APPENDIX P

Powerlink Pricing Methodology

May 2011

Powerlink Proposed Pricing Methodology

PROPOSED PRICING METHODOLOGY 1 JULY 2012 TO 30 JUNE 2017

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Powerlink Proposed Pricing Methodology

For information about Powerlink visit www.powerlink.com.au.

Contact
For enquiries about this proposed *pricing methodology* please contact:

Manager Network Customers & Pricing
Powerlink
PO Box 1193, Virginia
Queensland 4014

networkcustomers@powerlink.com.au

Powerlink Proposed Pricing Methodology

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1 INTRODUCTION

Powerlink is the principal electricity *Transmission Network Service Provider* (*TNSP*) in Queensland.

This proposed *pricing methodology*, for the regulatory period from 1 July 2012 to 30 June 2017, is submitted to the Australian Energy Regulator (AER) in accordance with the requirements of Chapter 6A of the National Electricity Rules (the Rules) and the AER's *pricing methodology guidelines.*

2 INTERPRETATION

All terms in this proposed *pricing methodology* that are italicised have the meaning given to them in the *pricing methodology guidelines* or, where no definition is provided in that document, the Rules.

A reference to the Rules is taken to be a reference to the current version of the National Electricity Rules, version 43, which commenced operation on 21 April 2011 as amended from time to time.

3 PRESCRIBED TRANSMISSION SERVICES

Powerlink's proposed *pricing methodology* relates to the provision of *prescribed transmission services* in the Queensland region by Powerlink. These services include:

- Shared transmission services provided to customers directly connected to the transmission network and connected network service providers (*prescribed TUOS services*);
- Connection services provided to connect the distribution networks such as Ergon Energy and Energex to the transmission network (*prescribed exit services*);
- Grandfathered connection services provided to generators and customers directly connected to the transmission network for connections that were in place or committed to be in place on 9 February 2006 (*prescribed entry services* and *prescribed exit services*); and
- Services required under the Rules or in accordance with jurisdictional electricity legislation that are necessary to ensure the integrity of the transmission network, including the maintenance of power system security and assisting in the planning of the power system (*prescribed common transmission services*).

Powerlink's proposed *pricing methodology* does not relate to the provision of *negotiated transmission services* or other *transmission services* provided by Powerlink (non-regulated transmission services) that are not subject to economic regulation under the Rules.

4 RULES REQUIREMENTS

Rule 6A.24.1 states that a *pricing methodology* is a methodology, formula, process or approach that, when applied by a *TNSP*:

(1) allocates the *aggregate annual revenue requirement* (*AARR*) for *prescribed transmission services* provided by that provider to:

(i) the *categories of prescribed transmission services* for that provider; and

(ii) *transmission network connection points* of *Transmission Network Users*; and

(2) determines the structure of the prices that a *Transmission Network Service Provider* may charge for each of the *categories of prescribed transmission services* for that provider.

The Rules also require that the *pricing methodology* satisfy principles and guidelines established by the Rules. In particular, Rule 6A.10.1(e) requires that a proposed *pricing methodology* must:

(1) give effect to and be consistent with the *Pricing Principles for Prescribed Transmission Services* (i.e. the principles set out in Rule 6A.23); and

(2) comply with the requirements of, and contain or be accompanied by such information as is required by, the *pricing methodology guidelines* made for that purpose under Rule 6A.25.

5 PRICING METHODOLOGY GUIDELINES REQUIREMENTS

The *pricing methodology guidelines* supplement and elaborate on the pricing principles contained in Chapter 6A of the Rules in so far as they specify or clarify:

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

Powerlink Proposed Pricing Methodology

All key elements of Powerlink's *proposed pricing methodology* are permissible under the *pricing methodology guidelines*. These elements include:

- calculation of the locational component of *prescribed TUOS services* costs using the *cost reflective network pricing methodology*;
- the locational *prescribed TUOS services* price being based on an agreed nominated demand and the *average-half hourly demand*;
- the postage stamp pricing structures for the non-locational component of *prescribed TUOS services* and *prescribed common transmission services* being based on *contract agreed maximum demand* or historical energy;
- the methodology for implementation of the priority ordering being the priority ordering approach under Rule 6A.23.2(d);
- a description of how asset costs which may be attributable to both *prescribed entry services* and *prescribed exit services* will be allocated at a connection point;
- a description of billing arrangements under Rule 6A.27;
- a description of prudential requirements as outlined in Rule 6A.28;
- the inclusion of hypothetical worked examples; and
- a description of how Powerlink intends to monitor and develop records of its compliance with its approved *pricing methodology*, the pricing principles for *prescribed transmission services* (Rule 6A.23) and part J of the Rules in general.

6 PROPOSED PRICING METHODOLOGY

6.1 Background

The diagram in Appendix A outlines the structure of transmission pricing under part J of the Rules that is applicable to this proposed *pricing methodology*.

6.2 Single Transmission Network Service Provider

Powerlink is the sole provider of *prescribed transmission services* within Queensland and is responsible for the allocation of the *AARR* within Queensland, in accordance with Rule 6A.29.2.

6.3 Aggregate Annual Revenue Requirement (AARR)

The revenue that a *TNSP* may earn in any *regulatory year* of a *regulatory control period* from the provision of *prescribed transmission services* is known as the *maximum allowed revenue*[1].

The *AARR* is calculated in accordance with Rule 6A.22.1 as:

> "the *maximum allowed revenue* referred to in clause 6A.3.1 adjusted:
>
> (1) in accordance with clause 6A.3.2, and
>
> (2) by subtracting the operating and maintenance costs expected to be incurred in the provision of *prescribed common transmission services*."

Adjustments in accordance with Rule 6A.3.2 could relate to a number of factors including reopening of the revenue determination for capital expenditure, network support pass through, cost pass through, service target performance incentive scheme outcomes, contingent projects or impacts due to wrong information or error.

The costs referred in (2) above are derived from budget projections and include:

- network switching and operations;
- administration and management of the business;
- network planning and development; and
- general overheads.

[1] Rule 6A.3.1

6.4 Categories of transmission services

Powerlink's *AARR* is recovered from transmission charges for the following categories of transmission services:

- ***Prescribed entry services***, are entry services that are *prescribed transmission services* by virtue of the operation of Rule 11.6.11 which include assets that are directly attributable to serving a Generator or group of Generators at a single connection point ;

- ***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 Rule 11.6.11; or (b) are provided to Distribution Network Service Providers at the boundary of the prescribed transmission network;

- ***Prescribed common transmission services***, which are services that provide equivalent benefits to all *Transmission Customers* without any differentiation based on their location, and therefore cannot be reasonably allocated on a locational basis; and

- ***Prescribed TUOS services***, which include services that provide benefits to *Transmission Customers* depending on their location within the transmission system, 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*.

The determination of prescribed transmission service prices involves four steps:

(1) allocation of the costs of transmission system assets to the categories of transmission service, to the extent to which assets are directly attributable to the provision of a *category of prescribed transmission services* (Section 6.5);

(2) calculation of the *attributable cost shares* (Section 6.6);

(3) allocation of the *AARR* to each category of *prescribed transmission services* in accordance with the attributable cost share for that category of services (Section 6.7); and

(4) allocation of the *annual service revenue requirement* (*ASRR*) for *prescribed entry services*, *prescribed exit services* and *prescribed TUOS services* to each transmission network connection point in accordance with the principles of Rule 6A.23.3 (Section 6.8).

Each step is described in further detail below.

6.5 Cost allocation

The **first step** in calculating prescribed transmission service prices is to allocate the costs of *transmission system* assets to the categories of transmission service in section 6.4 above, to the extent to which assets are *directly attributable* to the provision of a category of *prescribed transmission services*.

The delineation between the assets that provide *prescribed entry services*, *prescribed exit services*, *prescribed TUOS services* and *prescribed common transmission services* is set out in clause 2.4 of the *pricing methodology guidelines*.

The Powerlink cost allocation process assigns the optimised replacement cost (ORC)[2] of all *prescribed transmission services* assets to individual network pricing branches. Each network pricing branch is then defined as common, connection (entry or exit) or shared network. The pricing branches are used to determine the costs of the *transmission system* assets directly attributable to each *category of prescribed transmission services*, as required under Chapter 6A of the Rules. This cost allocation process is explained in more detail in Appendix B.

6.6 Calculation of the attributable cost share for each category of service

The **second step** in calculating prescribed transmission service prices is the calculation of the *attributable cost shares*. The *attributable cost share* for each *category of prescribed transmission services* is calculated in accordance with Rule 6A.22.3, as the ratio of:

(1) the costs of the *transmission system* assets directly attributable to the provision of that *category of prescribed transmission services*; to

(2) the total costs of all of Powerlink's *transmission system* assets directly attributable to the provision of *prescribed transmission services*,

where these amounts are determined as detailed in section 6.5 above.

For example, if the ORC's of prescribed services assets have been allocated to the applicable categories of *prescribed transmission services* as shown in Table 1 then the *attributable costs shares* are calculated as shown in the hypothetical example below. All numbers and amounts used in the hypothetical examples in the paper are fictional:

$$\textit{Attributable cost share}_{EXIT} = ORC_{EXIT} / ORC_{TOTAL}$$

$$= \$6{,}972{,}222 / \$43{,}050{,}000$$

$$= 0.162$$

with the *attributable cost shares* of the other categories calculated in the same manner, as shown in Table 2.

[2] Consistent with Rule 6A.22.3(b).

Table 1: Hypothetical costs allocated to categories of prescribed transmission services

Category	ORC
Exit service	6,972,222
Entry service	1,761,111
TUOS service	33,566,667
Common Service	750,000
Total	43,050,000

Table 2: Hypothetical attributable cost shares

Category	ORC	Attributable cost share
Exit service	6,972,222	0.162
Entry service	1,761,111	0.041
TUOS service	33,566,667	0.780
Common Service	750,000	0.017
Total	43,050,000	1.000

6.7 Calculation of the Annual Service Revenue Requirement (ASRR)

The **third step** in calculating prescribed transmission service prices is to allocate the *AARR* to each *category of prescribed transmission services* in accordance with the *attributable cost share* for that category of services.

This allocation results in the *ASRR* for each *category of prescribed transmission services.*

Assuming an *AARR* of $2,504,434 and applying the *attributable cost shares* determined above, the *ASRR* for each category of prescribed services is calculated as:

$ASRR_{EXIT}$ = *AARR* x *Attributable cost share*$_{EXIT}$

= $2,504,434 x 0.162

= $405,609

with the *ASRR*s of the other categories calculated in the same manner.

Table 3: Hypothetical Annual Service Revenue Requirements

Category	Attributable cost share	Annual Service Revenue Requirement (*ASRR*)
Exit service	0.162	405,609
Entry service	0.041	102,453
TUOS service	0.780	1,952,741
Common Service	0.017	43,631
Total	1.000	2,504,434

6.8 Allocation of the ASRR to transmission network connection points

The **fourth step** in calculating prescribed transmission service prices is to allocate the *ASRR* for *prescribed entry services*, *prescribed exit services* and *prescribed TUOS services* to each transmission network connection point in accordance with the principles of Rule 6A.23.3.

6.8.1 Prescribed entry services

The whole of the *ASRR* for *prescribed entry services* is allocated to each transmission network connection point in accordance with the *attributable connection point cost share* for *prescribed entry services* that are provided by the *TNSP* at that connection point.

The *attributable connection point cost share* for *prescribed entry services* is the ratio of the costs of the *transmission system* assets *directly attributable* to the provision of *prescribed entry services* at that transmission network connection point to the total costs of all the *TNSP's transmission system* assets *directly attributable* to the provision of *prescribed entry services*.

For example, if two generators, Gen A1 and Gen A2 receive *prescribed entry services* and the cost allocation process has allocated the ORCs of assets *directly attributable* to *prescribed entry services* to them as shown in Table 4.

$$\text{Attributable connection point cost share}_{\text{GEN A1}} = \text{ORC}_{\text{GEN A1}} / \text{ORC}_{\text{ENTRY}}$$

$$= \$1{,}033{,}333 / \$1{,}761{,}111$$

$$= 0.587$$

with the *attributable connection point cost share* of the other generator being calculated in the same manner as shown in Table 5.

Table 4: Hypothetical prescribed entry services ORCs

Entry	ORC
Gen A1	1,033,333
Gen A2	727,778
Total ORC of prescribed entry assets	1,761,111

Table 5: Hypothetical attributable connection point cost shares

Entry	ORC	Attributable connection point cost share
Gen A1	1,033,333	0.587
Gen A2	727,778	0.413
Total	1,761,111	1.000

The *ASRR* allocated to the Gen A1 transmission network connection point is calculated as follows:

$ASRR_{GEN\ A1}$ = $ASRR_{ENTRY}$ x Attributable connection point cost share$_{GEN\ A1}$

= \$102,453 x 0.587

= \$60,114

with the *ASRR* of the other generator connection point being calculated in the same manner.

Table 6: Hypothetical connection point *ASRR*s (entry)

Entry	ORC	Attributable connection point cost share	Connection point *ASRR*
Gen A1	1,033,333	0.587	60,114
Gen A2	727,778	0.413	42,338
Total	1,761,111	1.000	102,453

6.8.2 Prescribed exit services

The whole of the *ASRR* for *prescribed exit services* is allocated to each transmission network connection point in accordance with the *attributable connection point cost share* for *prescribed exit services* that are provided by the *TNSP* at that connection point.

The attributable connection point cost share for *prescribed exit services* is the ratio of the costs of the *transmission system* assets *directly attributable* to the provision of *prescribed exit services* at that transmission network connection point to the total costs of all the *transmission system* assets *directly attributable* to the provision of *prescribed exit services*.

The *ASRR*s of the prescribed exit connection points are calculated in the same manner as for the prescribed entry connection points.

Table 7: Hypothetical Connection point *ASRR*s (exit)

Exit	ORC	Attributable connection point cost share	Connection point *ASRR*
Load A1	2,083,333	0.299	121,198
Load A2	1,405,556	0.202	81,768
Load B1	2,633,333	0.378	153,194
Load C1	850,000	0.122	49,449
Total	6,972,222	1.000	405,609

6.8.3 Prescribed Transmission Use of System (TUOS) services

The prescribed TUOS (shared network) services *ASRR* is recovered from:

- *Prescribed TUOS services* (locational component); and
- *Prescribed TUOS services* (the adjusted non-locational component).

6.8.3.1 Prescribed TUOS services – locational component

Rule 6A.23.3(c)(1) requires that:

> "a share of the *ASRR* (the locational component) is to be adjusted by subtracting the estimated *auction amounts* expected to be distributed to the *TNSP* under clause 3.18.4 from the *connection points* for each relevant *directional interconnector* and this adjusted share is to be allocated as between such *connection points* on the basis of the estimated proportionate use of the relevant *transmission system* assets by each of those customers, and the *CRNP methodology* and *modified CRNP methodology* represent two permitted means of estimating proportionate use".

Consistent with Rule 6A.23.3(c)(1), the locational share of the *prescribed TUOS services ASRR* is adjusted for estimated inter-regional settlements residue proceeds, and the adjusted share is allocated between connection points on the basis of the estimated proportionate use of the relevant *transmission system* assets by each customer using the *CRNP methodology*.

The *CRNP methodology* allocates shared network costs to individual customer connection points on the basis of optimised replacement costs and assumes a 50 - 50 split between the locational and non-locational components of network charges.

Powerlink applies the *CRNP methodology* using the TPRICE *cost reflective network pricing* software approved by the AER for use by *TNSPs* in the NEM.

The *CRNP methodology* requires three sets of input data:

- an electrical (loadflow) model of the network;
- a cost model of the network (the results of the cost allocation process described in Appendix B); and
- an appropriate set of load/ generation patterns.

Appendix C describes the *CRNP methodology* in more detail.

6.8.3.2 Prescribed TUOS services – non- locational component

The remainder of the *ASRR* (the pre-adjusted non-locational component) is adjusted:

- by subtracting the amount (if any) referred to in Rule 6A.23.3(e);
- by subtracting or adding any remaining *settlements residue* (not being *settlements residue* referred to in the determination of the locational component but including the portion of *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 Rule 3.6.5(a);
- for any *over-recovery amount* or *under-recovery amount* from previous years;
- for any amount arising as a result of the application of Rule 6A.23.4(h) and (i), which detail adjustments so that prices for recovering the locational component of the *ASRR* for the provision of *prescribed TUOS services* do not change by more than 2% per annum compared to the load weighted average price for this component for the relevant region; and
- for any amount arising as a result of the application of prudent discounts in accordance with Rule 6A.26.1(d)-(g).

6.9 Transmission prices and charges

6.9.1 Prescribed entry and exit services prices and charges

Prescribed entry services and *prescribed exit services* prices are calculated to recover the *prescribed entry and prescribed exit services ASRR*s from the network users who are served by the relevant connection assets.

The *prescribed entry services ASRR* is recovered as a fixed annual charge for each entry point, which is recovered on the basis of a fixed $/month entry price.

Similarly, the *prescribed exit services ASRR* is recovered as a annual monthly charge for each exit point, which is recovered on the basis of a fixed $/month exit price.

6.9.2 Prescribed TUOS services – locational component prices and charges

The prescribed TUOS locational *ASRR* described in 6.8.3 is recovered through a single demand based price at each connection point. The price is based on the sum of the average half-hourly demand and the nominated demand, reflecting the greatest utilisation of the *transmission network* and times for which network investment is most likely to be contemplated, in accordance with Rule 6A.23.4(e) and 2.2(a) of the *pricing methodology guidelines.*

The CRNP methodology outlined in S6A.3 of the Rules and detailed in Appendix C of this proposed *pricing methodology* describes the process for cost allocation for the locational component of *prescribed TUOS services*, which results in a lump sum dollar amount to be recovered at each connection point.

This lump sum dollar amount for each connection point is divided by the sum of the average half hourly demand and the nominated demand, and then divided by twelve to calculate the monthly locational price for that particular connection point[3]. Prices for *prescribed TUOS services* are expressed in $/kW/month.

As provided for under Rule 6A.23.4(f), 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. 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.

As further provided for under Rule 6A.23.4(g) the change specified above "may exceed 2 per cent per annum if, since the last prices were set:

(1) the *load* at the *connection point* has materially changed;

(2) in connection with that change, the *Transmission Customer* requested a renegotiation of its *connection agreement* with the *Transmission Network Service Provider*; and

(3) the AER has approved the change of more than 2 per cent per annum."

This provision sets the prescribed TUOS locational price at a connection point with a material change in load, on the same basis as a new connection point.

Prescribed TUOS locational charges are determined, for each connection point providing *prescribed TUOS services* by multiplying the prescribed TUOS locational price by the sum of the agreed nominated demand (prevailing at the time transmission prices are published) and the measured average half-hourly demand for that month for that connection point, in accordance with 2.2(h) of the *pricing methodology guidelines.*

[3] The connection point for the purposes of determining the prescribed TUOS prices and prescribed TUOS charges will be the agreed point (or points) of supply between Powerlink and the transmission network user.

6.9.3 Prescribed TUOS services – non-locational component prices and charges

Prices for recovery of the adjusted non-locational component of *prescribed TUOS services* are set on a postage stamp basis in accordance with Rule 6A.23.4(j).

Consistent with the provisions of 2.3(c)(1) of the *pricing methodology guidelines* postage stamped prices are determined on the basis of *contract agreed maximum demand* or historical energy and calculated annually as follows.

Each financial year Powerlink will determine the following two prices to apply at every connection point:

- an energy based price that is a price per unit of historical metered energy or current metered energy at a connection point expressed as c/kWh; and
- a *contract agreed maximum demand* price that is a price per unit of *contract agreed maximum demand* at a connection point expressed as $/kW/month.

Either the energy based price or the *contract agreed maximum demand* price will apply at a connection point providing *prescribed TUOS services* except for those connection points where a transmission customer has negotiated reduced charges for the adjusted non-locational component of *prescribed TUOS services* in accordance with Rule 6A.26.1 (prudent discounts).

The energy based price and the *contract agreed maximum demand* price is determined so that:

- a transmission customer with a load factor in relation to its connection point equal to the median load factor for connection points with transmission customers connected to the transmission network in the region or regions is indifferent between the use of the energy based price and the *contract agreed maximum demand* price; and
- the total amount to be recovered by the adjusted non-locational component of *prescribed TUOS services* does not exceed the *ASRR* for this category of prescribed transmission service.

When applying the energy based price, the prescribed TUOS charge (non-locational component) for a billing period is calculated for each connection point by:

- multiplying the energy based price by the metered energy offtake at that connection point in the corresponding billing period two years earlier (i.e. *historical metered energy offtake*); or
- multiplying the energy based price by the metered energy offtake at that connection point in the same billing period (*current metered energy offtake*) if the *historical metered energy offtake* is unavailable; or
- multiplying the energy based price by the current metered energy offtake if the historical metered energy offtake is significantly different to the current metered energy off take. This method of calculation is only expected to be applied where the

conditions necessary to enact Rule 6A.23.4(g)[4] have been satisfied or a connection point is operated in a standby arrangement as detailed in section 6.10 of this *pricing methodology*.

When applying the *contract agreed maximum demand* price, the prescribed TUOS – non-locational component charge for a billing period will be calculated for each connection point by multiplying the *contract agreed maximum demand* price by the *contract agreed maximum demand* for the *connection point* (prevailing during the billing period concerned).

Forecast prescribed TUOS non-locational charges will be calculated using the *contract agreed maximum demand* prevailing at the time prices are determined as distinct from the actual *contract agreed maximum demand* based charges which will be calculated using the *contract agreed maximum demand* prevailing during the billing period concerned.

Any over or under recovery of prescribed revenue arising from variances between forecast *contract agreed maximum demands* and the *contract agreed maximum demands* used for calculating charges will be addressed by way of an under or over recovery adjustment when calculating prices for the following financial year.

6.9.4 Prescribed common service prices and charges

Prices for *prescribed common transmission services* are set on a postage stamp basis in accordance with Rule 6A.23.4(d).

Consistent with the provisions of clause 2.3(c)(1) of the *pricing methodology guidelines* postage stamped prices will be determined on the basis of *contract agreed maximum demand* or historical energy and calculated in a manner identical to that described for TUOS non-locational charges in the previous section.

In accordance with Rule 6A.23.3(f) the operating and maintenance costs expected to be incurred in the provision of *prescribed common transmission services*, which are deducted from the *maximum allowed revenue* to form the *AARR*, are added to the *ASRR* for *prescribed common transmission services* and recovered though *prescribed common service* prices and charges.

6.10 Standby service arrangements

If a customer requires a connection point to provide energy from the transmission network on a standby basis, such as to cover the outage of onsite generation, the customer will pay *prescribed exit services* charges and *prescribed TUOS services* – locational component charges as usual, but will only pay *prescribed TUOS services* – non-locational component charges and *prescribed common transmission services* charges during times that the standby service is actually utilised in energy delivery to the customer.

More specifically, prescribed transmission charges will be determined as follows:

- *Prescribed exit service* charges: as detailed in section 6.9.1;

[4] That being the clause which allows for the relaxation of the side constraints on TUOS locational prices at a connection point.

- Prescribed TUOS locational charges: based on the prevailing *contract agreed maximum demand* and *prescribed TUOS services* – locational component price as detailed in section 6.9.2, and

- Postage stamped prescribed TUOS non-locational service charges and prescribed common transmission service charges: based on *current metered energy offtake* in the billing period as detailed in sections 6.9.3 and 6.9.4.

Where standby arrangements are required, the customer's connection agreement must specify a *contract agreed maximum demand* and excess demand charges as detailed in section 6.11 will apply.

6.11 Excess demand charge

Where the customer's actual maximum demand exceeds the *contract agreed maximum demand* level at any time during the financial year and the customer has a *contract agreed maximum demand* in their Connection and Access Agreement (C&AA), then an excess demand charge applies and the actual maximum demand will become the *contract agreed maximum demand*, in accordance with the customer's connection agreement.

Powerlink will recover from the customer the incremental charges for the increased *contract agreed maximum demand* for the financial year.

The excess demand charge is determined in accordance with the customer's connection agreement.

6.12 Setting of TUOS locational prices between annual price publications

In the event that Powerlink is required to set a TUOS locational price at a new connection point or at a connection point where the load has changed significantly after prescribed TUOS service locational prices have been determined and published, an interim price, not subject to the side constraints of Rule 6A.23.4(f), will be determined[5]. This will be calculated using the prevailing pricing models with demands estimated in a manner consistent with clause 2.2(f) of the *pricing methodology guidelines*.

If a new *transmission network connection point* requires substantial investment in the network, Powerlink may adjust the TUOS locational price for the first year. This would be undertaken to ensure customers not associated with the investment are not adversely affected consistent with Section 11 of this *pricing methodology*.

A price subject to the side constraints of Rule 6A.23.4(f) will be determined and published at the next annual price determination.

[5] For an existing connection point this would be subject to Rule 6A.23.4(g).

7 BILLING ARRANGEMENTS

7.1 Billing for prescribed transmission services

Consistent with Rule 6A.27.1, Powerlink will calculate the transmission service charges payable by *Transmission Network Users* for each connection point in accordance with the transmission service prices published under Rule 6A.24.2.

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

Powerlink will issue invoices to *Transmission Network Users* for *prescribed transmission services* which satisfy or exceed the minimum information requirements specified in Rule 6A.27.2 on a monthly basis or as specified in the transmission connection agreement.

Consistent with Rule 6A.27.3, a *Transmission Network User* must pay charges for *prescribed transmission services* properly charged to it and billed in accordance with this *pricing methodology* by the date specified on the invoice.

7.2 Payments between Transmission Network Service Providers

If another *TNSP* is granted a Transmission Authority and is registered as a *Transmission Network Service Provider* by AEMO in the Queensland region, consistent with Rule 6A.27.4, one *TNSP* will become the *Co-ordinating Network Service Provider* under Rule 6A.29.1. The *TNSPs* will pay to each other relevant *TNSP* the revenue which is estimated to be collected during the following year by the first provider as charges for *prescribed transmission services* for the use of transmission systems owned by those other *TNSPs*.

Such payments will be determined by the *Co-ordinating Network Service Provider* for the region.

Financial transfers payable under Rule 6A.27.4 will be paid in equal monthly instalments or as documented in revenue collection agreements negotiated between the parties.

8 PRUDENTIAL REQUIREMENTS

8.1 Prudential requirements for prescribed transmission services

Consistent with Rule 6A.28.1, Powerlink may require a *Transmission Network User* to establish prudential requirements for either or both connection services and transmission use of system services. These prudential requirements may take the form of, but need not be limited to, capital contributions, pre-payments or financial guarantees.

The requirements for such prudential requirements will be negotiated between the parties and specified in the applicable transmission connection agreement.

8.2 Capital contribution or prepayment for a specific asset

Powerlink notes that no capital contributions or prepayments have been made in respect of *prescribed transmission services* assets as at the date of this proposed *pricing methodology*.

Consistent with Rule 6A.28.2, where Powerlink is required to construct or acquire specific assets to provide prescribed connection services or *prescribed TUOS services* to a *Transmission Network User*, Powerlink may require that user to make a capital contribution or prepayment for all or part of the cost of the new assets installed.

In the event that a capital contribution is required, any contribution made will be taken into account in the determination of prescribed transmission service prices applicable to that user by way of a proportionate reduction in the ORC of the asset(s) used for the allocation of prescribed charges or as negotiated between the parties.

In the event that a prepayment is required, any prepayment made will be taken into account in the determination of prescribed transmission service prices applicable to that user in a manner to be negotiated between the parties.

The treatment of such capital contributions or prepayments for the purposes of a revenue determination will in all cases be in accordance with the relevant provisions of the Rules.

9 PRUDENT DISCOUNTS

Powerlink expects to have an approved prudent discount in place during the period over which the *pricing methodology* applies.

In accordance with Rule 6A.26.1(d)-(g), Powerlink adjusts both the non-locational component of the *ASRR* for *prescribed TUOS services* and prescribed common transmission services to provide for the amount of any anticipated under-recovery arising from prudent discounts.

The discount amount is the difference in revenue that would be recovered by the application of the maximum prices to the application of the reduced charges. Where Powerlink seeks to recover greater than 70 percent of the discount amount through these charges, Powerlink will apply to the *AER* for approval to recover the proposed recovery amount in accordance with Rule 6A.26.2.

10 MONITORING AND COMPLIANCE

As a regulated business Powerlink is required to maintain extensive compliance monitoring and reporting systems to ensure compliance with its Transmission Authority, Revenue Determination and the Rules together with numerous other legislative obligations.

In order to monitor and maintain records of its compliance with its approved *pricing methodology*, the pricing principles for *prescribed transmission services*, and part J of the Rules, Powerlink proposes to:

- Maintain the specific obligations arising from part J of the Rules in its compliance management system;
- Maintain electronic records of the annual calculation of prescribed transmission service prices and supporting information; and
- Periodically subject its transmission pricing models and processes to functional audit by suitably qualified persons.

11 NEW CONNECTIONS REQUIRING SIGNIFICANT INVESTMENT

11.1 Impact on TUOS locational prices in cases of significant investment

If a new *transmission network connection point* requires significant investment in the network, Powerlink may determine the TUOS locational price for the first year in accordance with the method in Section 11.2, to ensure customers who do not directly benefit from with the investment are not directly or materially affected, for example, by an inequitable increase in the locational price and charges.

11.2 Setting TUOS locational prices in the first year of significant investment

In the event that a significant investment occurs, Powerlink may determine the locational TUOS prices for the new transmission network connection point(s) using cost reflective network pricing and not apply the 2% side constraint at the new connection point(s) relative to the load weighted average TUOS locational price for the region, as described in Section 6.9.2.

12 ADDITIONAL INFORMATION REQUIREMENTS

A number of additional information requirements arise from the *pricing methodology guidelines* which have not been covered elsewhere in this proposed *pricing methodology*. In order to satisfy these requirements Powerlink notes that it does not:

- consider transitional arrangements are necessary as a result of the implementation of the proposed *pricing methodology*;

- have any applicable relevant derogations in accordance with chapter 9 of the Rules; or

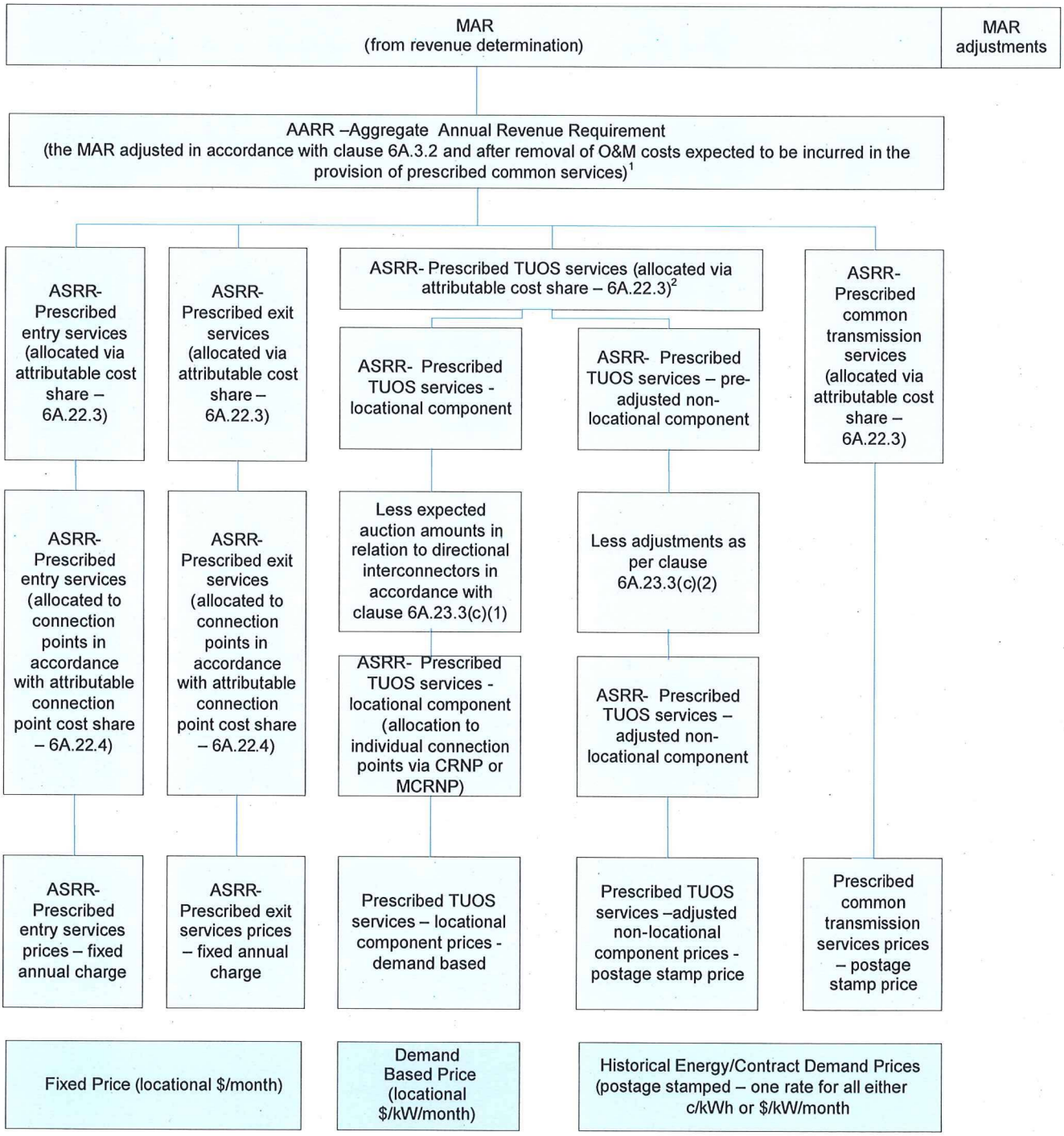
- have any applicable transitional arrangements arising from chapter 11 of the Rules.

Powerlink has not provided a confidential version of this proposed *pricing methodology* to the AER in accordance with clause 2.5 of the *pricing methodology guidelines* and hence the provisions of clause 2.1(n) of the *pricing methodology guidelines* are not applicable.

13 CONCLUSION

Powerlink's proposed *pricing methodology* for the regulatory control period from 1 July 2012 to 30 June 2017 has been submitted to the AER in accordance with the requirements of Chapter 6A of the Rules and the *pricing methodology guidelines*.

Appendix A- Structure of Transmission Pricing under Part J of Rules



1 These operating and maintenance costs are not part of the *AARR*, nor are they part of the *ASRR* for *prescribed common transmission services*, however they are recovered on a postage stamp basis.

2 Shares of the *ASRR* for *prescribed TUOS services* are to be allocated 50% to the locational component and 50% to the pre-adjusted non-location component or using an alternative allocation as per Rule 6A.23.3(d)(2).

Appendix B - Details of Cost Allocation Process

A cost allocation process is used to assign the optimised replacement cost (ORC) of all prescribed service assets to either common service (assets that benefit all transmission customers), network branches (transmission lines or transformers)[6] and prescribed entry or *prescribed exit services* in a manner consistent with Section 2.4 of the *pricing methodology guidelines*.

The cost allocation process is summarised as follows:

Step 1: Initial Cost Allocation

Assets and their ORCs are assigned to one of the following primary asset categories:

- transmission lines;
- transformers;
- circuit breakers;
- secondary systems, including protection and instrument transformers;
- common service assets (communications, reactive support, office buildings etc); and
- substation local assets (ancillary equipment, civil work, and establishment).

The following plant items are not separately identified in the ORC database and are incorporated into the ORC of the associated primary items above:

- bus work.

Step 2: Allocation to Categories of Transmission Services

Assets are allocated to the categories of prescribed service in accordance with the provisions of Section 2.4 of the *pricing methodology guidelines*. In the case of circuit breakers each circuit breaker has its replacement cost divided evenly between the branches to which it is *directly attributable*. Any circuit breaker that is not *directly attributable* to any branch together with substation local costs identified in step 1 are subject to the priority ordering process.

In the case of a shared connection asset, such as a transformer, serving multiple transmission connection points which may provide both *prescribed entry services* and *prescribed exit services* the cost of the shared connection asset will be allocated to the

6 Powerlink maintains an optimised replacement cost (ORC) model of the transmission network to determine the appropriate ORC of individual transmission lines, transformers, circuit breakers, common service assets and substation local costs.

appropriate category or categories of *prescribed transmission services* using an appropriate cost allocator[7]. For example:

- generation or reactive plant nameplate rating capacity or nominated demand supplied by the specified transmission category as a percentage of the total capacity and demand of all transmission categories at that location: Costs are attributable based on the capacity and/or nominated demand;

- unit of plant method: Costs are allocated based on the number of units of plant installed (typically circuit breakers) where these units of plant can be attributed to a particular category of transmission service; or

- as negotiated between the connecting parties.

This process would also be adopted to allocate shared costs to individual connection points.

Step 3: Priority Ordering

In the case of those costs which would be attributable to more than one category of *prescribed transmission services*, specifically the substation local assets identified in Step 1 and those circuit breakers identified as substation local costs in Step 2, costs will be allocated in accordance with the provisions of Rule 6A.23.2(d) having regard to the stand alone costs associated with the provision of *prescribed TUOS services* and *prescribed common transmission services* with the remainder being allocated to *prescribed entry services* and *prescribed exit services*. The implementation of the priority ordering process is detailed in Appendix D.

Conclusion

The shared network costs resulting from the cost allocation process are used as input to TPRICE, the *Cost Reflective Network Pricing* software that is approved by the AER for use by *TNSPs* in the NEM.

The entry, exit and common service costs are used as input to the calculation of *prescribed entry services* prices, *prescribed exit services* prices and *prescribed common transmission services* prices.

[7] This is consistent with Powerlink's cost allocation methodology which is used to allocate costs between *prescribed transmission services*, *negotiated transmission services* and *non-regulated transmission services*.

Appendix C - Cost Reflective Network Pricing Methodology

Steps

The *cost reflective network pricing methodology* (*CRNP methodology*) involves the following steps:

(1) determining the annual costs of the individual transmission network assets in the optimised transmission network;

(2) determining the proportion of each individual network element utilised in providing a transmission service to each point in the network for specified operating conditions;

(3) determining the maximum flow imposed on each transmission element by load at each connection point;

(4) allocating the costs attributed to the individual transmission elements to loads based on the proportionate use of the elements; and

(5) determining the total cost (lump sum) allocated to each point by adding the share of the costs of each individual network element attributed to each point in the network.

Allocation of Generation to Load

A major assumption in the use of the *CRNP methodology* is the definition of the generation source and the point where load is taken. The approach is to use the "electrical distance" to pair generation to load, in which a greater proportion of load at a particular location is supplied by generators that are electrically closer than those that are electrically remote. In electrical engineering terminology the "electrical distance" is the impedance between the two locations, and this can readily be determined through a standard engineering calculation called the "fault level calculation".

Once the assumption has been made as to the generators that are supplying each load for a particular load and generation condition (time of day) it is possible to trace the flow through the network that results from supplying each load (or generator). The use made of any element by a particular load is then simply the ratio of the flow on the element resulting from the supply to this load to the total use of the load made by all loads and generators in the system.

Operating Conditions for Cost Allocation

The choice of operating conditions is important in developing prices using the *CRNP methodology*. Powerlink has flexibility in the choice of operating conditions but notes that the old NER set out the principles that should apply in determining the sample of operating conditions considered. Of particular note is the requirement that the operating conditions to be used are to include at least 10 days with high system demand, to ensure that loading conditions, which impose peak flows on all transmission elements, are captured.

Schedule 6A.3.2(3) is less prescriptive requiring that the allocation of dispatched generation to loads be over a range of actual operating conditions from the previous financial year and that the range of operating scenarios is chosen so as to include the conditions that result in most stress on the transmission network and for which network investment may be contemplated.

Load and generation data

Clause 2.2(a) of the *pricing methodology guidelines* requires that prices for the recovery of the locational component of *prescribed TUOS services* are based on demand at times of greatest utilisation of the transmission network and for which network investment is most likely to be contemplated, in accordance with Rule 6A.23.4(e).

The use made of the network by particular loads and generators will vary considerably depending on the load and generation conditions on the network. For this reason Powerlink uses the full year of operating data (i.e. 365 days of half hourly data) as an appropriate set of operating conditions. The TPRICE capacity method of cost allocation (used by Powerlink) automatically captures the peak loading conditions on network elements from the sample of operating conditions analysed.

Consistent with clause 2.2(f) of the *pricing methodology guidelines* where actual operating conditions from the previous complete financial year are unavailable for a connection point, as would be the case for a new connection point, an estimate based on the *contract agreed maximum demand* and other characteristics of the load would be used to allocate costs to that connection point.

Appendix D - Priority Ordering Methodology

Rules Requirements

Rule 6A.23.2 (d) requires that:

Where, as a result of the application of the *attributable cost share*, a portion of the *AARR* would be attributable to more than one category of *prescribed transmission services,* that *attributable cost share* is to be adjusted and applied such that any costs of a *transmission system* asset that would otherwise be attributed to the provision of more than one category of *prescribed transmission services*, is allocated as follows:

(1) to the provision of *prescribed TUOS services*, but only to the extent of the *stand-alone amount* for that *category of prescribed transmission services*;

(2) if any portion of the costs of a *transmission system* asset is not allocated to *prescribed TUOS services*, under subparagraph (1), that portion is to be allocated to *prescribed common transmission services,* but only to the extent of the *stand-alone amount* for that *category of prescribed transmission services*; and

(3) if any portion of the costs of a *transmission system* asset is not attributed to *prescribed transmission services* under subparagraphs (1) and (2), that portion is to be attributed to *prescribed entry services* and *prescribed exit services.*

Stand-alone amount is defined as:

For a *category of prescribed transmission services*, the costs of a *transmission system* asset that would have been incurred had that *transmission system* asset been developed, exclusively to provide that *category of prescribed transmission services.*

Transitional Rule 11.6.11(c) states the following:

"For the purposes of new Chapter 6A:

(1) the costs of the *transmission system* assets that from time to time may be treated as:

(i) directly attributable to the provision of a prescribed connection service; or

(ii) incurred in providing a prescribed connection service,

to a *Transmission Network User* or a group of *Transmission Network Users* at a *transmission network connection point* is limited to the costs of the eligible assets which, from time to time, provide that prescribed connection service;

(2) any costs of an existing asset or a replacement asset (or of any portion of an existing asset or a replacement asset) that:

(i) is not an eligible asset (other than as a result of clause 11.6.11(d)); and

(ii) is used by a *Transmission Network Service Provider* to provide *connection services* to a *Transmission Network User* or a group of *Transmission Network Users* at a *transmission network connection point*,

must be treated as costs that are directly attributable to the provision of, or are incurred in providing, *prescribed TUOS services* and, to avoid doubt, the services provided by those assets which would otherwise be *connection services* are taken to be *prescribed TUOS services*; and

(3) the *stand-alone amount* for *prescribed TUOS services* is taken to include any portion of the costs referred to in clause 11.6.11(c)(2) that has not been allocated under clause 6A.23.2(d)(1)."

Objective and General Approach

The allocation methodology relies on the assumption 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[8] in the stand-alone arrangement to the number of high voltage circuit breakers in the whole substation.

Proposed Methodology

Step 1: Branch Identification

Identify the branches[9], being the lines, transformers, major reactive devices and exits/entries in the substation which provide prescribed TUOS, *prescribed common transmission services* and exit or entry services, in the substation.

Step 2: Allocation of Circuit Breakers to Branches

For each high voltage circuit breaker in the substation identify the branches directly connected to it. Any circuit breaker that does not directly connect to a branch is excluded from allocation and all costs associated with it are added to the substation infrastructure and establishment cost.

Count the total number of circuit breakers directly connected to branches.

Distribution Network Service Providers (DNSPs) are classified as a prescribed exit service while Generators are classified as a prescribed entry service. Negotiated services are not

8 Low voltage circuit breakers are not considered in the standalone arrangements.

9 Described in Definition - Branches.

part of the regulated asset base and fall outside the priority ordering process detailed in Rule 6A.23.2(d).

Step 3.1: Stand-alone arrangements for Prescribed TUOS

With reference to the number of lines providing *prescribed TUOS services* determine the number of circuit breakers required to provide TUOS services of an equivalent standard on a stand-alone basis[10]. The stand-alone configuration is the simplest substation configuration (in the absence of development) had it been developed to provide a prescribed TUOS service. This may be done by way of a look up of typical stand-alone configurations.

Step 3.2: Stand-alone arrangements for Prescribed common transmission services

With reference to the number of lines providing *prescribed TUOS services* and the devices providing *prescribed common service* determine the number of circuit breakers required to provide *prescribed common transmission services* of an equivalent standard on a stand-alone basis. The stand-alone configuration is the simplest substation configuration (in the absence of development) had it been developed to provide a *prescribed common service*. This may be done by way of a look up of typical stand-alone configurations.

Step 4: Allocation of substation infrastructure and establishment costs

Step 4.1 Allocation of Prescribed TUOS

Allocate a portion of substation infrastructure and establishment costs to prescribed TUOS according to the ratio of the high voltage circuit breakers identified in step 3.1 to the total number of high voltage circuit breakers connected to branches in the substation identified in step 2.

Step 4.2 Calculation of the Unallocated Substation Infrastructure Costs (after TUOS Allocation)

Calculate the unallocated substation infrastructure cost (after TUOS allocation) by subtracting the amount calculated in step 4.1 from the total substation infrastructure amount.

Step 4.3 Allocation of Prescribed Common Service

Allocate a portion of the substation infrastructure and establishment costs to prescribed common service based on to the ratio of the high voltage circuit breakers providing prescribed common transmission services identified in step 3.2 to the total number of high voltage circuit breakers connected to branches in the substation. If the common service portion of substation infrastructure is greater than the unallocated costs, then the unallocated portion only is attributed to prescribed common service. In this instance, nothing will be attributed to prescribed entry and *prescribed exit services*.

[10] A substation would typically not exist to provide TUOS services alone, however this interpretation is inconsistent with the intent of the Rule. Accordingly standalone arrangements for prescribed TUOS are taken to require a level of switching consistent with the prevailing bus arrangements.

Step 4.4 Calculation of the Unallocated Substation Infrastructure Costs (after Common Service Allocation)

Calculate the unallocated substation infrastructure cost (after Common Service allocation) by subtracting the amount calculated in step 4.3 from the amount calculated in step 4.2.

Step 4.5 Allocation of Prescribed Entry and Exit Service costs to Prescribed TUOS per 11.6.11

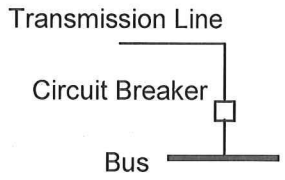
Allocate the remaining substation infrastructure and establishment costs (calculated in step 4.4) to each branch providing *prescribed TUOS services* based on the ratio of the high voltage circuit breakers providing the *prescribed TUOS services* to the branch to the total number of high voltage circuit breakers providing *prescribed TUOS services* or in accordance with the cost allocation process in Appendix B as appropriate.

Notes

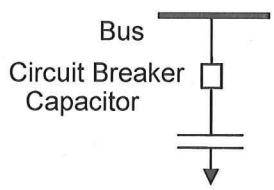
- Costs are only allocated in step 4 until fully allocated.
- Consistent with Rule 6A.23.2(d)(3) it is possible that no costs will be attributed to entry and exit services.
- New and existing negotiated service assets are excluded from the analysis as any incremental establishment costs associated with them are taken to be included in the negotiated services charges on a causation basis.
- The assessment of standalone arrangements only needs to be conducted once per substation except where changes to the configuration of the substation occur.

Definition - Branches

As illustrated by the diagrams below a "Branch" is a collection of assets (e.g. lines, circuit breakers, capacitors, buses and transformers) that provide a transmission service.



Branch with Transmission Line, Bus and Circuit Breaker

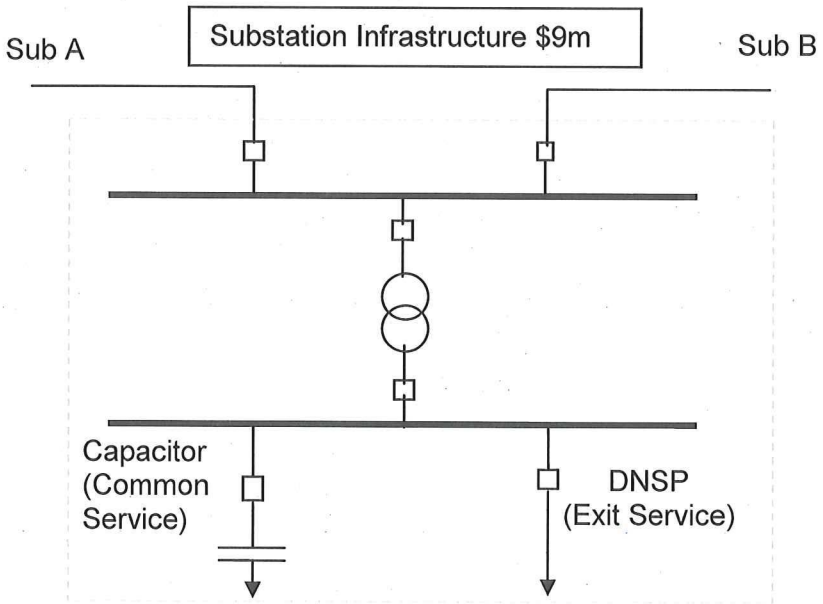


Branch with Capacitor, Circuit Breaker and Bus

Examples

Example A

Substation Configuration

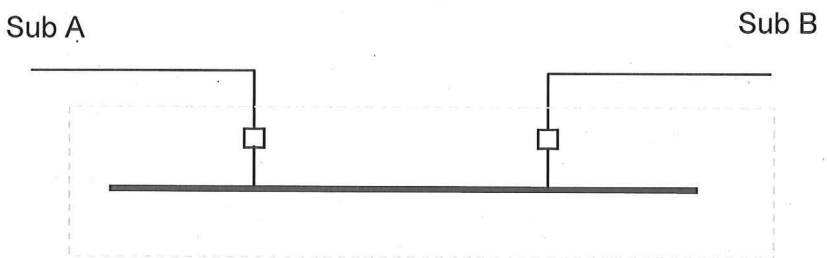


Step 1: The branches are Sub A, Sub B, DNSP, Tie Transformer and *Prescribed Common Service*.

Step 2: The total number of circuit breakers directly connected to branches is 6.

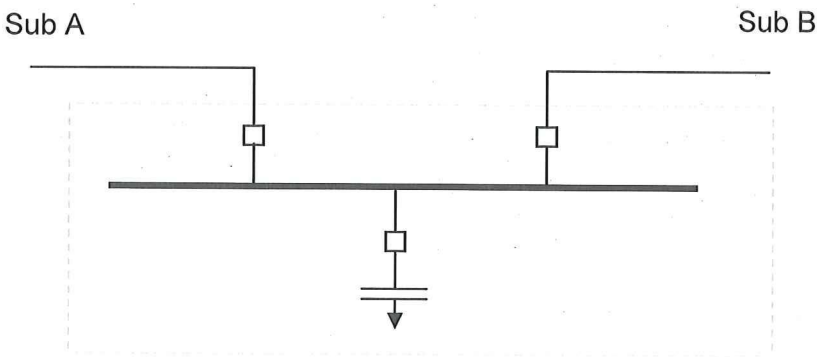
Step 3.1: The stand-alone arrangement for the provision of *prescribed TUOS services* to an equivalent standard is shown below and consists of 2 circuit breakers.

Stand Alone Prescribed TUOS Service



Step 3.2: The stand-alone arrangement for the provision of *prescribed common transmission services* to an equivalent standard is shown below and consists of 3 circuit breakers.

Stand Alone *Prescribed Common Service*



Step 4:

Assume total Infrastructure cost is $9m.

Costs are allocated to prescribed TUOS in the ratio of the circuit breakers in the stand-alone arrangement to the total circuit breakers.

Infrastructure Cost Allocated to TUOS = (2/6) x $9m = $3m

Unallocated Substation Infrastructure Costs (after TUOS allocation) = $9m - $3m = $6m

Costs are allocated to *prescribed common service* in the ratio of the circuit breakers in the stand-alone arrangement to the total circuit breakers.

Infrastructure Cost allocated to Common Service = (3/6) x $9m = $4.5m

Unallocated Substation Infrastructure Costs (after Common Service allocation)
= $6m - $4.5m = $1.5m

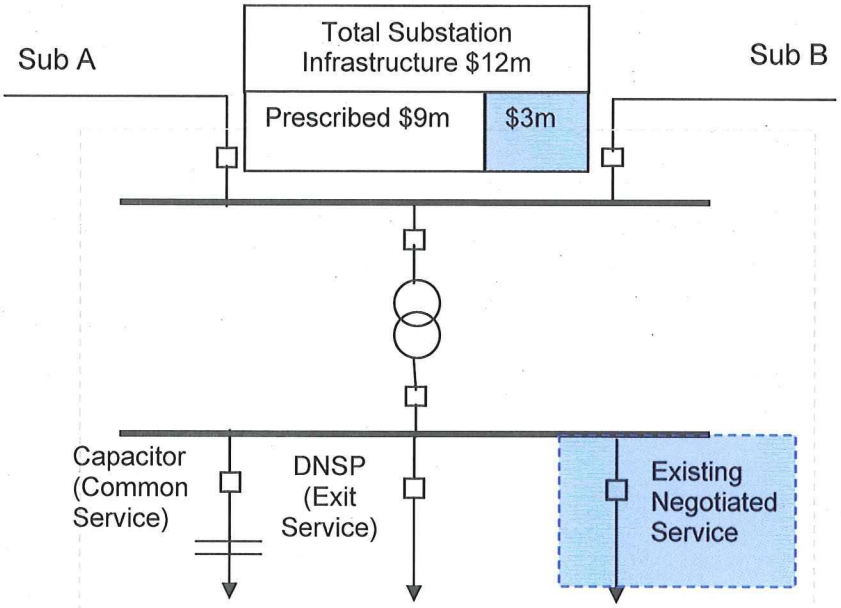
Remainder of unallocated (calculated above) to be allocated to *prescribed TUOS per 11.6.11*

Infrastructure Cost allocated to prescribed TUOS = $1.5m

Item	Number	Allocation	Unallocated
Substation infrastructure costs		9,000,000	9,000,000
Total Breakers	6		
TUOS Stand-alone breakers	2		
Share to TUOS (a)	0.333	3,000,000	6,000,000
Common Service stand-alone breakers	3		
Share to Common Service	0.500	4,500,000	1,500,000
Share to TUOS (b)		1,500,000	
Total Share to TUOS (a) + (b)		4,500,000	
Total Share to Common Service		4,500,000	

Example B

Substation Configuration

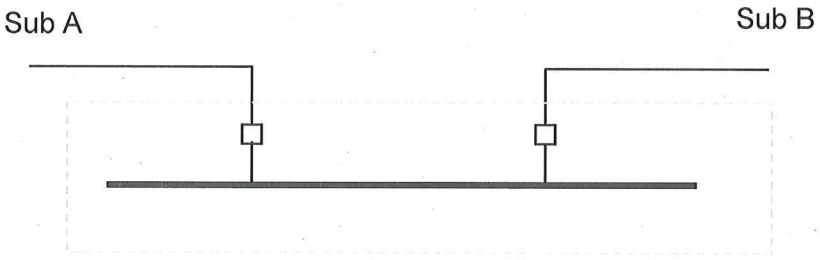


Step 1: The branches are Sub A, Sub B, DNSP, Tie Transformer, *Prescribed Common Service* and an existing negotiated service.

Step 2: The total number of circuit breakers directly connected to branches is 6 (no prescribed costs are allocated to the existing negotiated service).

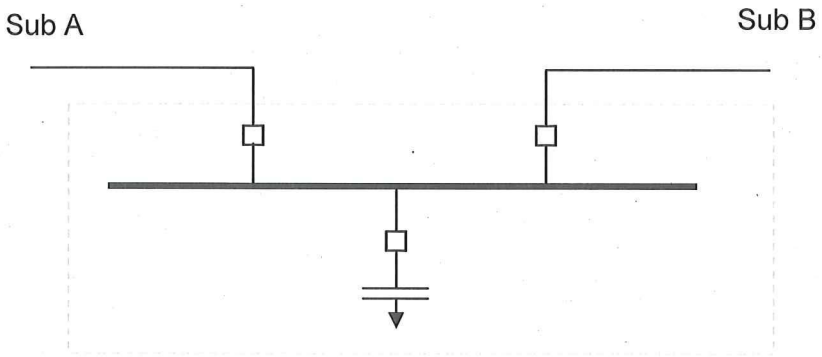
Step 3.1: The stand-alone arrangement for the provision of *prescribed TUOS services* to an equivalent standard is shown below and consists of 2 circuit breakers.

Stand Alone Prescribed TUOS Service



Step 3.2: The stand-alone arrangement for the provision of *prescribed common transmission services* to an equivalent standard is shown below and consists of 3 circuit breakers.

Stand Alone *Prescribed Common Service*



Step 4:

Assume total Infrastructure cost is $12m, however $3m is for the existing negotiated service, which does not form part of the regulated asset base and is not governed by 6A.23.2(d).

Costs are allocated to prescribed TUOS in the ratio of the circuit breakers in the stand-alone arrangement to the total circuit breakers.

Infrastructure Cost Allocated to TUOS = (2/6) x $9m = $3m

Unallocated Substation Infrastructure Costs (after TUOS allocation) = $9m - $3m = $6m

Costs are allocated to *prescribed common service* in the ratio of the circuit breakers in the stand-alone arrangement to the total circuit breakers.

Infrastructure Cost allocated to Common Service = (3/6) x $9m = $4.5m

Unallocated Substation Infrastructure Costs (after Common Service allocation)
= $6m - $4.5m = $1.5m

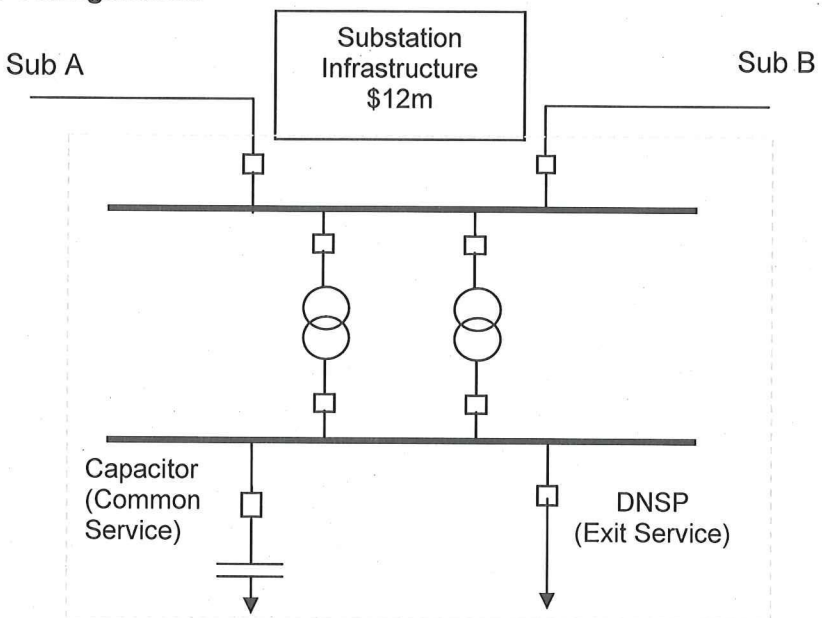
Remainder of unallocated (calculated above) to be allocated to *prescribed TUOS*.

Infrastructure Cost allocated to *prescribed TUOS* = $1.5m

Item	Number	Allocation	Unallocated
Substation infrastructure costs		9,000,000	9,000,000
Total Breakers	6		
TUOS Stand-alone breakers	2		
Share to TUOS (a)	0.333	3,000,000	6,000,000
Common Service stand-alone breakers	3		
Share to Common Service	0.500	4,500,000	1,500,000
Share to TUOS (b)		1,500,000	
Total Share to TUOS		4,500,000	
Total Share to Common Service		4,500,000	

Example C

Substation Configuration

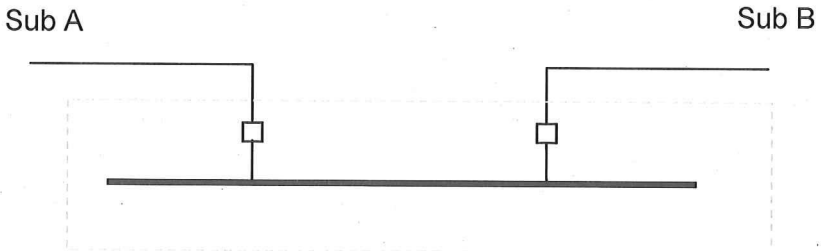


Step 1: The branches are Sub A, Sub B, DNSP, Tie Transformer 1, Tie Transformer 2 and *Prescribed Common Service*.

Step 2: The total number of circuit breakers directly connected to branches is 8.

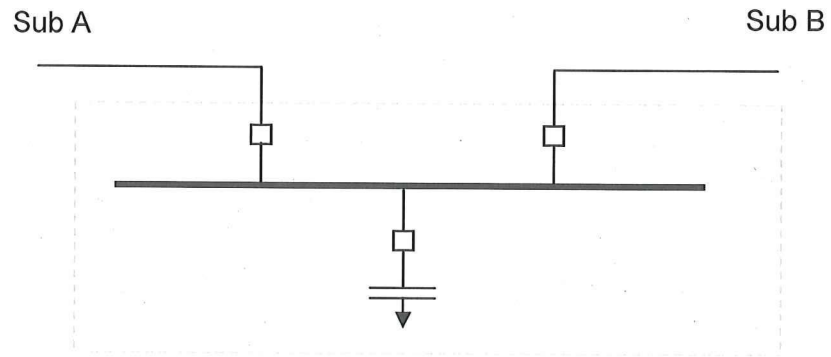
Step 3.1: The stand-alone arrangement for the provision of *prescribed TUOS services* to an equivalent standard is shown below and consists of 2 circuit breakers.

Stand Alone Prescribed TUOS



Step 3.2: The stand-alone arrangement for the provision of *prescribed common transmission services* to an equivalent standard is shown below and consists of 3 circuit breakers.

Stand Alone *Prescribed Common Service*



Step 4:

Assume total Infrastructure cost is $12m.

Costs are allocated to prescribed TUOS in the ratio of the circuit breakers in the stand-alone arrangement to the total circuit breakers.

Infrastructure Cost Allocated to TUOS (a) = (2/8) x $12m = $3m

Unallocated Substation Infrastructure Costs (after TUOS allocation) = $12m - $3m = $9m

Costs are allocated to *prescribed common service* in the ratio of the circuit breakers in the stand-alone arrangement to the total circuit breakers.

Infrastructure Cost allocated to Common Service = (3/8) x $12m = $4.5m

Unallocated Substation Infrastructure Costs (after Common Service allocation)
= $9m - $4.5m = $4.5m

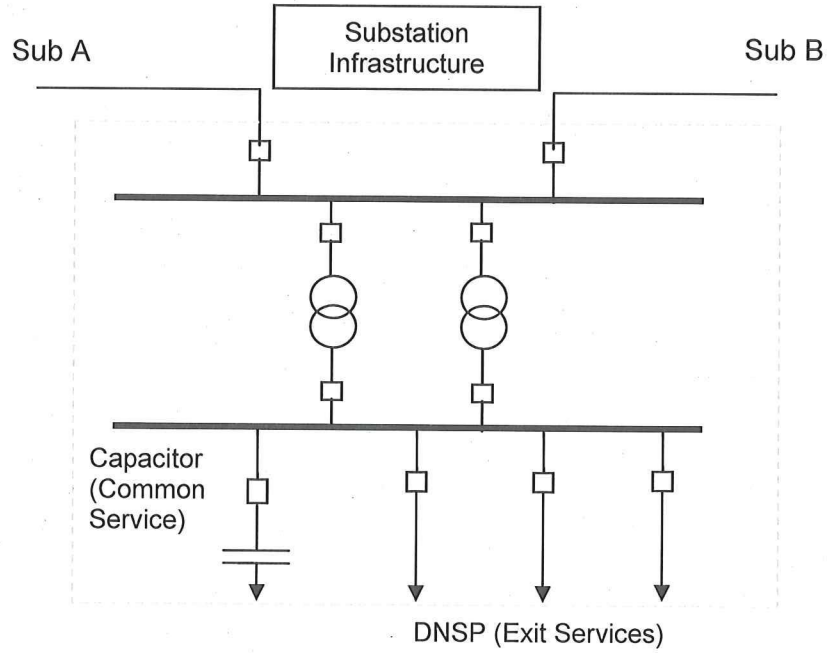
Remainder of unallocated (calculated above) to be allocated to *prescribed TUOS.*

Infrastructure Cost allocated to *prescribed TUOS (b)* = $4.5m

Item	Number	Allocation	Unallocated
Substation infrastructure costs		12,000,000	12,000,000
Total Breakers	8		
TUOS Stand-alone breakers	2		
Share to TUOS (a)	0.250	3,000,000	9,000,000
Common Service stand-alone breakers	3		
Share to Common Service	0.375	4,500,000	4,500,000
Share to TUOS (b)		4,500,000	
Total Share to TUOS		7,500,000	
Total Share to Common Service		4,500,000	

Example D

Substation Configuration

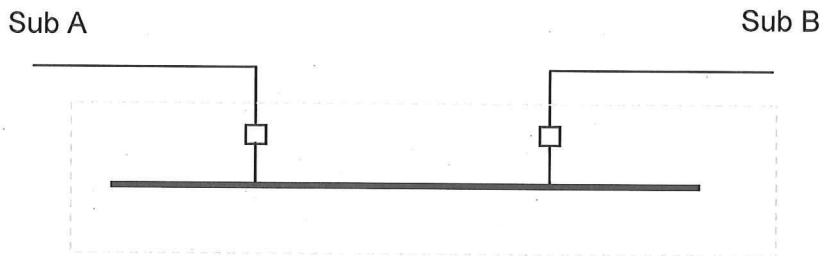


Step 1: The branches are Sub A, Sub B, DNSP1, DNSP2, DNSP3, Tie Transformer 1, Tie Transformer 2 and PCS.

Step 2: The total number of circuit breakers directly connected to branches is 10.

Step 3.1: The stand-alone arrangement for the provision of *prescribed TUOS services* to an equivalent standard is shown below and consists of 2 circuit breakers.

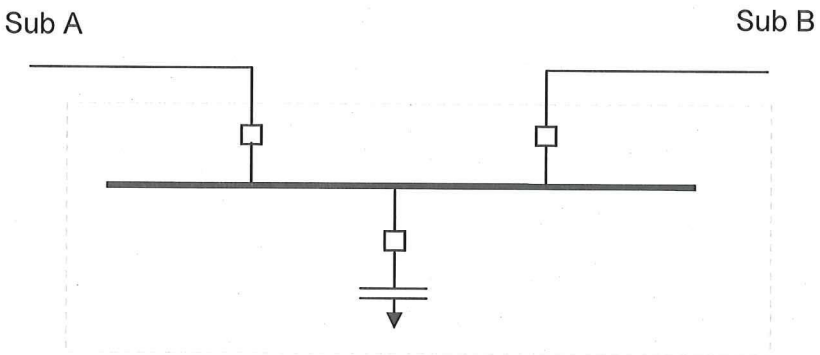
Stand Alone Prescribed TUOS



Step 3.2:

The stand-alone arrangement for the provision of *prescribed common transmission services* to an equivalent standard is shown below and consists of 3 circuit breakers.

Stand Alone *Prescribed Common Service*



Step 4:

Assume total Infrastructure cost is $15m.

Costs are allocated to prescribed TUOS in the ratio of the circuit breakers in the stand-alone arrangement to the total circuit breakers.

Infrastructure Cost Allocated to TUOS = (2/10) x $15m = $3m

Unallocated = $15m - $3m = $12m

Costs are allocated to *prescribed common service* in the ratio of the circuit breakers in the stand-alone arrangement to the total circuit breakers.

Infrastructure Cost allocated to Common Service = (3/10) x $15m = $4.5m

Unallocated = $12m - $4.5m = $7.5m

Remainder of unallocated (calculated above) to be allocated to *prescribed entry and prescribed exit services*.

Infrastructure Cost allocated to Exit = $7.5m

Item	Number	Allocation	Unallocated
Substation infrastructure costs		15,000,000	15,000,000
Total Breakers	10		
TUOS Stand-alone breakers	2		
Share to TUOS	0.200	3,000,000	12,000,000
Common Service stand-alone breakers	3		
Share to Common Service	0.300	4,500,000	7,500,000
Exit service		7,500,000	

14 AUTHORISATION

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Manager Network Customers & Pricing

25/5/11
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Date

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Manager Network Strategy & Performance

25/5/11
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Date