

# **POWER NETWORKS**

# Network Pricing Principles Statement and 2015/16 Network Pricing Proposal

May 2015

# **Executive Summary**

This document accompanies the Power and Water Corporation's proposed 2015/16 network tariffs for standard control services<sup>1</sup> and contains PWC's Network Pricing Principles Statement (NPPS) and 2015/16 Network Pricing Proposal.

The NPPS and 2015/16 Network Pricing Proposal, including the network tariffs, have been developed in accordance with the requirements of:

- The Utilities Commission's (the Commission) Final 2014 Networks Price Determination (2014 Networks Price Determination: Final Determination)<sup>2</sup>;
- The Commission's Regulatory Information Notice (the RIN) requirements for the 2014 Networks Price Determination (2014 NPD)<sup>3</sup>;
- The Electricity Networks Third Party Access Code (the TPA Code)<sup>4</sup>; and
- Chapter 6 (Part I) of the National Electricity Rules (the Rules), recognising that the Commission is applying the requirements of the Rules to the extent that they are consistent with the TPA Code<sup>5</sup>.

Power Networks has maintained the established tariff classes to which its existing and future network tariffs will be assigned. They are:

- *Domestic* (all Domestic customers);
- *Commercial HV* (high voltage connected Commercial customers with an annual consumption greater than 750 MWh per annum); and
- *Commercial* (all other Commercial customers and unmetered supplies).

The Commission's Final Determination concerning side constraints<sup>6</sup> continues to apply to these tariff classes throughout the 2014-19 regulatory control period.

Power Networks has used the approved 2014/15 developed Cost of Supply Model to prepare the 2015/16 Pricing Proposal Model. The intention is that this model will be used to guide future tariff changes and demonstrate compliance with the provisions of the 2014 NPD Final Determination, the RIN, the TPA Code and the Rules. A description is provided of this model and the resultant 2015/16 network tariffs are presented. This model has been updated and does not incorporate unders and overs in the development of the proposed 2015/16 tariffs.

<sup>&</sup>lt;sup>1</sup> Termed as either 'standard control network tariffs' or 'network tariffs' hereafter.

<sup>&</sup>lt;sup>2</sup> Utilities Commission, *2014 Network Price Determination: Final Determination Part A – Statement of Reasons & Part B – Network Price Determination*, April 2014.

<sup>&</sup>lt;sup>3</sup> Utilities Commission, *Regulatory Information Notice under Section 25 of the Utilities Commission Act and Clause 22 of Network Licence,* April 2013, clauses 16 & 18, p. 51-53.

<sup>&</sup>lt;sup>4</sup> Electricity Networks (Third Part Access) Code, Chapter 7.

<sup>&</sup>lt;sup>5</sup> Utilities Commission, *2014-2019 Network Price Determination Framework And Approach Decision Paper*, November 2012, p. 1.

<sup>&</sup>lt;sup>6</sup> Utilities Commission, *2014 Network Price Determination: Final Determination Part A – Statement of Reasons*, April 2014, clause 4.56 & 4.57, p. 40.

Power Networks proposes to undertake tariff reform and rebalancing to some standard control network tariffs. These changes will be made progressively, within the prescribed side constraints, and with due regard for their impact upon customers.

The network tariff changes discussed in this document will be progressively implemented during the remainder of the 2014-19 regulatory control period. The proposals for future tariff development are principally driven by the requirement to improve the cost reflectivity of network pricing. The revised tariffs will also provide more equitable outcomes for customers, whilst contributing to managing network demand.

The proposed changes for 2015/16 follow the path established in the 2015 Pricing Proposal. They embody a general increase, limited by the tariff class side constraint, of 12.06%. The changes are as follows:

• Retain all basic tariff structures as approved in 2014/15.

#### Domestic and Commercial < 750MWh pa

- Domestic block structure to move incrementally towards flat tariff by decreasing the lower block energy charge by 0.5% and increasing the upper block by 2.7%, relative to the general increase. Domestic SAC to reflect the average increase. These movements taken together reduce prices in relative terms for smaller consumption customers;
- Domestic and Commercial customers have markedly different consumption characteristics, requiring different block thresholds and energy rates to improve the cost reflectivity of the two tariffs. The energy tariffs were the same in 2014/15 but have been separated in 2015/16 to reflect their different costs of supply;
- Commercial SAC to increase by 7% relative to the general increase. Block structure also to move incrementally towards a flat tariff by decreasing the lower block energy charge by 1% and increasing the upper block by 0.4%, relative to the general increase; and
- These changes make incremental progress away from the historical declining block tariff structure towards a flat tariff structure. Power Networks will further consider the merits of progressing to an inclining block structure for small customer tariffs.

#### **Unmetered Supplies**

 Rebalance tariffs for street lighting (and similar consumption profiled unmetered supplies) and for traffic lights (and similar unmetered 24 hour supplies), to improve their cost reflectivity. The street light tariff has been increased by 2% (a decrease of 10.9% relative to the general increase), whereas the traffic light tariff has been increased by 5% relative to the general increase.

#### Commercial > 750 MWh pa

- The SAC charges of these tariffs have been altered to reflect the relative costs of the equipment involved. The SAC for the LV tariff was reduced by 5% and that for HV increased by 7%, relative to the overall tariff increase;
- Progressively simplify tariff structures and rebalance tariffs for greater cost reflectivity;
- The block 1 and block 2 demand charges have now been aligned for both HV and LV tariffs, and the upper block charges brought closer to alignment. The goal of this movement is to reduce the number of blocks, potentially to a single rate;
- The detailed changes to individual tariff blocks of the LV and HV tariffs differ and have been chosen to mitigate the price impacts on their different customer bases to acceptable levels; and
- The average prices for HV and LV tariffs also differ to reflect the different system assets used (LV connected customers do not make use of distribution transformers or the LV network). The average rates for these tariffs are 8.69 ¢/kWh and 4.98 ¢/kWh respectively.

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# 1 Background

## 1.1 Northern Territory legislation and National Electricity Rules

Clause 9 of the *Northern Territory Electricity Networks (Third Party Access) Act* establishes the Utilities Commission (the Commission) as the jurisdictional regulator and empowers it to monitor and enforce compliance with the Electricity Networks (Third Party Access) Code (TPA Code). The TPA Code sets out the respective responsibilities of the Commission and of Power Networks and includes provisions on the regulation and pricing of standard network access services.

# 1.1.1 Network Pricing Principles Statement

The TPA Code requires that Power Networks provide the Commission with a statement, for approval, setting out the details of the principles and methods used for defining the individual standard network access services to be supplied by the network providers and for establishing the reference tariffs to apply to those services<sup>7</sup>. This is referred to as the Network Pricing Principles Statement (NPPS) and the Commission approved it at the commencement of the 2014-19 regulatory control period, in 2014/15. It is replicated here in summary form in order to provide the necessary context for the 2015/16 Network Pricing Proposal.

# 1.1.2 Network Pricing Proposal

The TPA Code further requires that Power Networks provide the Commission with a statement, for approval, setting out proposed standard control network tariffs for the forthcoming regulatory year, including a statement detailing how the standard control network tariffs have been calculated by application of the principles in the TPA Code<sup>8</sup>. The RIN outlines the requirements of the Network Pricing Proposal<sup>9</sup>, addressing many of the matters required by a Pricing Proposal in Chapter 6 (Part I) of the Rules.

<sup>&</sup>lt;sup>7</sup> Electricity Networks (Third Party Access) Code, clause 75(5).

<sup>&</sup>lt;sup>8</sup> Electricity Networks (Third Party Access) Code, clause 78(1) & clause 78(2).

<sup>&</sup>lt;sup>9</sup> Utilities Commission, *Regulatory Information Notice under Section 25 of the Utilities Commission Act and Clause 22 of Network Licence*, April 2013, clause 18, p. 53.

#### 1.2 Structure of Power Networks' NPPS and Network Pricing Proposal

The structure of Power Networks' NPPS and 2015/16 Network Pricing Proposal is represented in Table 1.

Chapter	Title	Purpose
2	Business Characteristics	Summarises those characteristics of Power Networks' system that provide the context for network tariffs.
3	Regulatory Requirements	Summarises the regulatory requirements as they relate to Power Networks' NPPS and Network Pricing Proposal.
PART A: NETW	ORK PRICING PRINCI	PLES STATEMENT
4	Classification of Services	Sets out the principles and methods used for defining the individual direct control services that are supplied by Power Networks.
5	Tariff Classes	Explains how the tariff classes, into which Power Networks' customers of standard control services are divided, have been constituted.
6	Reference Tariffs for Direct Control Services	Explains the factors that Power Networks has taken into account in establishing tariffs for direct control services.
7	Efficient Network Pricing	Sets out how Power Networks has observed economic principles in establishing its tariffs and their charging parameters.
8	Price Modelling	Describes the Pricing Proposal Model (confidential) that is submitted as an attachment to this document.
PART B: 2015	/16 NETWORK PRICIN	IG PROPOSAL
9	Power Networks' Tariff Strategy	Outlines Power Networks' network tariff strategy for the 2014-19 regulatory control period.
10	Tariff Classes and Tariffs	Outlines the tariff classes and the proposed tariffs for each tariff class.
11	Tariff Charging Parameters	Sets out, for each proposed tariff, the charging parameters and the elements of service to which each charging parameter relates.
12	Power Networks' Revenue and Tariff Changes – 2015/16	Sets out the expected weighted average revenue for each tariff class and the increase to each tariff charging parameter in 2015/16.
13	Customer Impacts	Considers the impact of the 2015/16 prices on customers and the nature of any variations and adjustments that could occur to tariffs.
14	Compliance	This chapter demonstrates the compliance of Power Networks' proposed network tariffs for the 2015/16 regulatory year.
15	Price Modelling	Describes the Pricing Proposal Model (confidential) that is submitted as an attachment to this document.

#### Table 1 – Structure of the NPPS and 2015/16 Network Pricing Proposal

Chapter	Title	Purpose
PART C: ATTA	CHMENTS	
Attachment 1	Network Service Classification	Includes the Commission's classification of Power Networks' network access services, as per the 2014 NPD Final Determination.
Attachment 2	Cost of Supply Modelling	Description of Power Networks' approach to modelling the cost of supply.
Attachment 3	Tariffs for 2015/16	Power Networks' proposed standard control network tariffs for 2015/16.
Attachment 4	Compliance Checklist	Checklist of compliance requirements cross-referenced to sections of this Pricing Proposal.
Attachment 5	Glossary	Abbreviations used in this document.
Confidential Attachment 6	Cost of Supply Model (2015/16 Pricing Proposal Model)	Modelling of the cost of providing standard network access services.

### 1.3 Confidentiality

The TPA Code does not contain a confidentiality provision in relation to customers' consumption and billing information, which Power Networks considers to be confidential.

The Rules provide for the confidentiality of pricing information in the following circumstances.

#### 6.19.2 Confidentiality of distribution network pricing information

(a) Subject to the Law and the *Rules*, all information about a *Service Applicant* or *Distribution Network User* used by *Distribution Network Service Providers* for the purposes of *distribution service* pricing is confidential information.

The following attachment to the 2015/16 Pricing Proposal contains sensitive confidential information specific to individual distribution network users:

Confidential Attachment 6 – Cost of Supply Model (2015/16 Pricing Proposal Model)

Power Networks requests that the Commission does not disclose the information contained in this attachment to any person, except as permitted by any relevant legislation.

# 2 Business Characteristics

Power Networks is a ring-fenced electricity network business within Power and Water and has responsibility for planning, building and maintaining reliable electricity networks to transport electricity between electricity generators and electricity consumers in the Northern Territory. Its mission is to achieve this in a safe, reliable, efficient and environmentally sustainable manner. Power Networks operates under a Network Licence issued by the Commission that authorises it to:

- Own and operate an electricity network within the geographic area specified in Schedule 2 of that Network Licence; and
- Connect the electricity network to another electricity network, in accordance with the terms and conditions of the Network Licence.

Schedule 2 of the Network Licence lists the regulated electricity networks covered by the Licence as:

- Darwin (city, suburbs and surrounding rural areas);
- Katherine (township and surrounding rural areas);
- Darwin-Katherine Transmission Line (132kV) which extends from the network 132kV bus at Channel Island Power Station to a 132/22kV substation adjacent to the Katherine Power Station, with a 132/22kV substation at Manton and a 132/66kV substation at Pine Creek;
- Tennant Creek (township and surrounding rural areas); and
- Alice Springs (township and surrounding rural areas).

These regulated electricity networks, the Darwin-Katherine grid, Alice Springs and Tennant Creek stand-alone systems, are the subject of the 2015/16 Network Pricing Proposal.

# 3 Regulatory Requirements

### 3.1 Requirements of the TPA Code

The requirements of the TPA Code in relation to network pricing are set out in Sections 74 "Objectives of network pricing"; Section 75 "Structure of regulated network prices"; Section 77 "Publication of network tariffs" and Section 78 "Role of regulator".

### 3.2 Requirements of the Commission's RIN

In clause 16 of the RIN, the Commission sets out the requirement for Power Networks to provide a Network Pricing Principles Statement<sup>10</sup>, which mirrors some of the requirements set out in the Rules.

In clause 18 of the RIN, the Commission sets out the requirement for Power Networks to provide an indicative Network Pricing Proposal and Tariff Schedules<sup>11</sup>, which mirrors many of the requirements set out in the Rules.

<sup>&</sup>lt;sup>10</sup> Utilities Commission, *Regulatory Information Notice under Section 25 of the Utilities Commission Act and Clause 22 of Network Licence,* April 2013, clause 18.

<sup>&</sup>lt;sup>11</sup> Utilities Commission, *Regulatory Information Notice under Section 25 of the Utilities Commission Act and Clause 22 of Network Licence,* April 2013, clause 18.

#### 3.3 Requirements of the Commission's 2014 NPD Final Determination

The principal elements of the Commission's 2014 NPD Final Determination pertaining to pricing are the following Final Decisions:

- Approved Network Services Classification;
- The form of price control;
- The application of side constraints to the annual movement in the weighted average revenue for tariff classes; and
- The treatment of unders and overs.

These are described below.

### 3.3.1 Approved Network Services Classification

The Commission's 2014 NPD Final Determination specifies the Commission's classification of Power Networks' direct control services (both standard control services and alternative control services)<sup>12</sup>. This classification is set out in Attachment 1. PWC does not propose to alter the Commission's 2014 approved direct control services classification in this submission, but does note that the alternative control services are also undertaking a pricing review to achieve greater cost reflectivity.

## 3.3.2 Price control mechanism

A revenue cap form of price control will apply during the 2014-19 regulatory control period. The Commission has determined that Power Networks must submit network prices that comply with the following formula<sup>13</sup>:

$$\sum_{i=1}^{n} \sum_{j=1}^{m} p_{t}^{i,j} \times q_{t}^{j,j} \leq R_{t-1} \times (1 + CPI_{t}) \times (1 - Xt) \times (1 \pm passthrough_{t}) \pm \Delta R_{t}$$

where:

$R_{t-1}$	is the revenue in regulatory year t-1
CPI <sub>t</sub>	is the annual percentage change in CPI from March in regulatory year <i>t-2</i> to March in regulatory year $t-1^{14}$
Xt	is the allowed real change in revenue from regulatory year $t-1$ to regulatory year $t$ of the 2014-19 regulatory control period as determined by the Commission
passthrough <sub>t</sub>	is any positive pass through amount or negative pass through amount in regulatory year <i>t</i> determined by the Commission, expressed as a percentage of the annual revenue requirement

<sup>&</sup>lt;sup>12</sup> Utilities Commission, *2014 Network Price Determination Final Determination Part A – Statement of Reasons*, April 2014, Appendix A, p. 160.

<sup>&</sup>lt;sup>13</sup> Ibid., p. 39.

<sup>&</sup>lt;sup>14</sup> The Commission subsequently confirmed that the use of the December quarter CPI would be acceptable.

ΔRt	is the overs and unders adjustment to the annual revenue requirement in regulatory year $t$
п	is the number of network tariffs
т	is the number of tariff components
$p^{t}_{i,j}$	is the price of component <i>i</i> of tariff <i>j</i> in regulatory year $t$
$\boldsymbol{q}^{t}_{i,j}$	is the forecast volume of component <i>i</i> of tariff <i>j</i> in regulatory year <i>t</i>

In the 2015/16 Network Pricing Proposal, Power Networks demonstrates that its network tariffs have been set in a manner that compiles with the provisions of this revenue cap form of price control.

#### 3.3.3 Side constraints

The Commission has determined that the annual movement in the weighted average revenue for tariff classes must comply with the following formula<sup>15</sup>:

$$\frac{\sum_{j=1}^{m} p_{t}^{j} \times q_{t-2}^{j}}{\sum_{j=1}^{m} p_{t-1}^{j} \times q_{t-2}^{j}} \leq (1 + CPI_{t}) \times (1 - X_{t}) \times (1 + Y_{t}) \times (1 \pm Passthrough_{t}) \pm \left(\frac{\Delta R_{t}}{R_{t-2}}\right)$$

where:

CPI <sub>t</sub>	is the annual percentage change in CPI from March in regulatory year $t-2$ to March in regulatory year $t-1$
Xt	is the allowed real change in revenue from regulatory year $t-1$ to year $t$ of the 2014-19 regulatory control period as determined by the Commission
Y <sub>t</sub>	is the side constraint on revenue recovered from a tariff class or retail customer class from regulatory year <i>t-1</i> to regulatory year <i>t</i> of the 2014-19 regulatory control period as determined by the Commission
passthrough <sub>t</sub>	is any positive pass through amount or negative pass through amount in regulatory year <i>t</i> determined by the Commission, expressed as a percentage of the annual revenue requirement
ΔRt	is the overs and unders adjustment to revenue in regulatory year t
<i>R</i> <sub><i>t</i>-2</sub>	is the actual revenue in regulatory year <i>t-2</i>
т	is the number of tariff components

<sup>&</sup>lt;sup>15</sup> Utilities Commission, *Network (Variation) Price Determination - Variation Determination and Statement (sic) of Reasons*, April 2015, p.4.

$p_t'$	is the proposed price for component $j$ of the tariff class in regulatory year $t$
m/	is the price charged for component (of the tariff class in

- $p'_{t-1}$  is the price charged for component *j* of the tariff class in regulatory year *t-1*
- $q'_{t-2}$  is the actual volume of component *j* of the tariff class in regulatory year *t-2*

The above formula varies from that originally published by the Commission in the 2014 NPD Final Determination. In the course of preparing this submission PWC identified an unintended misalignment between the price control mechanism and the side constraint formula. The cause of the misalignment was the omission of an unders and overs adjustment factor in the side constraint formula.

PWC brought the issue to the attention of the Commission, which corrected the error. This 2015/16 Network Pricing Proposal demonstrates that the proposed 2015/16 network tariffs are compliant with the revised tariff class side constraint formula.

### 3.3.4 Overs and unders calculation

Power Networks will submit prices in each regulatory year that comply with the form of price control set out in section 3.3.2. It will be necessary to adjust the term  $\Delta Rt$  to permit the revenue recovery through prices to track the allowable revenue. The mechanism to achieve this is the Overs and Unders account.

In the 2014 NPD Final Determination, the Commission confirmed the appropriate formulation of this adjustment, as set out in Table 2<sup>16</sup>.

Element	Year t-2 Actual	Year t-1 Expected	Year t Forecast
Opening Balance	Opening <sub>t-2</sub>	<i>Opening<sub>t-1</sub></i> = Closing <sub>t-2</sub>	<i>Opening<sub>t</sub></i> = Closing <sub>t-1</sub>
Interest on opening balance	Opening <sub>t-2</sub> ×W	Opening <sub>t-1</sub> ×W	N/A
Under/over recovery for the year	$\Delta R_{t-2}$	$\Delta R_{t-1}$	$\Delta R_t$
Interest on under/over recovery	$\Delta R_{t-2} \times V$	$\Delta R_{t-1} \times V$	N/A
Closing balance	$Closing_{t-2} = Opening_{t-2} \times (1+W) + \Delta R_{t-2} \times (1+V)$	$Closing_{t-1} = Opening_{t-1} \times (1+W) + \Delta R_{t-1} \times (1+V)$	Closing <sub>t</sub> =Opening <sub>t-1</sub> + ΔR <sub>t-1</sub>

Table	2 -	Unders	and	Overs	calculation
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<sup>&</sup>lt;sup>16</sup> Utilities Commission, *2014 Network Price Determination: Final Determination Part B – Network Price Determination*, April 2014 Schedule 5, p. 53.

where:	
Opening <sub>t</sub>	is the balance of the unders and overs as at opening balance in year <i>t</i>
$\Delta R_t$	is the difference between the annual revenue requirement and revenue recovered in regulatory year <i>t</i>
W	is the nominal Weighted Average Cost of Capital (WACC) determined by the Commission for the regulatory control period
V	is the WACC applicable to a half regulatory year (ie. $V=\sqrt{W+1}-1$ )
Closing <sub>t</sub>	is the unders and overs closing balance in regulatory year t

The 2014 NPD Final Determination stipulated that unders and overs will apply to each year of the regulatory period. The availability of actual consumption data results in a lag of two years between the occurrence of the under or over recovery and it being reflected in tariffs.

#### Revenue recovery in 2015/16

The expected tariff volumes for 2014/15 are less than those that were used at the time of development of the tariffs for that year. As a consequence, there will be an expected under-recovery of about \$7.2 million in 2014/15. This under recovery (for year *t-1*) is not able to be factored into the 2015/16 revenue and tariffs. Power Networks has thus been constrained by individual tariff class movements from recovering the whole of its allowable revenue in the proposed 2015/16 tariffs.

#### 3.4 Requirements of the Rules

For the 2014 NPD, the Commission adopted the pricing requirements of Chapter 6 (Part I) of the Rules to the extent that they are consistent with the TPA Code. This is evidenced in the requirements specified in clauses 16 and 18 of the Commission's RIN, which address many of the matters required by a Pricing Proposal in Chapter 6 (Part I) of the Rules.

In addition to complying with the TPA Code, the Commission's RIN and 2014 NPD Final Determination, Power and Water has also demonstrated compliance, in the 2015/16 Pricing Proposal, with the following pricing principle in clause 6.18.5(a) of the Rules:

#### 6.18.5 Pricing principles

- (a) For each tariff class, the revenue expected to be recovered should lie on or between:
  - (1) an upper bound representing the stand alone cost of serving the *retail customers* who belong to that class; and
  - (2) a lower bound representing the avoidable cost of not serving those *retail customers*.

# Part A: Network Pricing Principles Statement

The following chapters of Part A of this document provides a summary of the approved Network Pricing Principles Statement (NPPS) for the 2014-19 regulatory period, as required under clause 16 of the RIN<sup>17</sup> and clause 75(5) of the TPA Code<sup>18</sup>.

# 4 Classification of Services

Direct control services are classified as either standard control services or alternative control services, with the latter subdivided into fee based services and quoted services.

In accordance with RIN clause 16.1, Power Networks has defined individual direct control services that are supplied by Power Networks according to the approved Network Service Classification in the Commission's 2014 NPD Final Determination<sup>19</sup>.

# 5 Tariff Classes

In accordance with RIN clause 16.2, this chapter of the NPPS describes the constitution of current and proposed tariff classes for the customers connected to Power Networks' three regulated systems.

#### 5.1 Summary of current tariff classes

Power and Water has the following approved network tariff classes that apply to the three regulated systems of Darwin-Katherine, Alice Springs and Tennant Creek, set out in Table 3.

Tariff Class	Tariffs		
Commercial HV	<ul><li>&gt;750 MWh pa Commercial HV: Commercial customers consuming</li><li>&gt;750 MWh pa connected to the HV network</li></ul>		
Commercial LV	<ul> <li>&gt;750 MWh pa Commercial LV: Commercial customers consuming</li> <li>&gt;750 MWh pa connected to the LV network</li> </ul>		
	<750 MWh pa Commercial: Commercial customers consuming <750 MWh pa		
	<ul> <li>Unmetered:</li> <li>Street lighting and similar consumption profiled unmetered supplies; and</li> <li>Traffic lights and similar unmetered 24 hour supplies.</li> </ul>		
Domestic	Domestic		

Table 3 - Current tariff classes tariff and users

<sup>&</sup>lt;sup>17</sup> Utilities Commission, *Regulatory Information Notice under Section 25 of the Utilities Commission Act and Clause 22 of Network Licence,* April 2013, clause 16, p. 51.

<sup>&</sup>lt;sup>18</sup> Northern Territory Electricity Networks (Third Party Access) Code.

<sup>&</sup>lt;sup>19</sup> Utilities Commission, *2014 Network Price Determination Final Determination Part A – Statement of Reasons*, April 2014, Appendix A, p. 160.

Figure 1 illustrates Power Networks' 2013/14 energy consumption (MWh) by the proposed tariffs (note that unmetered supplies have been bundled with the <750 MWh per annum Commercial tariff as their annual consumption is very small).



Figure 1 – Power Networks' energy consumption (MWh) by tariff class, 2013/14

Figure 2 illustrates the average annual energy consumption per customer connection for 2013/14. This demonstrates that there is significant diversity in the average energy consumption between users on different tariffs.





<sup>&</sup>lt;sup>20</sup> Excludes unmetered consumption.

As per clause 16.2 of the RIN, the number of tariff classes has been kept to a minimum, to avoid unnecessary transaction costs. In addition, customers have been grouped together on an economically efficient basis, recognising the material differences between users arising from:

- The pattern and level of network usage (as between domestic and commercial customers, which have different consumption patterns and average consumption); and
- The nature of the plant or equipment required to provide the network access service (in the case of the Commercial HV tariff class, as these customers do not make use of the low voltage network or distribution substations).

It is believed that this definition of tariff classes represents an economically efficient tariff class assignment that will avoid the need for unnecessary transaction costs.

### 5.2 Domestic tariff class

The Domestic tariff class is composed of one tariff, the <u>Domestic tariff</u>, which applies to network users supplied at a connection point where:

- Total electricity consumption, per financial year, is less than 750 MWh; and
- The tariff is applicable for premises intended to be used for residential purposes, excluding serviced apartments, but including:
  - o Electricity used on vacant land zoned for residential purposes; and
  - Living premises of retirement villages (must be separately metered).

#### 5.3 Commercial tariff class

The Commercial tariff class is made up of three different tariffs:

- Commercial customers consuming less than 750 MWh per annum;
- Commercial customers consuming more than 750 MWh per annum connected to the LV network; and
- Unmetered customers.

The  $\leq$  750 MWh pa Commercial tariff applies to network users supplied at a connection point where:

- Total electricity consumption, per financial year, is less than 750 MWh; and
- The tariff is applicable for premises intended to be used for non-residential purposes, including:
  - o Electricity used on vacant land zoned for commercial purposes;
  - Temporary supply (ie for building purposes);
  - Motels, hotels, service apartments and any form of temporary accommodation;
  - o Shops, offices, warehouses and industrial/manufacturing plants;
  - o Mining enterprises; and
  - o Farms.

The >750 MWh pa Commercial LV tariff applies to network users supplied at a connection point where:

- Total electricity consumption, per financial year, is greater than 750 MWh; and
- Electricity is supplied at a voltage level defined as low voltage nominally 230/400 V.

The <u>Unmetered tariff</u> applies to connection points that, with the agreement of Power Networks, are unmetered. In these circumstances, the consumption at the connection point is estimated.

## 5.4 Commercial HV tariff class

The Commercial HV tariff class is composed of one tariff, the >750 MWh pa <u>Commercial HV tariff</u>, which applies to network users supplied at a connection point where:

- Total electricity consumption, per financial year, is greater than 750 MWh; and
- Electricity is supplied at a voltage level of 11 kilovolts (kV) or higher.

## 5.5 Tariff reclassification

Power Networks will assign new customers to tariff classes on the same basis as described in sections 5.2 to 5.4, on which it has assessed and classified its existing customers. In the event that Power Networks is required to reassign a customer to a different tariff class (for example, if the purpose of consumption at the premises is changed), Power Networks will follow this classification basis, taking into account the requirements of Schedule 6 of Part B of the 2014 NPD Final Determination.

Consistent with Schedule 6 of Part B of the 2014 NPD Final Determination, Power Networks has developed and implemented an internal procedure that it will follow in assigning a new retail customer to a tariff class and in reviewing the tariff classification of a retail customer, if the customer objects to a tariff classification or reclassification.

### 5.6 Generators

Standard control network tariffs do not apply to generator users, with the exception of the following.

The only instance when standard control network tariffs apply to customers with generation facilities is when the customer requests network capacity to be reserved for purposes such as standby supply. In this case, the allocation to a tariff class will be made on the same basis as other customers; this being the extent and nature of consumption, and the nature of the connection to the network. The same standard control network tariffs will apply as for other customers. The energy charge will be based on actual energy consumed over the period. However, the demand charge may apply to a demand schedule (as agreed to with the customer) in recognition

that requested capacity will need to be made available to the customer even if no supply is taken.

# 6 Reference Tariffs for Direct Control Services

In 2015/16 Power Networks is continuing to make a number of incremental changes that will pave the way for more cost reflective tariffs, which in turn will improve the price signalling between tariff charging parameters and provide more equitable customer outcomes.

## 6.1 Standard Control Services

In establishing the reference tariffs to apply to standard control services, Power Networks has taken into consideration the factors set out in Table 4.

Pricing principles RIN clause 16.3; and TPA Code clause 74(1)(b)		Power Networks' consideration
(a)	the user's geographical and electrical location;	Uniform network tariffs are applied across Power Networks' three regulated systems (Darwin-Katherine, Alice Springs and Tennant Creek). A network user's electrical location is much more reflective of costs than the geographic location, and in the interests of balancing different pricing objectives and reducing transaction costs, Power Networks has chosen to apply uniform network tariffs to reduce the level of complexity.
		Network tariffs for larger customers (with annual consumption in excess of 750 MWh) are split into separate tariffs for high voltage and low voltage connected customers, thereby reflecting their electrical location.
(b)	the quantities in which the relevant network access service is to be supplied or is supplied;	Power Networks has established separate network tariffs for its larger (annual consumption in excess of 750 MWh) commercial customers. In addition, the average consumption of a <750 MWh per annum commercial customer is approximately 4.5 times that of a domestic customer and is one factor that supports the development of separate tariffs for these customers.
		Power Networks is also proposing to continue trending from the existing declining block structure for its <750 MWh per annum commercial and domestic tariffs to an inclining block structure.
(c)	the pattern of network usage;	The requirement to augment the capacity of the network is principally driven by the demand imposed by customers during peak periods. For this reason, the tariffs of customers consuming more than 750 MWh per annum have time of use charging parameters that are intended to provide a signal to customers of the increased costs of using the network during peak periods.

Table 4 – Power Networks' consideration of pricing principles

Pric RIN TPA	ing principles clause 16.3; and Code clause 74(1)(b)	Power Networks' consideration
		<ul> <li>rebalance the two tariffs for unmetered services:</li> <li>Street lighting and similar consumption profiled unmetered supplies; and</li> <li>Traffic lights and similar unmetered 24 hour supplies.</li> <li>to better reflect their usage patterns and improve cost reflectivity.</li> </ul>
(d)	the technical characteristics or requirements of the user's load or generation;	Power Networks' reference tariffs do not currently differentiate between customers on the basis of the technical requirements of their load or generation. The Network Technical Code sets out the technical requirements for all loads and generators and the reference tariffs reflect those requirements.
		Towards the latter half of the 2014-19 regulatory control period, Power Networks proposes to implement an additional tariff charging parameter for reactive power consumed in excess of the Network Technical Code provision.
(e)	the nature of the plant or equipment required to provide the network access service;	As stated in response to (a), separate tariffs are proposed for large commercial customers, depending upon the voltage of their connection. The high voltage connected customers do not make use of the low voltage network or distribution substations.
(f)	the periods for which the network access service is expected to be supplied.	As stated in the response to (c), the peak periods for the network are reflected in the current tariffs for larger commercial customers.

# 6.2 Alternative Control Services

Power Networks provides a number of alternative control services. These services are specified in the approved Network Service Classification at Attachment 1.

In establishing the prices to apply for 2015/16 for these alternative control services, Power Networks has used the following principles:

- The capital and operating resources associated with providing the services have been estimated on an incremental basis;
- Where practicable, transaction costs in the provision of the services were reduced in 2014/15 by grouping similar services and eliminating some services for which there was little demand in 2013/14; and
- The labour rates used in estimating the 2015/16 prices for alternative control services do not include corporate overheads.

# 7 Efficient Network Pricing

In ensuring the reference tariffs for direct control services are established in accordance with recognised economic principles, Power Networks has taken into consideration the factors set out in Table 5.

Table 5	– Power	Networks'	consideration	of	efficient	pricing
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Efficient costs RIN clause 16.4; and TPA Code clause 74(1)(a)		Power Networks' consideration
(a)	taken into account the long run marginal cost for the service or, in the case of a charging parameter, for the element of the service to which the charging parameter relates	Power Networks has calculated the LRMC using the Average Incremental Cost for the high and low voltages of its network, based on demand related capital expenditure, an allowance for operating and maintenance expenditure, and demand growth. This calculation is contained in Power Networks' Cost of Supply Model described in Attachment A2.6. Section 13.3.1 of Power Networks' 2015/16 Network Pricing Proposal (Part B) describes the way in which Power Networks has taken into account the LRMC in setting the charging parameters of individual tariffs.
(b)	<ul> <li>had regard to:</li> <li>(i) transaction costs associated with the tariff or each charging parameter; and</li> <li>(ii) whether customers of the relevant tariff class are able or likely to respond to price signals.</li> </ul>	Power Networks is simplifying the tariffs of larger (annual consumption greater than 750 MWh) commercial customers, by progressively reducing the number of energy and demand blocks for kVA and kWh customers down to three in 2015/16 from five in the previous year. This matter is addressed in more detail in section 13.4. The price signals embodied in Power Networks' tariffs are subject to many considerations. They have been aligned to the maximum extent practical with the LRMC for the network, with the express intention of minimising distortionary pricing arrangements. In this way, the probability of customers responding in a way that will mitigate demand growth is maximised. This matter is addressed in more detail in section 13.5.

# 8 Price Modelling

As per clause 16.5 of the RIN, Power Networks has provided its Cost of Supply Model (2015/16 Pricing Proposal Model) to the Commission as Confidential Attachment 6 to this Proposal. This is a commercial-in-confidence attachment as the model contains information on individual customers.

The purpose of the Cost of Supply Model is to enable the comparison of proposed tariffs with the cost reflective outcome. It enables the changes in individual tariffs and their charging parameters to be managed so as to improve their overall cost reflectivity, whilst also ensuring that Power Networks complies with the requirements of the Commission's 2014 NPD Final Determination.

The model does this by calculating the cost of supplying customers in 2015/16. It compares this with the revenue forecast through proposed tariffs at the individual large customer, tariff and tariff class level. The cost of supply is an allocation of the network cost to each tariff on the basis of its cost impact on the network. The network costs are apportioned into cost pools and then allocated to the tariffs that use those pools.

# Part B: 2015/16 Network Pricing Proposal

The following chapters of Part B of this document address the Commission's requirements for an indicative Network Pricing Proposal and Tariff Schedules, set out in clause 18 of the RIN<sup>21</sup> and clauses 78(1) and (2) of the TPA Code<sup>22</sup>.

# 9 Power Networks' Tariff Strategy

This chapter presents the high level framework that Power Networks has applied to the development of its network tariff strategy, which remains consistent with that approved in 2014/15.

## 9.1 Network tariff objectives

The major objectives of network pricing continue to be as follows:

- *Pricing efficiency* an efficient network price is one that signals to the customer their contribution to the cost of providing network services;
- Customer equity customers should pay a reasonable allocated share of costs, while moves towards efficient pricing are limited to avoid customer price shock;
- *Pricing simplicity* price structures should be understandable, simple and transparent; and
- *Revenue sufficiency* prices are formulated to recover the regulated revenue allowance.

## 9.2 Drivers of tariff reform

Power Networks' peak demand occurs in the wet season and is to a large extent driven by air conditioning usage. In the northern part of the Territory, high peak demands occur during hot and humid conditions, which correspond with periods when the elements of the system operate at high capacity and the power factor of loads is poor. In inland areas, both summer and winter conditions can result in high load demand.

A considerable proportion of Power Networks' capital expenditure on the network during the 2014-19 regulatory control period is demand related. That expenditure is driven by the need to augment and expand the network to adequately meet peak demand and provide for the connection of new customers.

Managing peak demand is thus a priority for Power Networks' tariff strategies. This leads to an emphasis on providing network price signals that will encourage both domestic and commercial customers to moderate their consumption during periods of high demand.

<sup>&</sup>lt;sup>21</sup> Utilities Commission, *Regulatory Information Notice under Section 25 of the Utilities Commission Act and Clause 22 of Network Licence,* April 2013, clause 18, p. 53.

<sup>&</sup>lt;sup>22</sup> Northern Territory Electricity Networks (Third Party Access) Code.

The tariff reform program being implemented over the 2014-19 regulatory control period are described in this section. All tariff changes are initiated so as to:

- Improve the cost reflectivity of the tariffs concerned;
- Improve equity between customers;
- Provide price signals intended to encourage customers to moderate their demand; and
- In the case of the tariffs for customers consuming greater than 750 MWh per annum, simplify their existing structure.

The tariff changes are all proposed to be implemented progressively, to limit the annual price changes to customers to within acceptable levels.

Power Networks' network tariff strategy for the 2014-19 regulatory control period therefore is considered to comply with the principles set out in Chapter 7 of the TPA Code (RIN clause 18.1(g)) and RIN clause 16.3 of the NPPS (RIN clause 18.1(f)), specifically:

- Tariffs better reflect the efficient costs of supply through being based on a cost of supply model that takes into account the cost of providing network standard control services.
- The tariffs involve a common approach for all network users, with the actual tariff with respect to a particular network access service only differing between users because of:
  - The user's electrical location, as is the difference between high voltage and low voltage connected Commercial customers with an annual consumption of more than 750 MWh;
  - The quantities in which the relevant network access service is to be supplied or is supplied, as measured by customers' energy consumption or the demand imposed on the network;
  - The pattern of network usage, as in the case of time of use energy and demand based tariffs, and between the street lighting and similar consumption profiled unmetered supplies, and traffic lights and similar unmetered 24 hour supplies;
  - The technical characteristics or requirements of the users load or generation, through the implementation of an additional tariff charging parameter for reactive power consumed in excess of the Network Technical Code provision;
  - The nature of the plant or equipment required to provide the network access service, such as in the difference between high voltage and low voltage Commercial customers with an annual consumption of more than 750 MWh;
  - The periods for which the network access service is expected to be supplied, in the case of all time of use based tariffs and the tariffs for street lighting and similar consumption profiled unmetered supplies, and traffic lights and similar unmetered 24 hour supplies;

- Tariffs are transparent and will be published, as will the 2015/16 Network Pricing Proposal, which explains their development and future tariff movements; and
- Tariff changes have been proposed with a view to limiting the rate of change to acceptable levels and thereby promoting price stability.

With reference to the tariff classes and relevant pricing principles in the Network Pricing Principles Statement (RIN clause 18.1(f)), Power Networks' proposed tariffs comply with the following:

- Tariff classes have been constituted on an economically efficient basis and in such a way as to minimise transaction costs as shown in chapter 5;
- Each tariff and tariff charging parameter have been established having regard to the LRMC of supply, as shown in section 14.3;
- Due regard has been given to the tariff transaction costs, by keeping the structure of tariffs and their charging parameters as simple as reasonably possible, as shown in section 14.4; and
- Due regard has been given, in structuring tariffs, as to whether customers of the relevant tariff class are able or likely to respond to price signals, as shown in section 14.5.

Power Networks therefore considers that its tariff changes in 2015/16 are compliant with the requirements of the TPA Code and the RIN.

In addition, for the 2015/16 regulatory year, Power Networks has demonstrated that, in accordance with clause 6.18.5(a) of the Rules, the revenue from its proposed tariff classes lies between the stand-alone and avoidable costs of supply, as shown in section 13.3.

In line with the above considerations, Power Networks has developed a strategy for each of its existing network tariffs and will be giving consideration to the introduction of new tariffs during the 2014-19 regulatory control period. These proposed developments are set out in sections 9.3.1 to 9.3.4, for standard control network tariffs.

### 9.3 Tariff strategies

The strategies for each of Power Networks' tariffs over the 2014-19 regulatory control period are discussed below.

### 9.3.1 Domestic (Domestic tariff class)

Domestic customers generally have accumulation meters, which limits the available options for tariff reform.

Nevertheless, the existing declining block energy tariff structure for domestic customers is out of step with many other Australian distributors. Many utilities have now implemented inclining block tariff (IBT) structures for small customers. An inclining block structure has the following features:

- It provides more cost reflective pricing for customers with large consumption levels. Larger customers generally have greater discretion in appliance usage and the demand they place on the network, which is manifested in a poorer average load factor. Large customers also tend to place a disproportionately high demand on the network;
- The IBT aligns the network pricing signals with government energy efficiency and carbon emissions policies;
- By enabling a relative reduction in the overall price for low consumption customers, the IBT may also align with government social objectives; and
- If implemented at the same time as a rollout of time of use or capacity based pricing to larger domestic customers, the IBT provides a means of progressively increasing the incentive for high consumption customers to transfer to more cost reflective tariffs, thereby controlling the pace and maximising the benefit of the rollout.

The transition to a flat tariff and potentially to an IBT is illustrated in Figure 3.



#### Figure 3 – Indicative transition from declining block tariff

In light of these potential advantages of the inclining block energy tariff, Power Networks proposes:

- In 2015/16, to incrementally rebalance the existing declining block tariff, within pricing side constraints and without causing significant price shocks to customers; and
- Once a flat tariff is achieved, subject to analysis of the customer consumption profiles, progressively increase the differential in the pricing blocks to create an inclining block structure.

# 9.3.2 <750 MWh pa Commercial (Commercial tariff class)

In line with the rationale and strategy for domestic energy tariffs reform above, Power Networks proposes to progressively replace the declining block tariff structure with an inclining block structure over a similar implementation timeframe. The commercial tariff rates and block levels are different from the domestic tariff, reflecting the different consumption profiles of the tariffs.

The <750 MWh per annum Commercial tariff customer size distribution covers a very wide range, with annual consumption from zero to 750 MWh. The lower portion of this distribution in shown in Figure 4.



Figure 4 – <750 MWh pa Commercial customer size distribution, 2013/14

What is evident from Figure 4 is that approximately 23 per cent of customers have an annual consumption less than 1,000 kWh. As a result, a disproportionate number of commercial customers have a very small network charge. Whilst the demand of these small customers may be low and the impact on the upstream infrastructure costs small, the per-customer cost associated with the low voltage network and metering is above the Service Availability Charge and is equivalent to 111 ¢/day. After the proposed increase in 2015/16, this component would become 76 ¢/day, or 69% of the cost reflective rate.

Power Networks intends to progressively increase this charging parameter throughout the 2014-19 regulatory control period until it reaches a cost reflective level, whilst also maintaining regard for the impact on individual customers.

### 9.3.3 Unmetered (Commercial tariff class)

Prior to 2014/15 Power Networks had an existing single tariff class to specifically include; "Street Light and other Unmetered Supplies" energy tariff that is applied to all unmetered supplies. It was an anytime energy rate that is applied to the estimated consumption. There are two principal types of customer that qualify for this tariff: street lights and traffic lights.

The demand profile and hence the contribution to network costs of these two types of loads is very different. The Darwin-Katherine load peaks on wet season afternoons, due to air conditioning demand. The Alice Springs and Tennant Creek loads peak during summer afternoons, although their winter night demand is also significant. This leads to the following situation:

- *Street lights* are automatically switched on at dusk and their contribution to the network peak is therefore small in the wet season/summer, but more significant in inland areas during winter.
- *Traffic lights* have an essentially constant demand profile and therefore make a greater relative contribution to the network demand than street lights.

In 2014/15, the street lighting and traffic lights tariffs where split with the formation of a new tariff for traffic lights and similar unmetered 24 hour supplies. In 2015/16 the two tariffs have undergone rebalancing as a part of tariff reform to progressively improve their cost reflectivity, now evident with the tariff price differentials presented in this proposal.

# 9.3.4 > 750 MWh pa Commercial LV and HV (Commercial and Commercial HV tariff classes)

The existing energy and demand tariff charging parameters for the current >750 MWh per annum Commercial tariff were characterised by a five step declining block structure (it originally had seven steps) plus a fixed daily charge and peak and off peak energy and demand rates.

The existing tariff charging parameters are applied to customers regardless of their voltage of connection. The declining block structure would ensure that a larger customer, which would be more likely to be connected to the high voltage network or at a zone substation, would pay a lower average network rate. However, this tariff difference is a poor reflection of the difference in supply costs.

The 2014/15 price changes for >750 MWh per annum Commercial customers are shown in Figure 5. High voltage and low voltage customers have been separately identified, as their utilisation of the network and costs of supply differ. The large variations in the average cost of supply in  $\ell/kWh$  are due to the tariff reflecting significant differences in the load factor of individual customers and in the ratio of peak to off peak consumption. The average tariff rates (8.69  $\ell/kWh$  for low voltage and 4.98  $\ell/kWh$  for high voltage) are not shown on this chart but reflect the differences in the assets these customers use.





It is proposed to modify the tariffs that apply to >750 MWh pa Commercial customers, as follows:

- With the voltage distinction now in place (and potentially the locational distinction, if a zone substation tariff is introduced) between HV and LV customers there is no justification for such tariffs to have either an inclining or declining block structure. The existing price structure will be progressively simplified by rebalancing the upper and lower block rates until the block rates become equal, whereupon the block structure will be removed.
- Rebalancing of the tariff charging parameters to progressively increase the demand charge and reduce energy rates would provide improved cost reflectivity. This will progress throughout the 2014-19 regulatory control period at a pace that recognises the impact on individual customers.
- The adoption of a kVA capacity charge to replace the monthly reset kVA demand charge has some potential advantages:
  - a customer with a strongly seasonal profile would receive a year-round charge that more closely reflected their utilisation of peak network capacity; and
  - a customer that made occasional use of the network for standby purposes would receive a charge that was much better aligned to their impact on the network's costs in ensuring it could cater for this peak demand.

- However, Power Networks has now carried out an assessment of the pricing impact on customers and appreciates that the introduction of the tariff would require a transition period. In addition, as the billing arrangements and the communication of this arrangement to customers require development, Power Networks now proposes that the introduction of the capacity tariff be deferred until the 2019-24 regulatory control period.
- Power Networks proposes to introduce a new tariff charging parameter to apply to Commercial customers with an annual consumption greater than 750 MWh per annum. The Excess kVAr charge will supplement the demand charging parameter of the tariff and provide significantly greater incentive for customers to compensate their load to achieve Network Technical Code compliance. It should be noted that this approach has been successfully deployed by SA Power Networks and will be introduced in 2015/16 by Ergon Energy.

The implementation of the Excess kVAr charge is currently proposed for 2016/17, but may be implemented later in the regulatory control period depending on the extent of tariff rebalancing proposed in each year, to ensure compliance with tariff class side constraints.

#### 9.4 Interval metering and time of use based tariffs for small customers

In other jurisdictions, customers with annual consumption much lower than 750 MWh usually have access to a time of use or demand/capacity tariff. Ausgrid and some other distribution network service providers offer a time of use tariff to all domestic and commercial customers, with no minimum consumption threshold.

Introducing time of use or capacity charges for small customers will require the rollout of interval meters.

Over the 2014-19 regulatory control period, Power Networks will progressively rollout interval meters to customers with an annual consumption greater than 40 MWh and less than 750 MWh. The rollout will be accompanied by the development of a kVA tariff for these customers. Power Networks will also develop a trial for customers with annual consumption in the range of 15 to 40 MWh, to determine the cost effectiveness of proceeding with a full rollout of interval meters to customers with annual consumption down to 15 MWh in the 2019-24 regulatory control period.

# 10 Tariff Charging Parameters – 2015/16

Power Networks' existing 2014/15 and proposed 2015/16 tariffs and their charging parameters, and the elements of service to which each charging parameter relates, are described in this chapter, in accordance with RIN clause 18.1(c).

#### 10.1 Domestic tariff

The charging parameters for the domestic tariff are shown in Table 6.

Charging Parameter	Tariff	
	Domestic 2015/16	
System Availability Charge	¢/day	
	≤ 500 kWh per month	
Energy ¢/kWh	>500 and $\leq$ 1,000 kWh per month	
	>1,000 kWh per month	

An additional consumption block step and threshold was introduced in 2014/15 and has been maintained in the 2015/16 year to facilitate the possible implementation of an inclining block tariff.

The price signalling provided by energy based tariff charging parameters has a relatively poor correspondence with the customers' demand on the network. Nonetheless, the energy based charge would ideally recover the LRMC of supply and the residual (revenue less LRMC) would be recovered in the least distortionary means (i.e. through the fixed charge).

As a minimum, the System Availability Charge would recover the fixed costs of supply (eg. metering and the low voltage network). However, it under recovers even that amount and the balance of costs is recovered through the energy charge.

Because of the potential impact on low consumption domestic customers, Power Networks is cognisant of the consequence of increasing the proportion of the network charge recovered through the fixed charging parameter. However, the move towards a flat and inclining block structure will reduce prices in relative terms for small customers and improve the cost reflectivity of the marginal consumption for larger customers.

## 10.2 <750 MWh pa Commercial tariff

The charging parameters for the <750 MWh per annum Commercial tariff are shown in Table 7.

Charging Parameter	Tariff	
	<750 MWh pa Commercial 2015/16	
System Availability Charge	¢/day	
	≤ 1,000 kWh per month	
Energy ¢/kWh	>1,000 and ≤2,000 kWh per month	
	>2,000 kWh per month	

#### Table 7 - <750 MWh pa Commercial tariff charging parameters

As with the Domestic tariff, this tariff has maintained the 2014/15 consumption blocks step and threshold structure in 2015/16. The thresholds have different levels, as the consumption characteristics and size distribution of the customers on the two tariffs differ.

The charging parameters and their means of recovery for this commercial tariff are as for the Domestic tariff. With the 2015/16 rebalancing of <750 MWh customers both Domestic and Commercial tariff tiers are the same energy cost per KWh.

Power Networks plans to progressively increase the proportion of the network charge recovered through the fixed parameter to recover more of the residual (revenue less LRMC) component by at least reflecting the fixed costs of the network (metering and the low voltage network costs).

### 10.3 Unmetered tariff

Unmetered tariffs have a single charging parameter – energy consumption. In 2015/16, the single unmetered tariff is to be priced with two separate differential cost reflective tariff rates: for street lighting and similar consumption profiled unmetered supplies; and for traffic lights and similar unmetered 24 hour supplies. The charging parameters are the same and are shown in Table 8.

Charging		Tariff	
Parameter	Street Lighting and other unmetered supplies 2013/14	Street Lighting and similar consumption profiled unmetered 2014/15	Traffic lights and similar unmetered 24 hour supplies 2014/15
Energy ¢/kWh	Estimated energy consumed		

Table 8 - Unmetered tariff charging parameters					
	Table 8 -	Unmetered	tariff	charging	parameters

As there is only one charging parameter for unmetered supplies all costs are recovered through the energy rate.

# 10.4 > 750 MWh pa Commercial (HV and LV) tariffs

The charging parameter for the >750 MWh per annum Commercial (HV and LV) tariffs for customers with annual consumption in excess of 750 MWh and connected to either the high voltage or low voltage network are shown in Table 9.

Table 9 - >750 MWh pa	Commercial – HV and LV	tariffs charging parameters
		tainie enarging parametere

Charging Parameter	Tariff (>750 MWh pa)			
		>750 Commercial LV 2015/16	>750 Commercial HV 2015/16	
System Availability Charge		\$/day		
		First 10,000 kWh per n	nonth	
Peak energy		Next 20,000 kWh per r	nonth	
	Next 50,000 kWh per month			
¢/kWh (a)	Next 100,000 kWh per month			
	Any further energy per month			
	First 50 kVA per month			
Peak demand	Next 100 kVA per month			
	Next 300 kVA per month			
Off-peak demand \$/k\/A/month (a)	Next 500 kVA per month			
	Any further kVA per month			
(a) Peak rates currently apply to usage between 6.00 am and 6.00 pm on any day. Off-peal			ו any day. Off-peak	

The charging parameters of the Commercial kVA tariffs would ideally recover the following cost components:

- The peak period kVA and energy rates provide price signalling to customers. These charging parameters would recover a cost commensurate with the LRMC of supply; and
- The residual costs (allocated revenue less LRMC) would be recovered in the least distortionary manner, ideally all through a fixed charge, but in practice through both fixed and off peak charges.

For kVA metered customers, the LRMC as currently calculated is approximately equal to the peak period charging components (demand and energy). However, the current calculation of LRMC is considered to be an underestimate for reasons stated in Attachment A2.6.

Power Networks intends to improve the cost reflectivity of these tariffs by rebalancing them to increase the peak period demand charge whilst reducing energy charges. This greater emphasis on peak period demand charging is expected to have

a stronger influence on customers' consumption patterns than a time of use energy rate.

# 11 Power Networks' Revenue and Tariff Changes – 2015/16

Power Networks' proposed network tariffs for 2015/16 continues to exclude the under recovery amount of lost revenue from the previous 2014/15 period tariffs.

## 11.1 Network standard control revenue for 2015/16

In the 2014 NPD Final Determination, the Commission determined Power Networks' revenue for standard control services in 2015/16 at \$202.949 million (nominal).

In accordance with RIN clause 18.1(d), Table 10 sets out, for each tariff class related to standard control services, the expected weighted revenue for the 2015/16 regulatory year. The Table also demonstrates that Power Networks complies with the 2015/16 annual revenue requirement as per the Commission's 2014 NPD Final Determination.

Tariff Class	2015/16 Expected Weighted Revenue \$'000
Commercial HV	\$23,887
Commercial	\$97,545
Domestic	\$81,517
Total	\$202,949

#### Table 10 - Expected weighted revenue by tariff class

### 11.2 Network tariff changes for 2015/16

The network tariffs for 2015/16 and the changes from the previous regulatory year are described in the following sections 11.2.1 to 11.2.5, in accordance with clause 18.1(i) of the RIN.

## 11.2.1 Domestic tariff in 2015/16

The proposed domestic tariff for 2015/16 and the change in each charging parameter from 2014/15 are shown in Table 11.

Table 11 – Domestic	tariff in 2015/16	(GST exclusive)
		<b>\</b>

Tariff charging parameter	2014/15	2015/16	Price change
System Availability Charge ¢/day	36.487	40.885	12.1%
First 500 kWh per month ¢/kWh	12.580	14.034	11.6%
Next 500 kWh per month ¢/kWh	12.580	14.034	11.6%
Energy used above 1,000 kWh per month ¢/kWh	10.199	11.707	14.8%

### 11.2.2 <750 MWh pa Commercial tariff in 2015/16

The proposed <750 MWh pa commercial tariff for 2015/16 and the change in each charging parameter from 2014/15 are shown in Table 12.

Table 12 –	<750 MWh pa	Commercial ta	ariff in 2014/15	(GST exclusive)
	() oo mm pa			

Tariff charging parameter	2014/15	2015/16	Price change
System Availability Charge ¢/day	63.678	75.812	19.1%
First 1,000 kWh per month ¢/kWh	12.580	13.971	11.1%
Next 1,000 kWh per month ¢/kWh	10.199	11.466	12.4%
Energy used above 2,000 kWh per month ¢/kWh	10.199	11.466	12.4%

# 11.2.3 Unmetered tariffs in 2015/16

The proposed unmetered tariffs for 2015/16 and the change in each charging parameter from 2014/15 are shown in Table 13.

#### Table 13 – Unmetered tariffs in 2015/16 (GST exclusive)

Tariff charging parameter	2014/15	2015/16	Price change
Unmetered energy for street lighting and similar consumption profiled unmetered supplies ¢/kWh	7.215	7.359	2.0%
Unmetered energy for traffic lights and similar unmetered 24 hour supplies ¢/kWh	7.215	8.446	17.1%

#### 11.2.4 > 750 MWh pa Commercial Low Voltage tariff in 2015/16

The proposed tariff for low voltage connected commercial customers with consumption of more than 750 MWh per annum in 2015/16 is shown in Table 14, with the change in each charging parameter from 2014/15.

Tariff charging parameter	2014/15	2015/16	Price change
System Availability Charge \$/month	772.723	827.237	7.1%
Peak period energy (c/kWh)			
First 10,000 kWh per month	6.740	6.987	7.9%
Next 20,000 kWh per month	4.912	5.571	13.4%
Next 50,000 kWh per month	4.003	4.540	13.4%
Next 100,000 kWh per month	3.381	3.902	15.4%
Any further kWh per month	2.238	2.639	17.9%
Off peak period energy (c/kWh)			
First 10,000 kWh per month	6.121	6.606	7.9%
Next 20,000 kWh per month	4.357	4.920	12.9%
Next 50,000 kWh per month	3.447	3.892	12.9%
Next 100,000 kWh per month	2.808	3.241	15.4%
Any further kWh per month	1.497	1.765	17.9%
Peak period demand (\$/kVA)			
First 50 kVA per month	10.999	11.054	0.5%
Next 100 kVA per month	9.648	11.054	14.6%
Next 300 kVA per month	8.039	9.118	13.4%
Next 500 kVA per month	6.370	7.225	13.4%
Any further kVA per month	4.454	5.252	17.9%
Off peak period demand (\$/kVA)			
First 50 kVA per month	2.557	2.608	2.0%
Next 100 kVA per month	2.294	2.608	13.7%
Next 300 kVA per month	1.775	2.004	12.9%
Next 500 kVA per month	1.775	2.004	12.9%
Any further kVA per month	1.337	1.577	18.0%

Table 14 – >750 MWh pa Commercial LV tariff in 2015/16 (GST exclusive)

#### 11.2.5 > 750 MWh pa Commercial High Voltage tariff in 2014/15

The proposed tariff for high voltage connected commercial customers with consumption of more than 750 MWh per annum in 2015/16 is shown in Table 15, with the change in each charging parameter from 2014/15.

Tariff charging parameter	2014/15	2015/16	Price change
System Availability Charge \$/month	772.723	919.963	19.1%
Peak period energy (c/kWh)			
First 10,000 kWh per month	6.474	6.655	2.8%
Next 20,000 kWh per month	4.912	5.049	2.8%
Next 50,000 kWh per month	4.003	4.115	2.8%
Next 100,000 kWh per month	3.381	3.712	9.8%
Any further kWh per month	2.238	2.569	14.8%
Off peak period energy (c/kWh)			
First 10,000 kWh per month	6.121	6.292	2.8%
Next 20,000 kWh per month	4.357	4.479	2.8%
Next 50,000 kWh per month	3.447	3.543	2.8%
Next 100,000 kWh per month	2.808	3.083	9.8%
Any further kWh per month	1.497	1.718	14.8%
Peak period demand (\$/kVA)			
First 50 kVA per month	10.999	11.054	0.5%
Next 100 kVA per month	9.648	11.054	14.6%
Next 300 kVA per month	8.039	9.148	13.8%
Next 500 kVA per month	6.370	7.249	13.8%
Any further kVA per month	4.454	5.247	17.8%
Off peak period demand (\$/kVA)			
First 50 kVA per month	2.557	2.608	2.0%
Next 100 kVA per month	2.294	2.608	13.7%
Next 300 kVA per month	1.775	1.984	11.8%
Next 500 kVA per month	1.775	1.984	11.8%
Any further kVA per month	1.337	1.575	17.8%

Table 15 – >750 MWh pa Commercial HV tariff in 2015/16 (GST exclusive)

# 12 Customer Impacts

#### *12.1 Indicative customer impact*

The proposed increase in network tariffs is passed on to retailers in the first instance. Retailers can pass on the increased network tariffs to contracted customers if they have a pass-through clause in their contracts. However, for customers on pricing orders, retailers cannot charge above the regulated retail tariff.

In accordance with the customer impact requirement of clause 18.1(i) of the RIN, Table 16 below outlines the indicative impacts of the proposed network tariff increase on the electricity price for each customer type, based on a sample of customers.

#### Table 16 – Indicative Average Impact on Customers

Tariff	Total Bill \$ Increase	Total Bill % Increase	% Network Bill Increase
Domestic	143	6.0%	12.1%
Commercial <750 MWh pa	547	5.4%	12.5%
>750 MWh pa LV	15,049	N/A*	12.4%
>750 MWh pa HV	54,784	N/A*	13.1%

\*PWC is not privy to the total bills of individually contracted customers.

It must be noted that the above impacts are indicative only, as the impact on each customer will depend on its individual consumption and demand profile.

#### 12.2 Variations to tariffs

Power Networks envisages that there may be a variation in network revenue and consequently in tariffs if a pass through event were to be approved by the Commission for a material cost impact (positive or negative) that was beyond Power Networks' control.

The Commission approved the following pass through events in the 2014 NPD Final Determination<sup>23</sup>:

- A regulatory change event;
- A service standard event;
- A tax change event;
- A retailer insolvency event;
- A terrorism event;
- An insurance event;
- A natural disaster event; and
- A structural separation event.

<sup>&</sup>lt;sup>23</sup> Utilities Commission, 2014 Network Price Determination: Final Determination Part A – Statement of Reasons, April 2014, clause 13.79, p. 136.

If a pass through event were to be approved by the Commission, the impact on network tariffs would form part of Power Networks and the Commission's considerations on the way in which any altered revenue were recovered.

The Commission approved the following contingent projects, which if triggered, would vary the revenue path approved by the Commission<sup>24</sup>:

- PRD30600 New Mitchell Street Switching Station project; and
- PRD30309 Darwin Construct Stage 2 of East Arm Zone Substation project.

In addition, the Commission has the discretion to reopen the 2014 Networks Price Determination for unexpected capital expenditure in accordance with the 2014 NPD Final Determination<sup>25</sup>.

There were no pass through or contingent events affecting revenue and network tariffs in 2015/16.

# 13 Compliance

This chapter demonstrates the compliance of Power Networks' proposed network tariffs with the various requirements set out in the Commission's 2014 NPD Final Determination, in accordance with clause 18.1(h) of the RIN. This chapter also demonstrates compliance with the LRMC pricing principle in RIN clause 16.4 and the stand-alone and avoidable cost pricing principle in Rules clause 6.18.5(a).

### 13.1 Compliance with the revenue cap

Compliance with revenue cap in 2015/16 is illustrated in Table 17. Note that there is no carry over amount associated with overs and unders in the first two years of the regulatory control period. Tariffs have been set for 2015/16 (using forecast volumes) to recover slightly less than the proposed revenue allowance.

Quantity	Revenue (\$′000)
Proposed revenue allowance	202,948.96
Forecast revenue through tariffs	201,087.82
Revenue less Tariffs	-1,861.14

Table <sup>•</sup>	17 -	Compliance	with the	revenue	cap in	2015/16
	• •	eemphanee		10101140	oup	2010/10

<sup>&</sup>lt;sup>24</sup> Ibid., clause 13.80, p. 136.

<sup>&</sup>lt;sup>25</sup> Utilities Commission, 2014 Network Price Determination: Final Determination Part B – Network Price Determination, April 2014, clause 3.3, p. 25.

### 13.2 Compliance with the tariff class side constraints

The percentage change in the weighted average revenue for each tariff class is shown in Table 18. As specified by the 2014 NPD Final Determination, this comparison is based on 2012/13 consumption volumes.

Tariff Class	2014/15	2015/16	Change	Side
	(\$'000)	(\$′000)		Constraint
Domestic	82,686	92,654	12.054%	12.055%
Commercial	77,742	87,109	12.049%	12.055%
Commercial HV	15,217	17,051	12.050%	12.055%

Table <sup>•</sup>	18 -	Compliance	with the	tariff	class s	ide co	nstraint	in	201	5/1	6
Iable	10 -	compliance	with the	tariii	CI222 2	nue cu	nistianit		201	57 1	υ

Table 18 demonstrates that the proposed tariffs are compliant with the side constraint for tariff classes.

# *13.3 Compliance with LRMC, avoidable and stand alone cost requirements*

## 13.3.1 Long Run Marginal Cost

Taking LRMC into account when setting tariffs ensures that there is not a demand or peak energy charge (designed to modify customer behaviour) that dramatically under or over signals the cost of using the network. The economic theory is that the price signal that modifies consumption should broadly equate to the network cost.

Power Networks' calculation of the LRMC of supply is described in Attachment A2.6. Where practicable, this has been considered in relation to the tariff classes, tariffs and the charging parameters (individual components) of tariffs, as follows:

• The Commercial HV tariff class comprises one network tariff – Commercial customers connected at high voltage with an annual consumption more than 750 MWh per annum. The LRMC for this tariff class is approximately 65 per cent of the revenue derived from all charging parameters of the tariff (fixed, peak and off peak demand and peak and off peak energy). This tariff's revenue recovery through the price signalling tariff charging parameters (peak demand and peak energy) is 66 per cent. There is reasonable alignment between the price signalling tariff charging parameters and the LRMC of supply.

However, Power Networks believes the current estimate of LRMC may be understated, for the reasons specified in Attachment A2.6, and that greater price signalling through the demand related charging parameter of the tariff would be appropriate. This is the direction Power Networks proposes to pursue throughout the 2014-19 regulatory control period.

- The LRMC for the Commercial tariff class is 60 per cent of the tariff class revenue. This tariff class comprises three network tariffs:
  - The >750 MWh per annum Commercial LV tariff, the same considerations in terms of future tariff rebalancing apply as to its high

voltage counterpart. At present, the price signalling tariff charging parameters (peak demand and peak energy) recover 63 per cent of the tariff's revenue, which as with the high voltage customers is a little greater than the current estimate of LRMC for the tariff class.

- The current Street Light and Traffic light tariffs and other Unmetered Supplies tariff have one charging parameter only, a single energy rate.
- The <750 MWh per annum Commercial tariff has two charging parameters, a fixed charge and anytime energy with a declining block structure. An energy charge provides a poor signal for the customer to manage demand. It is proposed to enhance demand signalling by the progressive rebalancing of this tariff and introduction of an inclining block structure. If the upper block of the tariff is considered to provide a consumption-related pricing signal, this comprises 62 per cent of the tariff's revenue, which is lower than the current estimate of LRMC.

In addition, as noted in section 9.3.2, there is a large proportion of these customers with very low consumption that make an inadequate contribution to network revenue and it is also proposed to increase the fixed charging parameter of this tariff, which would improve alignment with the LRMC.

The *Domestic* tariff class contains one tariff – Domestic. As with the commercial tariff for customers with an annual consumption of less than 750 MWh per annum, this has two charging parameters, a fixed charge and declining block energy charge. Again, the energy charge provides poor demand signalling and it is proposed that this tariff will also progressively be rebalanced and an inclining block structure introduced. If the upper block of the tariff is considered to provide a consumption related pricing signal, this comprises 14 per cent of the tariff's revenue, lower than the LRMC of 40%.

Power Networks has therefore considers that the requirement to take into account LRMC for has been met to the extent that is practicable.

#### 13.3.2 Stand alone and avoidable costs

The stand-alone and avoidable costs for Power Networks' tariff classes are compared with the tariff revenue for 2015/16, in Table 19.

		Total		
	Commercial HV	Commercial	Domestic	
Stand-alone cost	\$66,082	\$168,544	\$190,600	\$425,225
Revenue through tariffs	\$17,541	\$89,031	\$94,516	\$201,088
Avoidable cost	\$7,046	\$14,219	\$25,608	\$46,873

#### Table 19 – Stand-alone and avoidable costs of supply, \$'000

Table 19 demonstrates that the weighted average revenue for each of the three tariff classes lies between the stand-alone cost and the avoidable cost. As a consequence, the tariff classes do not contain economic cross subsidies.

The Stand-alone, Avoidable and Long Run Marginal Costs are compared with the tariff revenue for 2015/16 in Figure 6, where all have been expressed on the same \$/kVA per annum basis.



#### Figure 6 – Cost comparison

### 13.4 Transaction costs

In accordance with clause 16.4(b)(i) of the RIN, Power Networks has attempted to minimise any transaction costs arising from its network tariffs by limiting the complexity of the tariff structures and the charging parameters within each tariff. The charging parameters applicable to each tariff are provided in Chapter 11 of this 2015/16 Network Pricing Proposal.

### 13.5 Response to price signals

Clause 16.4(b)(ii) of the RIN requires that Power Networks determine network tariffs with regard to whether customers of the relevant tariff class are able or likely to respond to the price signals.

It is generally accepted that efficiency gains may be made through pricing services at their LRMC, thereby inducing a behavioural change in the customer.

To the extent possible, Power Networks has signalled the LRMC of supply through those tariff charging parameters having the greatest price elasticity of demand – the variable charges that are based on the customer's upper block energy usage, peak period energy use or peak period demand.

The residual of network costs (the shortfall between revenue and long run marginal cost) are recovered from those charging parameters with the lowest price elasticity of demand, namely the fixed charging parameter, subject to consideration of customer impact. This minimises the distortion of the pricing signal and maximises

the probability of efficiency gains being realised through customer behavioural response to efficient price signals.

# 14 Price Modelling

As per clause 16.5 of the RIN, Power Networks' has provided it's Cost of Supply Model (2015/16 Pricing Proposal Model) to the Commission as Confidential Attachment 6 to this Proposal. This is a commercial-in-confidence attachment as the model contains information on individual customers.

The purpose of the Cost of Supply Model is to enable the comparison of proposed tariffs with the cost reflective outcome. It enables the changes in individual tariffs and their charging parameters to be managed so as to improve their overall cost reflectivity, whilst also ensuring compliance with the requirements of the Commission's 2014 NPD Final Determination.

The model does this by calculating the cost of supplying customers in 2015/16. It compares this with the revenue proposed to be obtained through tariffs at the individual large customer, tariff and tariff class level. The cost of supply is an allocation of the network cost to each tariff on the basis of its cost impact on the network. The network costs are apportioned into cost pools and then allocated to the tariffs that use those pools.

## Part C: Attachments

# Attachment 1 – Network Service Classification

#### Regulated network access services

Service group	Activities description
Network service (mandated standard)	<ul> <li>Network services include:</li> <li>planning, designing and constructing the electricity network;</li> <li>maintaining and operating the electricity network; and</li> <li>emergency response and administrative support;</li> <li>to the standards provided for in the Network Technical Code, and in accordance with good electricity industry practice.</li> <li>Network Services are services provided using the shared electricity network, to all users connected to the electricity network. They do not include Connection Services which make use of assets dedicated to the supply of a single network user.</li> </ul>
Unmetered supply (energy delivery) service	Network services (energy delivery) provided to unmetered supplies such as street lights, traffic lights, advertising signs, CCTV cameras and similar applications where energy consumption may reasonably be estimated and it is not economic or practical to install, maintain and read a meter.
Connection services (mandated standard)	Connection services include: • commissioning of connection assets; • service connection; • installation inspection; and • operating and maintaining connection assets, to the standard provided for in the Network Technical Code, and in accordance with good electricity industry practice. Connection Services are provided at the request of a network user and are dedicated to the individual network user. Connection assets include all of the dedicated electrical equipment that is used to transfer electricity to (entry) or from (exit) the shared electricity network at the connection point.

Service group	Activities description
Metering services (mandated standard)	Metering services, including meter data services, provide the means by which the electricity that is transferred to or from a network user is measured at a connection point.
	<ul> <li>Metering services include, but are not necessarily limited to:</li> <li>provision, installation and commissioning of metering assets; and</li> </ul>
	<ul> <li>periodic accuracy testing, maintenance and replacement of metering assets,</li> </ul>
	to meet legislated accuracy requirements and conform to good electricity industry practice.
	<ul><li>Meter data services include by are not necessarily limited to:</li><li>meter reading, either locally or remotely;</li></ul>
	<ul> <li>collection, storage and management of metering data; and</li> </ul>
	<ul> <li>routine transfer of data to participant billing systems, to meet legislated accuracy requirements and conform to good</li> </ul>
	electricity industry practice.
	Where supply is unmetered, consumption is estimated at the connection point.

#### Excluded network access services not subject to effective competition

Service group	Activities description
Quoted services	
Quoted network services	<ul> <li>Network services provided at the request of a network user with higher (or lower, where permissible) quality or reliability standards than are required under applicable legislation, codes or other regulatory instruments</li> <li>Quoted Network Services include above standard or nonstandard services associated with: <ul> <li>planning, designing and constructing the electricity network;</li> <li>maintaining and operating the electricity network;</li> <li>emergency response and administrative support; and</li> <li>other associated services,</li> </ul> </li> <li>to the performance standard agreed with the network user.</li> <li>Under Quoted Network Services, network users are only charged the incremental cost of the work above the cost of the mandated standard Network Service.</li> <li>Quoted Network Services exclude above standard or nonstandard Connection Services which make use of dedicated assets.</li> </ul>
Quoted connection services	Connection services provided at the request of a network user with higher (or lower, where permissible) quality or reliability standards than are required under applicable legislation, codes

Service group	Activities description
	or other regulatory instruments
	Quoted connection services include above standard or non- standard services associated with:
	<ul> <li>commissioning of connection assets;</li> </ul>
	service connection;
	Installation inspection; and
	operating and maintaining connection assets to the performance standard agreed with the petwork user
	Ouoted Connection Services also include:
	supply abolishment: and
	<ul> <li>ancillary Connection Services.</li> </ul>
	Associated services for which PWC Networks may seek payment
	from the user include, but are not necessarily limited to:
	<ul> <li>responding to enquiries in relation to the provision of the above standard or non-standard connection services;</li> </ul>
	<ul> <li>provision of technical specifications in relation to the connection;</li> </ul>
	<ul> <li>provision of duplicate or underground supply where requested by a network user; and</li> </ul>
	• preliminary communications with potential or existing network user where more than 6 hours work is or is likely to be required.
	Under Quoted Connection Services, network users are only charged the incremental cost of the work above the cost of the mandated standard Connection Service.
	Connection Services are provided at the request of a network user and are dedicated to the individual network user. Connection assets include all of the dedicated electrical equipment that is used to transfer electricity to (entry) or from (exit) the shared electricity network at the connection point.
Quoted metering services	Metering services, including meter data services, provided at the request of a network user of a type that exceeds the normal requirements for the type of network user.
	Quoted metering services include, but are not necessarily limited to:
	<ul> <li>provision, installation and commissioning of additional or above standard or non-standard metering assets;</li> </ul>
	periodic accuracy testing of additional of additional or above
	standard or non-standard metering assets; and
	<ul> <li>maintenance and replacement of additional or above standard or non-standard metering assets.</li> </ul>
	Quoted meter data services include:
	<ul> <li>reading, either locally or remotely, of additional or above standard or non-standard meters provided at the request of the network user;</li> </ul>
	<ul> <li>installing and maintaining communications for additional or above standard or non-standard remotely read meters; and</li> </ul>

Service group	Activities description
	<ul> <li>transfer of meter data to the meter data system and management of the stored meter data, for additional or above standard or non-standard meters.</li> </ul>
	Quoted ancillary Metering Services include:
	<ul> <li>non-standard read of a standard meter, either locally or remotely; and</li> </ul>
	<ul> <li>non-routine transfer of meter data to participant billing systems or network users.</li> </ul>
	Under Quoted Metering Services, network users are only charged the incremental cost of the work above the cost of the mandated standard Metering Service.
	Several of the more commonly provided excluded metering services are subject to standard fees (Fee based services).
Asset relocation, temporary disconnection and reconnection	Removal, relocation or other permanent or temporary change to PWC Network assets at the request of a network user.
Emergency recoverable works	Repairs to shared electricity network or network connections caused by a third party (for example, due to vehicle accident).
Services associated with temporary supply	<ul> <li>Services associated with temporary supply include:</li> <li>provision electric plant or stand-by generator for temporary supply at the request of a network user; and</li> <li>provision of temporary supplies at both low and high voltage at the request of a network user.</li> </ul>
Illegal connections and damage to network equipment	Costs incurred by Power Networks as a result of a network user not complying with relevant contractual obligations. Repair of equipment damaged by a network user or third party.
Provision of non-standard street light assets	Provision, construction and maintenance of street light assets based on non-standard designs or new technology such as LED.
Wasted attendance	Additional costs incurred by PWC Networks where service provision could not be undertaken and/or completed as planned due to action or inaction of a network user or their agent.
Asset location and identification services	PWC Networks' identification of its assets, including location of buried cables, at the request of a network user.
High load transport escorts	Provision of high load transport escort, including administration costs.
Covering of low voltage mains	Insulation coverage of low voltage mains at the request of a network user or other person.
Fee-based services	
Fee-based metering services	<ul> <li>Fee-Based Metering service provided at the request of a network user include, but are not necessarily limited to:</li> <li>out of sequence (unscheduled) meter reading services;</li> <li>meter program changes;</li> <li>testing or inspection of metering assets;</li> <li>removal or relocation of metering assets;</li> </ul>

Service group	Activities description
	<ul> <li>the exchange or replacement of metering assets;</li> <li>installation of prepayment meters; and</li> <li>provision of a permanent three-phase service.</li> <li>The provision of less routine services is subject to quotation (Quoted Services).</li> </ul>
Street light services	Provision, construction and maintenance of street lighting assets.
Non-standard data services	Provision of non-standard data services of a routine nature.
Disconnection and reconnection	Providing temporary disconnection and reconnection of supply at a connection point at the request of a network user or market participant and in accordance with the terms of the Network Technical Code.
Fault response – not PWC Networks' equipment	Attendance in response to advice of a fault by a network user where the fault is not associated with PWC Networks' assets or metering equipment.
Installation of minor equipment to the network	<ul> <li>This includes but is not necessarily limited to:</li> <li>installation of tiger tails on PWC Networks assets;</li> <li>polylogger test equipment at the user's premises; and</li> <li>rental cost of minor equipment.</li> </ul>
Travel costs	Where PWC Networks' personnel are required to attend rural locations more than 100kms from the relevant PWC Networks depot.

# Excluded network access services subject to effective competition

Service group	Activities description
Equipment rental for non- network purposes	<ul> <li>Equipment rental charges may be but are not necessarily limited to the following:</li> <li>for the attachment of communications services such as coaxial or fibre optic cables;</li> <li>for pole attachments, ducts or conduits; and</li> <li>for the use of tunnels or ducts by communications or other services.</li> </ul>
Investigation and testing services	Investigation and testing services requested by a network user.
Contestable networks engineering consulting services	Consulting services provided by PWC Networks to network users and third parties.

# Attachment 2 – Cost of Supply Modelling

Distribution network businesses use a cost of supply model for the purpose of allocating costs to their tariffs. Only with this understanding of the cost structure of the business, can tariffs be constructed that are truly cost reflective. Power Networks has developed such a model in order to prepare the 2015/16 Network Pricing Proposal (2014-15 Pricing Proposal Model).

The general approach to cost of supply modelling is illustrated in Figure 7.



Figure 7 – Cost of supply modelling

The diagram depicting the network voltage levels at left has been developed for Power Networks' configuration. The general principle is that the network costs are considered within pools. It is proposed that there would be 6 such cost pools for Power Networks (plus a common service component, discussed below).

Each cost pool contains the capital and operating and maintenance costs of the associated network assets. A process of allocation of the total network costs has been required in order to determine these pools, as described below.

The costs of each pool are allocated to the loads that make use of each pool. For example, a load connected at high voltage would be allocated costs from pools 1 to 3, plus pool 6 and 7. The Commercial HV tariff class is not allocated costs associated with distribution substations and the low voltage network. The tariff allocation table is then used to guide formulation of the appropriate tariff charging parameters.

The most appropriate allocation process for network costs is the "Modified Method of Intercepts" approach, illustrated in the chart at right. The network is augmented for peak demand growth and thus the cost allocation is peak weighted, as shown. This

allocation process would apply to representative demand profiles for each tariff class. However, at this stage Power Networks does not have profile information for the Domestic and <750 MWh per annum Commercial tariff and the demand allocation has been based on the estimated contribution of each tariff to the coincident system demand.

### A2.1 Cost of supply modelling

Power Networks developed a Cost of Supply Model (2014/15 Pricing Proposal Model) for the regulated network. This model allocates the capital and operating and maintenance costs of the network to the tariffs and tariff classes and performs associated calculations. The 2015/16 Pricing Proposal Model updated the 2014/15 model inputs and retains all the computational components.

The principal functions of the Cost of Supply Model are to inform the network tariff strategy and assist in demonstrating its compliance, by:

- Allowing comparison of the network's cost of supply with the revenue obtained through tariffs on a tariff charging parameter, tariff and tariff class basis;
- Ensuring that tariffs reflect the efficient cost of supply, in accordance with clause 74(1)(a) of the TPA Code;
- Calculating the stand-alone and avoidable costs of tariff classes, to enable compliance to be demonstrated with clause 6.18.5(a) of the Rules;
- Calculating the long run marginal cost of supply (LRMC) for tariffs and tariff classes, to enable compliance to be demonstrated with clause 16.4(a) of the Commission's RIN; and
- Ensuring that the forecast revenue complies with the revenue cap and side constraint control mechanisms as per the Commission's 2014 NPD Final Determination.

Power Networks is of the view that the current estimate of LRMC, using the Average Incremental Cost approach, may be underestimated. This is because:

- It is based on five years of approved capital and marginal operating and maintenance expenditure extrapolated a further five years, rather than a longer term review of development needs (ideally, over 20 or more years); and
- The forecast follows a period of intense asset renewal which has provided some increased capacity, thereby lessening the growth related capital expenditure.

There are two other generally accepted means of estimating the LRMC for a network, as described in the Australian Energy Market Commission's (AEMC) review of distribution pricing<sup>26</sup>:

- The Turvey, or perturbation approach, would assume an increment in growth and devise a long term forecast of capital and operating expenditure to meet that growth; and
- The Long Run Incremental Cost (LRIC) approach, which calculates the annualised cost of the next proposed investment measured relative to incremental demand.

The Turvey approach would be highly information intensive and effectively involves re-forecasting capital and operating expenditures for the network. It is not favoured for this reason Power Networks therefore proposes to investigate, in the 2014-19 regulatory control period, the application of the LRIC approach, which has been used for many years by network distributors in the United Kingdom.

### A2.2 Structure of the Cost of Supply Model

A number of cost pools form the basis of the Cost of Supply Model. Each cost pool is formed from:

- Network capital costs associated with the cost pool. These have been based on the capital costs of the network, apportioned using the ORC of the assets in each cost pool; and
- Network operating and maintenance costs by cost pool. Initially, an allocation
  of the network's operating and maintenance costs on the basis of the ORC of
  assets in each pool has been used, with the exception of metering costs. A
  weighting factor is used to account for the relatively high operating and
  maintenance costs of lower voltage assets.

A proportion of 80 per cent of the network's costs is allocated in this way to cost pools 1-6, corresponding to an average LRMC of network supply. The remaining 20 per cent is allocated as a common service charge. This proportion is based on Ausgrid's experience with the LRMC calculation over a period of more than a decade.

AEMC, Consultation Paper - National Electricity Amendment (Distribution Network Pricing Arrangements) Rule 2014, Rule Proponents Independent Pricing and Regulatory Tribunal of NSW, Standing Council on Energy and Resources, 14 November 2013.

The network cost pools and the process by which they are allocated to tariffs are set out in Table 20.

Cost pool	Allocation
Transmission	Coincident kVA demand, as the principal driver of costs in these
Zone Substations	components of the network is customer demand.
High Voltage Distribution	
Distribution Substations	
Low Voltage Distribution	Per-customer connection allocation, weighted for the number of phases (the costs of the LV network and services are relatively independent of demand).
Metering	Per-customer connection allocation, weighted for relative cost.
Common Service	Energy consumption

#### Table 20 – Allocation of network costs

The tariff classes, constituent tariffs and the allocation process in the Cost of Supply Model are illustrated in Figure 8.

Figure 8 – Structure of the Cost of Supply Model

Teriff Class	a and Tariff	Cost Pool								
Tarim Class	s and Tariff	Transmission	ZSS	HV Dist.	LV Dist.	Metering	Common Service			
Domestic	Domestic					Custo	mer			
	<750 Commercial						Connection Allocation			
Commercial	Unmetered	Demand Allocation				is weighted of phases & t	for number he Metering	Energy Allocation		
Commercial HV	>750 HV >750 LV					for relation is	ve cost)			

The outcomes from the Cost of Supply Model are discussed below.

#### A2.3 Cost of Supply outcomes

The outcome of the Cost of Supply Model cost allocation to tariffs and tariff classes is shown in Table 21.

Table 21 - Cost of Supply Model allocations

Tariff	and class			Cost Allocat	ors			Network cost distribution Common						Total	
		Coincid	ent kVA	Customer Con	nections	Consumptio	on MWh	Trans ZSS HV Dist. Dist SS LV Dist. Metering			Service	Alloc'n			
Tariff	Domestic	198,899	22.5%	71,089	83.6%	616,595	34.9%	7.02%	8.43%	9.16%	4.07%	6.05%	1.95%	3.49%	40.2%
	Commercial	199,243	22.5%	13,559	16.0%	488,608	27.6%	7.03%	8.45%	9.17%	4.08%	2.31%	0.37%	2.76%	34.2%
	Street lights	252	0.0%	0	0.0%	14,693	0.8%	0.01%	0.01%	0.01%	0.01%	0.05%	0.00%	0.08%	0.2%
	Traffic lights	70.9	0.0%	0	0.0%	621	0.0%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.0%
	>750 LV	82,772	9.4%	279	0.3%	295,600	16.7%	2.92%	3.51%	3.81%	1.69%	0.07%	0.02%	1.67%	13.7%
	>750 HV	402,446	45.5%	76	0.09%	352,489	19.9%	2.79%	3.35%	3.64%			0.01%	1.99%	11.8%
Tariff	Domestic	198,899	22.5%	71,089	83.6%	616,595	34.9%	7.02%	8.43%	9.16%	4.07%	6.05%	1.95%	3.49%	40.2%
Class	Commercial	282,337	32.0%	13,837	16.3%	799,522	45.2%	9.96%	11.97%	13.00%	5.78%	2.45%	0.39%	4.52%	48.1%
	Commercial HV	402,446	45.5%	76	0.1%	352,489	19.9%	2.79%	3.35%	3.64%			0.01%	1.99%	11.8%
Total		883,683	100.0%	85.002	100.0%	1.768.606	100.0%	19.77%	23.76%	25.79%	9.85%	8.50%	2.34%	10.00%	100.0%

This allocated cost is compared with the cost recovery through tariffs in 2015/16, which is shown in Table 22.

Tariff	and class	Total Alloc		Tariff	Variation	
		Alloc'n	Cost	2015/16		
Tariff	Domestic	40.2%	81.517	94.516	16%	
	Commercial	34.2%	69.351	62.207	-10%	
	Street lights	0.2%	0.348	1.081	210%	
	Traffic lights	0.0%	0.058	0.052	-9%	
	>750 LV	13.7%	27.789	25.690	-8%	
	>750 HV	11.8%	23.887	17.541	-27%	
Tariff	Domestic	40.2%	81.517	94.516	16%	
Class	Commercial	48.1%	97.545	89.031	-9%	
	Commercial HV	11.8%	23.887	17.541	-27%	
Total		100.0%	202.949	201.088	99%	

Table 22 - Cost of Supply Model comparison with 2015/16 tariff revenue

It is observed from the comparison in Table 22 that:

- The 2015/16 tariffs under-recover total costs (99%) due to the side constraint on tariff class price movements constraining the revenue through tariffs.
- The domestic tariff class and tariff revenue is above the network cost;
- The <750 MWh per annum commercial tariff revenue for customers with an annual consumption less than 750 MWh is less than the network cost;
- For unmetered usage the street light tariff is over recovering and the traffic light tariff is under recovering (note that Power Networks proposes to confirm the estimated consumption patterns);
- The >750 MWh per annum LV Commercial tariff for customers with an annual consumption more than 750 MWh connected to the low voltage network under recovers revenue;
- Overall, revenue is under recovered for the proposed Commercial tariff class containing the <750 MWh per annum Commercial, Unmetered and >750 MWh per annum LV Commercial tariffs; and
- The Commercial HV tariff class and the >750 MWh per annum HV Commercial tariff for customers with an annual consumption more than 750 MWh connected to the high voltage network significantly under recovers revenue.

A network pricing strategy that seeks to improve equity between customers would align network tariffs and tariff classes with their cost of supply outcomes.

The Cost of Supply Model also calculates the stand-alone and avoidable costs for tariff classes, as required by clause 6.18.5(a) of the Rules. The stand-alone and avoidable costs are derived from the Cost of Supply Model. To do this, a hypothetical network is effectively developed for each tariff class, by answering two hypothetical questions.

#### A2.4 Avoidable cost

This is formulated by responding to this hypothetical question:

"If XX tariff class were not supplied from the network, what percentage reduction in the value of existing assets employed in category YY could be made but still enable the same standard of network service to be provided to all remaining tariff classes?"

The outcome of this network optimisation is shown in Table 23, with similar consideration of the planning and capacity implications for the network as in Table 24.

Network level	Tariff class				
	Commercial HV	Commercial	Domestic		
Transmission	-5.0%	-3.0%	-5.0%		
Zone substations	-5.0%	-5.0%	-5.0%		
HV network	-5.0%	-10.0%	-5.0%		
Distribution substations	0.0%	-10.0%	-30.0%		
LV network and services	0.0%	-15.0%	-50.0%		
Metering	-0.3%	-16.3%	-83.5%		
Common service costs	0.0%	0.0%	0.0%		

#### Table 23 – Stand-alone network costs

#### A2.5 Stand-alone cost

In this case the hypothetical question is:

"If XX tariff class were the only one supplied from the network, what percentage value of the existing assets employed in category YY would still be required to enable the same standard of network service to be provided to tariff class XX?"

The outcome in terms of the network optimisation is shown in Table 24.

Table 24 – Stand-alone network costs

Network level	Tariff class					
	Commercial HV	Commercial	Domestic			
Transmission	65.0%	98.0%	98.0%			
Zone substations	30.0%	90.0%	95.0%			
HV network	10.0%	80.0%	95.0%			
Distribution substations	0.0%	80.0%	80.0%			
LV network and services	0.0%	40.0%	90.0%			
Metering	0.3%	16.3%	83.5%			
Common service costs	100.0%	100.0%	100.0%			

The costs in Table 24 have been derived by consideration of the planning and capacity implications for the network. For example, in the case of the HV network, only 10 per cent is utilised for the supply of customers in the Commercial HV tariff class and would need to be retained if that tariff class alone remained connected to the network.

#### A2.6 Long run marginal cost

The LRMC for the network has been calculated using an Average Incremental Cost approach. The inputs to this calculation are the following components:

- Network demand related costs. This is a subset of the capital expenditure approved by the Commission in the 2014 NPD Final Determination. Capital expenditure associated with new connections and demand growth fall into the category of 'demand related', plus an allowance for incremental operating and maintenance expenditure. This forecast is extrapolated over a period of 10 years, which is still relatively short for a long run calculation; and
- The demand (in kVA) for the respective tariff classes, forecast over the same period as the capital expenditure.

Because of the limited forecast period used in this approach, and the cyclical nature of network growth, Power Networks is concerned that the resulting LRMC values underestimate the marginal cost per kVA of connecting load. They are based on the Commission's approved five-year expenditure extrapolated a further 5 years, whereas a longer term forecast would be preferred. In addition, Power Networks' substantial construction program during the 2009-14 regulatory control period has displaced a portion of the demand related capital expenditure that might otherwise have been required during the 2014-19 regulatory control period.

Power Networks intends to investigate an alternative approach by which a more robust estimate of the network LRMC may be made. The Energy Networks Association (UK) developed an approach termed the "500 MW model", based on the LRIC approach and has been in place for many years<sup>27</sup>.

<sup>&</sup>lt;sup>27</sup> Energy Networks Association (UK), CDCM model user manual Model Version: 102, 28 February 2013.

#### Attachment 3 – Tariffs for 2015/16

A3.1 2015/16 tariffs excluding GST

# Schedule A - All Regions 2015/16 EXCLUDING GST

# A - For High Voltage Connected Customers with consumption above 750 MWh per year

Reference Service<sup>1</sup> Provided: Normal transmission and distribution of electricity consumed through customers' metering for customers supplied and metered at high voltage

	System				
	Availability	\$/kVA	\$/kVA	¢/kWh	¢/kWh
	Charge	peak <sup>2</sup>	off peak <sup>2</sup>	peak <sup>2</sup>	off peak <sup>2</sup>
System Availability Charge					
Dollars per month per meter	\$919.963				
Plus charges related to monthly					
demand					
First 50 kVA per month		\$11.054	\$2.608		
Next 100 kVA per month		\$11.054	\$2.608		
Next 300 kVA per month		\$9.148	\$1.984		
Next 500 kVA per month		\$7.249	\$1.984		
Any further kVA per month		\$5.247	\$1.575		
Plus charges related to energy					
metered					
First 10,000 kWh per month				6.655	6.292
Next 20,000 kWh per month				5.049	4.479
Next 50,000 kWh per month				4.115	3.543
Next 100,000 kWh per month				3.712	3.083
Any further kWh per month				2.569	1.718

<sup>[1]</sup> Charges for increased or reduced service such as for higher reliability or for back-up supply to on-site generation are subject to negotiation.

<sup>[2]</sup> Peak and off-peak periods for demand and energy related charging rates will be as determined from time to time. The peak period rates currently apply to usage between 6.00 am and 6.00 pm on any day. Off-peak period rates apply at other times.

# Schedule B - All Regions 2015/16

#### **EXCLUDING GST**

# B - For Low Voltage Connected Customers with consumption above 750 MWh per year

Reference Service<sup>1</sup> Provided: Normal transmission and distribution of electricity consumed through customers' metering for customers supplied and metered at low voltage

	System Availability	\$/kV	\$/kV	¢/kWh	∉/kWh
	Charge	peak <sup>2</sup>	off peak <sup>2</sup>	peak <sup>2</sup>	off peak <sup>2</sup>
System Availability Charge		-	-		-
Dollars per month per meter	\$827.237				
Plus charges related to monthly					
demand					
First 50 kVA per month		\$11.054	\$2.608		
Next 100 kVA per month		\$11.054	\$2.608		
Next 300 kVA per month		\$9.118	\$2.004		
Next 500 kVA per month		\$7.225	\$2.004		
Any further kVA per month		\$5.252	\$1.577		
Plus charges related to energy					
metered					
First 10,000 kWh per month				6.987	6.606
Next 20,000 kWh per month				5.571	4.920
Next 50,000 kWh per month				4.540	3.892
Next 100,000 kWh per month				3.902	3.241
Any further kWh per month				2.639	1.765

<sup>[1]</sup> Charges for increased or reduced service such as for higher reliability or for back-up supply to on-site generation are subject to negotiation.

<sup>[2]</sup> Peak and off-peak periods for demand and energy related charging rates will be as determined from time to time. The peak period rates currently apply to usage between 6.00 am and 6.00 pm on any day. Off-peak period rates apply at other times.

# Schedule C - All Regions 2015/16

## EXCLUDING GST

#### C - For Customers with consumption below 750 MWh per year

Reference Service<sup>1</sup> Provided: Normal transmission and distribution of electricity consumed through customers' connection.

System Availability Charge	
Cents per day per meter - Domestic	40.885
Cents per day per meter - Commercial	75.812
Plus charges related to energy	¢/kWh
metered	anytime
Domestic	
First 500 kWh per month	14.034
Next 500 kWh per month	14.034
Energy used above 1,000 kWh per month	11.707
(pro-rated per billing period)	
Commercial	
First 1,000 kWh per month	13.971
Next 1,000 kWh per month	11.466
Energy used above 2,000 kWh per month	11.466
(pro-rated per billing period)	
Unmetered	
Street lighting and similar consumption profiled unmetered supplies	7.359
Traffic lights and similar unmetered 24 hour supplies	8.446
<sup>[1]</sup> Charges for increased or reduced service such as for higher reliability or for bac	k-up supply to on-site generation are subject to neg

# Attachment 4 – Compliance Checklist

This attachment cross-references the chapters and sections of the Network Pricing Principles Statement and 2015/16 Network Pricing Proposal against the TPA Code, the Commission's RIN, the Commission's 2014 NPD Final Determination and RIN requirements.

#### A4.1 TPA Code requirements

The requirements of the TPA Code in relation to network pricing are set out in clause 74, shown in Table 25.

TPA Code of	lause	Pricing Proposal section
74.Objectiv (1) The (a)	res of network pricing e reference tariffs are – to reflect efficient costs of supply;	<ul> <li>Chapter 14 demonstrates that the 2015/16 reference tariffs have been maintained to:</li> <li>Recover the proposed revenue;</li> <li>Do not contain economic cross subsidies; and</li> <li>Have been set with due regard to the LRMC.</li> <li>Chapter 7 also discusses efficient network pricing.</li> </ul>
(b)	<ul> <li>to involve a common approach for all network users, with the actual tariff with respect to a particular network access service only differing between users because of – <ul> <li>(i) the user's geographical and electrical location;</li> </ul> </li> <li>(ii) the quantities in which the relevant network access service is to be supplied or is supplied;</li> <li>(iii) the pattern of network usage;</li> <li>(iv) the technical characteristics or requirements of the user's load or generation;</li> <li>(v) the nature of the plant or equipment required to provide the network access service; and</li> <li>(vi) the periods for which the network access service is expected to be supplied;</li> </ul>	Table 4, at section 6.1, demonstrates Power Networks' consideration of pricing principles.
(c)	to be transparent and published in order to provide pricing signals to network users;	Tariff schedules at Attachment 3 will be published.
(d)	to promote price stability; and	Section 11.2 on tariff movements.
(e)	to reflect a balancing of the quest for detail against the administrative costs of doing so which would be passed through to end-use customers.	Chapter 9 on tariff structural changes.

Table 25 – TPA Code requirements on network pricing

TPA Co	ode clause	Pricing Proposal section
75. (1)	Structure of regulated network prices The network provider is to be responsible for establishing the pricing structure that best gives effect to the principles in clause 74.	Part A: Network Pricing Proposal Statement
(2)	In determining the pricing structure, the network provider may distinguish tariffs and charges for the following categories of standard network access services –	
	<ul> <li>(a) entry services that include the asset-related costs and services provided to serve a generator user at its connection point;</li> </ul>	
	<ul> <li>(b) exit services that include the asset-related costs and services provided to serve a load user at its connection point;</li> </ul>	
	(c) common services that include the asset- related costs and services that ensure the integrity of the network and benefit all network users and cannot be allocated on the basis of voltage levels or location; and	
	<ul> <li>(d) use of network services that include the network shared by generator users and load users, but exclude entry services, exit services and common services.</li> </ul>	
(3)	Tariffs and charges may relate to specific connection points, and may involve a combination of fixed and variable amounts and may be related to one or more of the following elements –	
	<ul><li>(a) demand levels (maximum kw of kvA per period);</li><li>(b) energy quantities involved (kWh or kVAh per</li></ul>	
	period); and (c) time of use.	
(4)	If quantities are used in determining tariffs and charges, these quantities may refer to minimum, maximum or actual quantities.	
(5)	Prior to commencement of each regulatory control period or to the network provider's coverage by this Code, the network provider must provide the regulator with a draft statement setting out details of principles and methods to be used for defining the individual standard network access services to be supplied by the network provider and for establishing the reference tariffs to apply to those services.	
78. (1)	Role of regulator At least 60 days prior to the start of each financial year, the network provider must provide to the regulator a statement setting out its proposed reference tariffs for the standard network access	Part B: 2015/16 Network Pricing Proposal

TPA Code clause	Pricing Proposal section
<ul><li>services it will be supplying that will apply in the relevant period with respect to a network.</li><li>(2) The statement must detail how the tariffs and charges have been calculated by application of the principles in this Chapter.</li></ul>	

### A4.2 RIN requirements

The requirements of the Commission's RIN in relation to the pricing principles in this document are set out in Table 26.

#### Table 26 – RIN requirements on pricing principles

RIN	clause	Pricing Proposal section
<b>16</b> 16.1	<b>NETWORK PRICING PRINCIPLES STATEMENT</b> Provide a draft statement ( <i>Network Pricing</i> <i>Principles Statement</i> ), suitable for publication, setting out the principles and methods to be used for defining the individual direct control services, both standard control services and <i>alternative control</i> <i>services</i> , to be supplied by <i>PWC Networks</i> and for establishing the reference tariffs to apply to the standard control services.	Chapter 4 on the classification of services.
16.2	<ul> <li>Explain how tariff classes have been constituted, having regard to:</li> <li>(a) the need to group <i>customers</i> together on an economically efficient basis; and</li> <li>(b) the need to avoid unnecessary transaction costs.</li> </ul>	In Chapter 5 Power Networks explains how tariff classes have been constituted.
16.3	<ul> <li>In establishing the reference tariffs to apply to direct control services, explain whether and how <i>PWC</i>. <i>Networks</i> has taken into consideration:</li> <li>(a) the user's geographical and electrical location;</li> <li>(b) the quantities in which the relevant network access service is to be supplied or is supplied;</li> <li>(c) the pattern of network usage;</li> <li>(d) the technical characteristics or requirements of the user's load or generation;</li> <li>(e) the nature of the plant or equipment required to provide the network access service;</li> <li>(f) the periods for which the network access service is expected to be supplied.</li> </ul>	Table 4, in Chapter 6, demonstrates Power Networks' consideration of network pricing principles.

RIN	clause	Pricing Proposal section
16.4	Explain whether and how, for each tariff, and if it consists of two or more charging parameters, each charging parameter for a tariff class, <i>PWC Networks</i> has:	Table 5, in Chapter 7, demonstrates Power Networks' consideration of efficient pricing.
	<ul> <li>(a) taken into account the long run marginal cost for the service or, in the case of a charging parameter, for the element of the service to which the charging parameter relates; and</li> </ul>	
	(b) had regard to:	
	<ul> <li>(i) transaction costs associated with the tariff or each charging parameter; and</li> </ul>	
	<ul> <li>(ii) whether <i>customers</i> of the relevant tariff class are able or likely to respond to price signals.</li> </ul>	
16.5	Provide a copy of the model(s) that have been used in the development of the draft <i>Network Pricing</i> <i>Principles Statement</i> , including any proprietary model(s) provided by a third party;	Power Networks' Cost of Supply Model (2015/16 Pricing Proposal Model) has been made available to the Commission on a confidential basis.

The requirements of the Commission's RIN in relation to a Network Pricing Proposal and Tariff Schedules are set out in Table 27.

RIN	clause	Pricing Proposal section		
18.	INDICATIVE TARIFF SCHEDULES			
18.1	Provide, for the regulatory year commencing 1 July 2014, an indicative Network Pricing Proposal and Tariff Schedules, suitable for publication, that:	Part B: 2015/16 Network Pricing Proposal; and Attachment 3: Tariff Schedules		
	<ul><li>(a) sets out the tariff classes that are to apply for the relevant <i>regulatory year</i>;</li><li>(b) sets out the proposed tariffs for each tariff class;</li></ul>	Chapter 5 sets out the tariff classes and proposed tariffs for each tariff class.		
	<ul> <li>(c) sets out, for each proposed tariff, the charging parameters and the elements of service to which each charging parameter relates;</li> </ul>	Chapter 10 sets out, for each proposed tariff, the charging parameters and the elements of service to which each charging parameter relates.		
	(d) sets out, for each tariff class related to standard control services, the expected weighted average revenue for the relevant <i>regulatory year</i> , and	Section 12.1 sets out the expected weighted average revenue for each tariff class for 2015/16.		
	<ul> <li>(e) sets out the nature of any variation or adjustment to the tariff that could occur during the course of the <i>regulatory year</i> and the basis on which it could occur; and</li> </ul>	Section 12.2 sets out the circumstances in which a variation or adjustment to tariffs could occur.		

Table 27 – RIN reg	uirements on a	Network P	Pricina Propo	sal and Tarif	f Schedules
	an ements on a	NUCLIVICIN	incing in ope	Sul ullu Tulli	1 Schedules

RIN clause			Pricing Proposal section
	(f) (g)	details how the tariffs and charges have been calculated by application of the principles and methods set out in the <i>Network Pricing</i> <i>Principles Statement</i> ; demonstrates compliance with the principles set out in Chapter 7 of the TPA Code:	Chapter 9 demonstrates compliance with these requirements.
	(h)	demonstrates compliance with any applicable network price determination, including any side constraints; and	Chapter 13 demonstrates compliance with the 2014 NPD Final Determination.
	(i)	describes the nature and extent of change from the previous <i>regulatory year</i> , including the impact on <i>customers</i> , and demonstrate that the changes comply with the TPA Code and any applicable <i>network price determination</i> .	Chapter 12 sets out the extent of the changes to network prices in 2015/16 and Chapter 13 describes the impact on customers.
18.2	18.2 Provide a copy of the model(s) that have been used in the development of the tariff schedules, including any proprietary model(s) provided by a third party;		Power Networks' Cost of Supply Model (2014/15 Pricing Proposal Model) has been made available to the Commission on a confidential basis.

#### A4.3 2014 NPD Final Determination requirements

The requirements of the Commission's 2014 NPD Final Determination in relation to the pricing in this document are set out in **Table 28**.

#### Table 28 – 2014 NPD Final Determination requirements

2014 NPD Final Determination requirement	Pricing Proposal section
The principal elements of the Commission's 2014 NPD Final Determination pertaining to pricing are the following Final Decisions:	Chapter 4 discusses the classification of network services.
<ul> <li>Approved Network Services Classification;</li> <li>The form of price control;</li> <li>The application of side constraints to the annual movement in the weighted average revenue for tariff classes; and</li> <li>The treatment of unders and overs.</li> </ul>	Chapter 13 demonstrates compliance with the revenue cap and side constraint control mechanisms. The overs and unders provision will be first implemented in 2016/17 as there is no actual data to support the under recovery evident in 2014/15. Power Networks will demonstrate the application of this mechanism in future annual Pricing Proposals.

#### A4.4 Rule requirements

For the 2014 Networks Price Determination, the Commission has adopted the pricing requirements of Chapter 6 (Part I) of the Rules to the extent that they are consistent with the TPA Code. This is evidenced in the requirements specified in clauses 16 and 18 of the Commission's RIN, which address many of the matters required by a Pricing Proposal in Chapter 6 (Part I) of the Rules.

In addition to complying with the TPA Code, the Commission's RIN and 2014 NPD Final Determination, Power and Water has also demonstrated compliance, in the 2015/16 Pricing Proposal, with the following pricing principle in clause 6.18.5(a) of the Rules.

 Table 29 – Network pricing principles and side constraints

Rules clause	Pricing Proposal section				
6.18.5 Pricing principles					
(a) For each tariff class, the revenue expected to be recovered should lie on or between:	Section 13.3 demonstrates that the revenue from tariff classes lies between the bounds of the stand-				
<ul> <li>(1) an upper bound representing the stand alone cost of serving the <i>retail customers</i> who belong to that class; and</li> </ul>					
(2) a lower bound representing the avoidable cost of not serving those <i>retail customers</i> .					

# Attachment 5 – Glossary

Term	Definition
2009 Regulatory Control Period	The regulatory period 1 July 2009 to 30 June 2014
2014 NPD Final Determination	The Commission's Final Determination for the 2014 Networks Price Determination
ABS	Australian Bureau of Statistics
AER	Australian Energy Regulator
Alternative Control Service	As defined in approved Network Services Classification, at Attachment 1
Charging Parameters	As defined in Chapter 10 of the Rules
Commission	The Utilities Commission
Connection	As defined in the Electricity Networks (Third Party Access) Code
Connection Point	As defined in the Electricity Networks (Third Party Access) Code
CPI	Consumer Price Index
Customer	Network User (terms are used interchangeably)
Direct Control Services	As defined in approved Network Services Classification, at Attachment 1
HV	High voltage (a nominal voltage level of 11,000 volts or 22,000 volts)
kV	Kilovolt, a unit of electrical voltage.
LV	Low voltage (a nominal voltage level of 230/400 volts)
Network User	As defined in the Electricity Networks (Third Party Access) Code
Pricing Proposal/ Network Pricing Proposal	As defined in clause 16 of the Regulatory Information Notice
Previous Regulatory Control Period	The regulatory period 1 July 2004 to 30 June 2009
RIN	Regulatory Information Notice, as issued by the Utilities Commission by Power and Water Corporation in April 2013.
Rules	National Electricity Rules
Standard Control Services	As defined in approved Network Services Classification, at Attachment 1
ToU	Time of Use, a system of pricing where the usage rate varies with the time of day
TPA Code	Electricity Networks (Third Party Access) Code