pricing software used by most TNSPs in the NEM. In relation to the non-locational component of TUOS, the remainder of the ASRR (the pre-adjusted non-locational component) is adjusted according to clause 6A.23.3(2) of the NER. These adjustments are carried out by TransGrid as the Co-ordinating TNSP in NSW. EnergyAustralia provides advice to TransGrid of any expected under-recovery or over-recovery amount from previous years to be used by TransGrid in setting prices each year.
Step 4 - Derive prices at each connection point	This step is undertaken for EnergyAustralia by TransGrid. TransGrid receives EnergyAustralia's transmission models with all assets allocated to the relevant asset classes and a portion of the AARR allocated to give the ASRR for each class. Assets within each asset class have already been allocated a portion of the ASRR for that class in accordance with this pricing methodology. EnergyAustralia is able to propose locations on its transmission network where an excess demand charge is to apply. EnergyAustralia nominates to TransGrid the particular location of one of EnergyAustralia's transmission connections points where excess demand charging is to apply. EnergyAustralia also proposes an agreed maximum demand for this connection point. If EnergyAustralia's maximum demand exceeds the contract agreed maximum demand level at any time during the financial year then an excess demand charge applies. TransGrid determines the rates for the excess demand charge as the co-ordinating TNSP in NSW. Details on the excess demand charge can be found in TransGrid's transmission pricing methodology.

4. ElectraNet[17]

ElectraNet	Methodology
Information	In accordance with clause 6A.29.1 of the NER, ElectraNet is the Co-ordinating Network Service Provider for South Australia and collects both ElectraNet's and the Murraylink Transmission Company (MTC)'s regulated revenue entitlements via ElectraNet's prescribed transmission service prices. As such, ElectraNet's pricing methodology relates to the provision of prescribed transmission services in the South Australian region by ElectraNet and Murraylink MTC is required to advise ElectraNet annually of the AARR for its transmission system assets which are used to provide prescribed transmission services within the South Australian region only. It is also required to provide any other information reasonably required by ElectraNet to ensure the proper calculation of prescribed transmission prices in South Australia. ElectraNet's and MTC's AARRs are recovered from transmission charges for the following categories of transmission services: • Prescribed entry services which include assets that are directly attributable to serving a Generator or group of Generators at a single connection point and are deemed prescribed by virtue of the operation of clause 11.6.11 of the NER; • Prescribed exit services which include assets that are directly attributable to serving a Transmission Customer or group of Transmission Customers at a single connection point and: (a) are deemed prescribed by virtue of the operation of clause 11.6.11 of the NER; or (b) are provided to Network Service Providers at the boundary of the prescribed transmission network; • Prescribed transmission use of system (TUOS) services which include assets that are shared to a greater or lesser extent by all users across the transmission system and are not prescribed common transmission services, prescribed entry services or prescribed exit services; and • Prescribed common transmission services, which are services that benefit all Transmission Customers and cannot be reasonably allocated on a locational basis.
Step 1 - Deriving the AARR from the Maximum Allowed Revenue	As per other TNSPs and the NER. The AARR is calculated in accordance with clause 6A.22.1 of the NER.

[17] http://www.electranet.com.au/pdf/Pricing/RevisedProposedPricingMethodology3Apr2008.pdf

Step 2 - Allocating the AARR to services to determine ASRRs	As per the NER, the AARR is allocated to each of the 4 prescribed transmission services on the basis of "attributable cost share". For costs that are not directly attributable to a single prescribed transmission service (specifically substation infrastructure and establishment costs), the AARR is allocated on a priority basis as per the NER in the same way as other TNSPs. ElectraNet determines the stand-alone arrangements for substation infrastructure and establishment costs using an appropriate casual cost allocator, this is typically the ratio of the number of high voltage circuit breakers in a stand-alone arrangement to the number of high voltage circuit breakers in the whole substation.
Step 3 - Allocating ASRRs for each service to each connection point	The process for determining the ASRR for prescribed entry and exit services and prescribed TUOS services is as per Transend (using modified CRNP).
Step 4 - Derive prices at each connection point	Prices for entry and exit services are set as per the NER. As for other TNSPs, this amount is recovered as a fixed annual charge for each entry or exit point, which is recovered on the basis of a fixed $/day entry or exit price respectively. Prices for prescribed common transmission services are calculated in the same way as Transend and TransGrid. The locational component of prescribed TUOS services is calculated in the same manner as Transend, that is, it is determined on the basis of contract agreed maximum demand. The non-locational component of prescribed TUOS services is established in the same manner as Transend and TransGrid, on the basis of an energy based price or contract agreed maximum demand price. Once the adjusted non-locational component has been determined, it is recovered in accordance with clause 6A.23.4(j) of the NER; that is, on a postage-stamp basis. The Excess Demand Charge is determined by multiplying the charge rate specified in ElectraNet's published Transmission Service Price Schedule ($/kW) by the amount by which the maximum contract demand has been exceeded (kW) or, where applicable, in accordance with the customer's connection agreement. The charge rate ($/kW) is calculated as three times the maximum revenue, which ElectraNet can earn from prescribed services during the pricing period ($), divided by the aggregate of all contracted agreed maximum demands connected to the transmission network.

5. VENCorp[18]

VENCorp	Methodology
Information	Under the Victorian jurisdictional derogation in Chapter 9 of the NER, and the Electricity Industry Act 2000 (Vic) and VENCorp's transmission licence thereunder: • the Victorian Transmission Network is owned and operated by SP AusNet and SP AusNet is responsible for providing VENCorp with the Prescribed TUOS Services and Prescribed Common Transmission Services supplied by means of that Network; and • VENCorp is responsible for providing those Prescribed TUOS Services and Prescribed Common Transmission Services to transmission customers. Accordingly, in relation to pricing matters, SP AusNet undertakes the allocation of the AARR to each of the categories of prescribed transmission services, and is also responsible for pricing connection services. VENCorp is responsible for pricing prescribed TUOS services and prescribed common transmission services. The Pricing Methodologies for SP AusNet and VENCorp only deal with the respective areas of responsibility. In addition, under rule 9.8.4F(f) of the NER, VENCorp is taken to be the Co-ordinating Network Service Provider responsible for the allocation of all relevant AARR relating to the provision of Prescribed TUOS Services or Prescribed Common Transmission Services within the Victorian region in accordance with Part J of Chapter 6A of the Current NER. To enable VENCorp to undertake its role as the Co-ordinating Network Service Provider, SP AusNet and Murraylink (which also operates in Victoria) must notify VENCorp of the actual amount of the AARR allocated in respect of each of the Prescribed TUOS Services and Prescribed Common Transmission Services categories of Prescribed Transmission Services, immediately after it performs this allocation.
Step 1 - Deriving the AARR from the Maximum Allowed Revenue	Under the Victorian derogation (rule 9.8.4F of the NER), a reference to the AARR in the case of VENCorp is to be read as a reference to Maximum Allowable Aggregate Revenue (MAAR).
Step 2 - Allocating the AARR to services to	As the Co-ordinating Network Service Provider for the Victorian region, VENCorp is responsible, under clause 9.8.4F(f)(1) of the NER, for the allocation of all relevant AARRs relating to the provision of Prescribed TUOS Services and Prescribed Common Transmission

[18] http://www.aer.gov.au/content/item.phtml?itemId=716741&nodeId=2eef2bfe42f9042063c616b924099a69&fn=Revised%20proposed%20pricing%20methodology.pdf

determine ASRRs	Services in the Victorian region. Under clause 9.8.4F(d) of the NER, SP AusNet and Murraylink will notify VENCorp of SP AusNet's and Murraylink's ASRRs respectively for Prescribed TUOS Services and Prescribed Common Transmission Services. VENCorp calculates its own Attributable Cost Shares and ASRR for each of the Prescribed TUOS Services and Prescribed Services categories as per the NER i.e. the same as for Transend and TransGrid based on direct allocation and a priority allocation for costs that cannot be directly allocated. VENCorp determines the aggregate ASRR for each of the Prescribed TUOS Services and Prescribed Common Transmission Services categories for the Victorian region by summing: • SP AusNet's ASRR for each of the Prescribed TUOS Services and Prescribed Common Services categories; • Murraylink's ASRR for each of the Prescribed TUOS services and Prescribed Common Services categories; and • VENCorp's ASRR for the Prescribed TUOS Services and Prescribed Common Transmission Services categories respectively.
Step 3 - Allocating ASRRs for each service to each connection point	In accordance with clause 9.8.4F(c)(3) of the NER, VENCorp is responsible for allocating the ASRR for Prescribed TUOS Services and Prescribed Common Transmission Services and SP AusNet is responsible for allocating the ASRR for Prescribed Entry Services and Prescribed Exit Services. In relation to the locational component of prescribed TUOS services, the same process as TransGrid is used. VENCorp use CRNP (not modified CRNP) to allocate the locational component of the ASRR for Prescribed TUOS Services to connection points and TPRICE is used to estimate the proportional use of the relevant assets by each transmission customer. After VENCorp has determined the locational component allocated to each connection point with a transmission customer using TPRICE, VENCorp then determines the adjusted locational component by subtracting the estimated Auction Amounts referred to in clause 6A.23.3(c)(1) of the Current NER from the locational component. It then adjusts the locational component allocated to each connection point by a proportion equivalent to the ratio of the adjusted locational component to the locational component. This is different to what occurs for other TNSPs In relation to the non-locational component of prescribed TUOS services, the remainder of the ASRR (the pre-adjusted non-locational component) is adjusted according to clause 6A.23.3(c)(2) of the NER.

	As per clause 6A.23.3(f) of the NER, the ASRR for prescribed common transmission services and the operating and maintenance costs incurred in the provision of those services, are recovered through prices charged to Transmission Customer and Network Service Provider transmission network connection points (Step 4).
Step 4 - Derive prices at each connection point	VenCorp only calculates prices for two services: Prescribed TUOS services – locational and non-locational components, and prescribed common transmission services. In relation to the locational portion of prescribed TUOS services, VenCorp is consistent with the NER and with section 2.2(c)(2) of the Pricing Methodology Guidelines however follows a different method to Transend. It uses Average Maximum Demand during 'the previous 12 months' to determine locational TUOS prices The Average Maximum Demand is defined as the average demand for each connection point at the times of top 10 system peak demand. As provided for under clause 6A.23.4(f) of the NER TUOS locational prices must not change by more than 2% per annum at connection points relative to the load weighted average TUOS locational price for the region. In relation to the non-locational components of prescribed TUOS services, the AER's Pricing Methodology Guidelines allows VENCorp to apply either a historical energy or contract agreed maximum demand postage stamp pricing structure. These are calculated to a uniform price for each connection point on the Victorian Network and as such the total amount VENCorp expects to recover from charges for the adjusted non-locational component does not exceed the adjusted non-locational component of the ASRR for Prescribed TUOS Services. In relation to prescribed common transmission services, the approach is the same as that described for TUOS non-locational charges. In accordance with clause 6A.23.3(f) of the NER, these prices will recover: • the aggregate ASRR for Prescribed Common Transmission Services for the Victorian region determined by VENCorp as the Co-ordinating Network Service Provider for the region; • SP AusNet's operating and maintenance costs incurred in the provision of Prescribed Common Transmission Services to VENCorp, which were deducted by SP AusNet from its Maximum Allowable Revenue in deriving its AARR; and • VENCorp's additional operating and maintenance costs incurred in the provision of those Prescribed Common Transmission Services to Transmission Customers (if any), which were deducted by VENCorp from its MAAR analogous to the Maximum Allowable Revenue of other TNSPs in deriving its MAAR analogous to the AARR of other TNSPs.

6. SP AusNet[19]

Step	Methodology
Information	For the current regulatory period (1 April 2008 to 31 March 2014), SP AusNet is subject to the Agreed Interim Requirements published by the AER on 16 February 2007. In addition, the arrangements between SP AusNet and VENCorp and their respective responsibilities are set out in the previous section. In relation to pricing matters, SP AusNet undertakes the allocation of the AARR to each of the categories of prescribed transmission services, and is also responsible for pricing connection services – SP AusNet's pricing methodology therefore only addresses the pricing matters for which SP AusNet has responsibility.
Step 1 - Deriving the AARR from the Maximum Allowed Revenue	SP AusNet defines the AARR in accordance with clauses 6A.3.1, 6A.3.2, and 6A.22.1 of the NER - clause 6A.3.1 notes that the AARR should be defined in accordance with the revenue determination.
Step 2 - Allocating the AARR to services to determine ASRRs	In accordance with clause 6A.22.6 of the NER, SP AusNet determines the attributable cost share for each category of prescribed transmission services by calculating the ratio of: • the costs of the transmission system assets directly attributable to the provision of that category of prescribed transmission services; to • the total costs of SP AusNet's transmission system assets directly attributable to the provision of prescribed transmission services. SP AusNet values it assets in accordance with an optimised replacement cost methodology. As per the AER Agreed Interim Requirements, assets are ascribed to the particular category of prescribed transmission services in accordance with clause 6A.23.2 of Part J of the NER and Schedule 6.2 of Part C of the old NER. This means that SP Ausnet is not required to adopt the asset groupings set out in the AER's Pricing Methodology Guidelines and is not subject to the priority allocation requirements in the NER. The resulting amount of the AARR allocated to each of the categories of prescribed transmission services reflects the annual service revenue requirement (ASRR).

[19] http://www.aer.gov.au/content/item.phtml?itemId=717343&nodeId=685d9eef34df08b1e84bb351079621c8&fn=Final%20decision.pdf

Step 3 - Allocating ASRRs for each service to each connection point	SP AusNet is responsible for entry and exit services only. Accordingly, this step describes how the ASRR for prescribed entry and exit services are allocated to transmission network connection points (VENCorp is responsible for allocation the ASRR for prescribed TUOS services and prescribed common transmission services in accordance with the NER). In accordance with clause 6A.23.3 of the NER, SP AusNet allocates the ASRR for prescribed entry and exit services to transmission network connection points in accordance with the attributable connection point cost share for prescribed entry and exit services at each connection point by calculating the ratio of: • the costs of the transmission system assets directly attributable to the provision of those services at a transmission network connection point; to • the total costs of all SP AusNet's transmission system assets directly attributable to the provision of prescribed entry services or prescribed exit services, respectively. SP AusNet values its assets with an optimised replacement cost methodology. Where more than one entry customer shares a terminal station, shared costs are allocated by asset replacement costs (ORC) share. Where more than one exit customer is supplied from a terminal station, shared costs are allocated under the following methodology: • Coincident maximum demand (average of 10 highest demand days) will be used to determine the allocation of costs between customers. • Coincident maximum demand information provide for the allocation will be for the previous financial year; and • The proportion of share costs allocated to a new exit customer must be calculated on the basis of a reasonable estimate of expected demand (over a period of not less than six months), consistent with the terms of the connection agreement between SP AusNet and the new exit customer. Where an exit customer shares a terminal station with a Generator or MNSP, shared costs will be allocated by asset optimised replacement cost share.
Step 4 - Derive prices at each connection point	SP AusNet is responsible for the pricing of prescribed entry and exit services only, whilst VENCorp has responsibility for pricing prescribed TUOS services and prescribed common transmission services. In relation to prescribed entry and exit services, clauses 6A.23.4(c) of the NER requires that prices for prescribed entry services and prescribed exit services must be a fixed annual amount. SP AusNet therefore proposes that prices for prescribed entry and exit services are fixed annual amounts.

7. Directlink

Directlink	Methodology
Information	The Directlink Transmission Company (Directlink) is not required to publish its pricing methodology until the next revenue reset in 2015. Under the Co-ordinating Network Service Provider arrangements for New South Wales, TransGrid collects prescribed revenue entitlements for Directlink via TransGrid's prescribed transmission service prices. Directlink is required to advise TransGrid annually of the AARR for their transmission system assets which are used to provide prescribed transmission services within the New South Wales region. They are also required to provide any other information reasonably required by TransGrid to ensure the proper calculation of prescribed transmission prices in New South Wales.
Step 1 - Deriving the AARR from the Maximum Allowed Revenue	AARR for Directlink provided in the decision by the AER on 3 March 2006 for the Directlink Joint Venture.[20]
Step 2 - Allocating the AARR to services to determine ASRRs	See TransGrid Pricing Methodology.
Step 3 - Allocating ASRRs for each service to each connection point	See TransGrid Pricing Methodology.
Step 4 - Derive prices at each connection point	See TransGrid Pricing Methodology.

[20] http://www.aer.gov.au/content/item.phtml?itemId=692516&nodeId=465eca84dffe76277bd01f5e6644aef3&fn=Decision%20(3%20March%202006).pdf

8. Murraylink

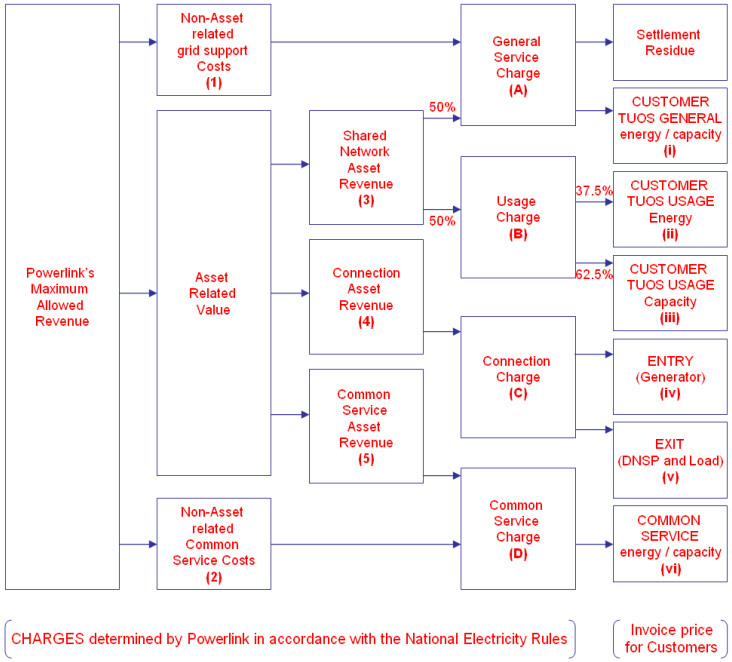
Murraylink	Methodology
Information	The Murraylink Transmission Company (Murraylink) is not required to publish its pricing methodology until the next revenue reset in 2013. In accordance with clause 6A.29.1 of the NER, ElectraNet is the Co-ordinating Network Service Provider for South Australia and collects both ElectraNet's and Murraylink's regulated revenue entitlements in South Australia via ElectraNet's prescribed transmission service prices. As such, ElectraNet's pricing methodology relates to the provision of prescribed transmission services in the South Australian region by ElectraNet and Murraylink. A similar arrangement exists between Murraylink and VENCorp in relation to Victoria. Murraylink is required to advise ElectraNet (VENCorp) annually of the AARR for its transmission system assets which are used to provide prescribed transmission services within the South Australian (Victorian) region. It is also required to provide any other information reasonably required by ElectraNet (VENCorp) to ensure the proper calculation of prescribed transmission prices in South Australia (Victoria).
Step 1 - Deriving the AARR from the Maximum Allowed Revenue	AARR for Murraylink provided in the AER's Murraylink Transmission Company Application for Conversion and Maximum Allowed Revenue decision as revoked and substituted on 31 March.[21]
Step 2 - Allocating the AARR to services to determine ASRRs	See ElectraNet and VENCorp Pricing Methodologies.
Step 3 - Allocating ASRRs for each service to each connection point	See ElectraNet and VENCorp Pricing Methodologies.
Step 4 - Derive prices at each connection point	See ElectraNet and VENCorp Pricing Methodologies.

[21] http://www.aer.gov.au/content/item.phtml?itemId=661238&nodeId=c4312529701c0f35bed8b58e241ebbe7&fn=Decision%20(1%20October%202003).pdf and http://www.aer.gov.au/content/item.phtml?itemId=661230&nodeId=7d6079e1e86074e483eb8719770d149d&fn=Letter%20revocation%20and%20substitution%20(7%20April%202004).pdf

9. Powerlink

Steps	Methodology
Information	Under the transitional provisions under 11.6.12 of the National Electricity Rules, Powerlink's pricing is subject to the 'old' Chapter 6. A brief description of the pricing process is provided on Powerlink's web page.[22] The diagram below represents the Chapter 6 pricing structure.

[22] http://www.powerlink.com.au/data/portal/00005056/content/77363001146628155930.pdf. The information on the web page was supplemented by additional information provided by Powerlink.



The Maximum Allowed Revenue that Powerlink collects from customers is separated into five components:

1. Non asset related grid support costs. These are contract costs that Powerlink pays to the contracted generators to generate electricity during periods where the demand was greater than the combined transmission capability and local generation operating under market conditions.
2. Non asset related common service costs. These are costs that cannot be allocated to specific service or locations.
3. Shared Service Asset Revenue – assets that are shared between customers and can be identified as related to a specific part of the system
4. Connection Service Asset Revenue – dedicated regulated assets for the supply of a single customer or group connected at a single connection point.
5. Common Service Asset Revenue– assets that benefit all customers and cannot reasonably be allocated on a locational basis.

The components above are then translated into four transmission charges:

A. General service charge = 50% of the “shared service revenue”, the “Non asset related grid support cost”, over or under revenue

	collection from the previous year and expected settlements residue. B. Usage "Locational" charge = the other 50% of the "shared service revenue". C. Connection charge = "connection service revenue". This is applicable to DNSPs and to any load or generators with connection agreement signed prior to 9 February 2006. D. Common service charge = the sum of "non asset related common service cost" and "common service asset revenue". Transmission prices are derived from the above transmission charges: i. Customer TUOS general energy (c/kWh) or capacity ($/kW/month) – customers can pay the energy price or demand price. Note that the customer can only pay the demand price if the customer has entered into a connection agreement with a defined penalty for exceeding the maximum demand. Powerlink will then charge the lesser of the two charges. ii. Customer TUOS usage energy (c/kWh) – prices for each connection point are capped at +/- 2% relative to the Queensland average price change for all customers. For the 09/10 period, 62.5% of the Usage charge is allocated to Customer TUOS usage energy price. iii. Customer TUOS usage capacity ($/kWh/month) – prices for each connection point are capped at +/- 2% relative to the Queensland average price change for all customers. For the 09/10 period, 37.5% of the Usage charge is allocated to Customer TUOS usage capacity price. iv. Entry price for generators ($/month). Note that the entry connection charge applies only to generators with a connection agreement signed prior to 9 February 2006. v. Exit price for DNSP and direct connect load customers ($/month). Note that the exit connection charge applies only to direct connect with a connection agreement signed prior to 9 February 2006. vi. Common service energy (c/kWh) or capacity ($/kW/month) – customers can pay the energy price or demand price. Note that the customer can only pay the demand price if the customer has entered into a connection agreement with a defined penalty for exceeding the maximum demand. Powerlink will then charge the lesser of the two charges.

10. Western Power[23]

Steps	Methodology
Information	Section 8.1 of the Electricity Networks Access Code 2004 (Access Code) requires Western Power to submit Price List Information to the Authority. The Access Code defines Price List Information as: *"price list information" means a document which sets out information which would reasonably be required to enable the Authority, users and applicants to:* *(a) understand how the service provider derived the elements of the proposed price list; and* *(b) assess the compliance of the proposed price list with the access arrangement.* Western Power operates both a transmission and distribution business. While the price list information provided by Western Power applies to both these businesses, the transmission and distribution tariffs settings are separately determined. In terms of the transmission component, there are essentially 5 steps in developing transmission prices: • Step 1 – Identify the transmission AARR. • Step 2 – Allocate the AARR to transmission cost pools. • Step 3 – Allocate cost pool costs to transmission connection points and determine transmission-system-connected prices. • Step 4 – Determine the revenue to be recovered from transmission connection points from transmission system connected customers and identify the residual revenue to be recovered from connection points on the distribution system. • Step 5 – Determine prices for connection points on the distribution system.
Step 1 – Identify the transmission AARR	Western Power's target revenue for transmission services is based on the price control methodology detailed in Western Power's Access Arrangement.
Step 2 - Allocate the AARR to Transmission Cost Pools	Western Power has identified four transmission system cost pools: • Connection services cost pool. • Shared Network Services Cost Pool. – Use of system cost pool. – Common service for loads cost pool.

[23] http://www.era.wa.gov.au/cproot/6564/2/2008-09%20Price%20List%20Information.pdf

	• Control System Services Cost Pool. In order to calculate transmission cost of supply, all transmission assets are valued and categorised into the above cost pools. Each network branch is further defined as either exit, entry or shared network and cost allocation is then applied based on the gross optimised deprival value (GODV) of all relevant assets. The target transmission revenue for the year is allocated to the above cost pools in proportion to the gross optimised deprival value of assets in each cost pool.
Step 3 – Allocate cost pool costs to transmission connection points and determine transmission-system-connected prices	Step 3 requires that the cost pool costs are allocation to connection points and tariffs for customers that are direct connected to the transmission system. The CRNP cost allocation method allocates the revenue requirement to all network elements, based on their gross ODV, then determines the use made of each network element by each connection point during the survey period. This process is discussed below for each of the cost pools. <u>Connection Costs</u> Connection costs are allocated to connection points by taking the connection cost pool revenue and dividing it by the aggregate of relevant contracted maximum demand (CMD) or declared sent out capacity (DSOC) (over all exit or entry points where the charge is applied). Connection charges for connection points on the transmission system are not published but are determined subject to the specific connection arrangements. These connection charges are individually calculated to reflect the actual connection assets that apply to that user. The amount of the charge is based on achieving a regulated return on all relevant assets and an allocation of the transmission network operating costs. <u>Use of system costs</u> The proportion of the transmission reference service revenue that is for Transmission use of system is allocated to each and every connection point using a CRNP. CRNP assigns a proportion of shared network costs to individual user connection points. The relativity of use of system prices for both exit and entry points is calculated using “T-price”. T-price is a modelling tool used to allocate network costs to each node using CRNP. The raw T-price use of system prices are applied to all users based on forecast CMDs and DSOCs and scaled to give the required relevant cost pool revenue. In order to perform the calculations, T-price requires that:

	• The gross optimised deprival value of every branch and node of the network is allocated. Every node is classified as either Exit or Entry, and every branch is classified as either shared, or dedicated to consumers or dedicated to generators. • Electrical configuration and parameters of the network are established. • Interval demand data is assembled for every node. • Load flow analysis is carried out so that all of the network element costs are allocated to each zone substation based on usage of those network elements. This process derives an annual cost for each node. • The costs at each node are then converted to prices by assigning a maximum demand to each node and using that demand to calculate a price in terms of $/kW/annum. Use of system prices for exit points are calculated by scaling raw T-price use of system prices for exit points to recover the use of system for loads cost pool revenue. Use of system prices for entry points are calculated by scaling raw T-price use of system prices for entry points to recover the use of system for generators cost pool revenue. <u>Common service costs</u> The common service component is calculated by taking the common service cost pool revenue and dividing it by the aggregate of relevant contract maximum demands (over all Exit points where the charge is applied). (No common service costs associated with entry points). The common service price is expressed in $/kW/annum and is uniform for all exit points. <u>Control system service</u> 2 separate components – control system service for customers and control system service for generators. The revenue associated with control system service for customers is derived by taking the control system services to loads cost pool revenue and dividing it by the aggregate of relevant CMDs (over all exit points where the charge is applied). The revenue associated with control system service for generators is calculated by taking the control system services to generators cost pool revenue and dividing it by the aggregate of relevant DSOCs (over all entry points where the charge is applied). The control system service price is expressed in $/kW/annum.

Step 4 – Determine the revenue to be recovered from transmission connection points from transmission system connected customers and identify the residual revenue to be recovered from connection points on the distribution system	Determine revenue to be recovered from transmission only customers and revenue to be recovered from connection points on the distribution system. Based on the above tariffs, Western Power determines the annual transmission revenue to be collected from transmission connection points. However, the tariffs for connection points on the transmission system do not collect the full transmission reference service revenue entitlement (only the revenue associated with entry and exit services). Connection points on the distribution system utilise the transmission system as well as the distribution system. The remainder of the transmission reference service revenue entitlement is collected from tariffs for connection points on the distribution system.
Step 5 - Determine prices for connection points on the distribution system	The revenue to be collected for connection points on the distribution system reflects the difference between the AARR and the revenue forecast to be recovered from transmission connection points. Charges are determined for each direct connected transmission user based on respective CMDs. The revenues from these users are then deducted from the revenue entitlement for that substation to give a net revenue amount to be recovered from users connected to that substation via tariffs for connection points on the distribution system. Reference tariffs for users connected to the distribution system with a peak demand >1MVA incorporate transmission nodal prices. The transmission pass-through revenue, net of the revenues from the >1MVA users, is then allocated in aggregate to the various small customer groupings on the basis of loss adjusted any time maximum demand (ATMD) for each grouping. The CMD tariffs are based on a nominated peak demand in terms of kVA. The CMD tariffs are nodal in that they are based on the transmission node to which the load user is connected. All other tariffs are uniform across the network.