



POWER NETWORKS

Network Pricing Principles Statement and 2014-15 Network Pricing Proposal

May 2014

Executive Summary

This document accompanies Power Networks' proposed 2014/15 network tariffs for standard control services¹ and contains Power Networks' Network Pricing Principles Statement (NPPS) and Power Networks' 2014/15 Network Pricing Proposal.

The NPPS and 2014/15 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)²;
- The Commission's Regulatory Information Notice (the RIN) requirements for the 2014 Networks Price Determination (2014 NPD)³;
- The Electricity Networks Third Party Access Code (the TPA Code)⁴; and
- Chapter 6 (Part I) of the National Electricity Rules (the Rules), recognising that the Commission is seeking to apply the requirements of the Rules to the extent that they are consistent with the TPA Code⁵.

In line with the provisions of the RIN⁶, Power Networks has established three 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 Decision concerning side constraints⁷ will apply to these tariff classes throughout the 2014-19 regulatory control period.

Power Networks has developed a Cost of Supply Model (2014-15 Pricing Proposal Model) for the purpose of guiding the direction of future tariff changes and demonstrating compliance with the provisions of the Commission's 2014 NPD Final Determination, the RIN, the TPA Code and the Rules. A description is provided of this model and of outcomes for the 2014/15 network tariffs. Further refinements will be made to this model during the 2014-19 regulatory control period.

¹ Termed as either 'standard control network tariffs' or 'network tariffs' hereafter.

² Utilities Commission, *2014 Network Price Determination: Final Determination Part A – Statement of Reasons & Part B – Network Price Determination*, April 2014.

³ 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.

⁴ Electricity Networks (Third Party Access) Code, Chapter 7.

⁵ Utilities Commission, *2014-2019 Network Price Determination Framework And Approach Decision Paper*, November 2012, p. 1.

⁶ Utilities Commission, *Regulatory Information Notice under Section 25 of the Utilities Commission Act and Clause 22 of Network Licence*, April 2013, clause 16.1, p. 51.

⁷ Utilities Commission, *2014 Network Price Determination: Final Determination Part A – Statement of Reasons*, April 2014, clause 4.56 & 4.57, p. 40.

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

Power Networks proposes to make alterations to the structure of some standard control network tariffs. These changes will be made progressively, within the side constraint for the each tariff class, and with due regard for the impact upon Power Networks' customers. The proposed changes are as follows:

In 2014/15:

- Retain all basic tariff structures as in 2013/14;
- Establish additional consumption block levels for Domestic and Commercial customers with an annual consumption less than 750 MWh per annum (the Domestic and Commercial tariffs will each have three blocks but with different threshold levels);
- Establish separate tariffs for street lighting (and similar consumption profiled unmetered supplies) and for traffic lights (and similar unmetered 24 hour supplies), initially with the same rates;
- Establish separate tariffs for low voltage and high voltage connected Commercial customers with an annual consumption more than 750 MWh per annum, initially with the same rates; and
- Apply a uniform increment to existing tariff charging parameters to permit recovery of the annual revenue requirement, as per the Commission's 2014 NPD Final Determination.

Over the remainder of the regulatory control period (2015/16 to 2018/19), the expected changes are as follows:

Domestic

- Progressively move from a declining to an inclining block structure.

<750 MWh pa Commercial

As for Domestic, with different consumption threshold levels, plus:

- Increase the level of the Service Availability Charge.

Unmetered Supplies

- Introduce separate tariffs for street lighting (and similar consumption profiled unmetered supplies) and for traffic lights (and similar unmetered 24 hour supplies), to improve cost reflectivity.

>750 MWh pa Commercial

- Introduce separate, voltage based, tariffs for low voltage and high voltage connected customers;

- Progressively simplify the tariff structure and rebalance the charging parameters to provide greater cost reflectivity;
- Introduce an Excess kVAr charge, as an incentive to customers to improve compliance with power factor specifications of the Network Technical Code; and
- For further consideration - adopt a seasonal tariff profile.

Interval meter rollout

- Progressive rollout of interval meters to customers with an annual consumption greater than 40 MWh and less than 750 MWh. The rollout would be accompanied by the development of a demand tariff for these customers; and
- 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.

Cost of supply modelling

- Obtain interval data for representative samples of Domestic and Commercial (<750 MWh per annum) customers to refine estimates of their cost-to-serve and identify the potential benefits of further tariff initiatives.

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1 Background

The structure of Power and Water Corporation's (Power and Water) network tariffs has remained unchanged since they were first introduced in 2000. It is an overly complex tariff structure that is out of step with current industry practice and is no longer cost reflective.

The pricing of distribution networks is currently receiving intense national scrutiny, as a result of significant electricity price increases that have taken place in the National Electricity Market (NEM) jurisdictions in recent years. Amongst other things, reports by the Australian Energy Market Commission (AEMC), the Productivity Commission and the Australian Government's White Paper all propose the reform of distribution network tariffs, with particular emphasis on the following^{8,9,10}:

- Enhancing cost reflectivity and reducing cross subsidies through network tariffs;
- Curtailing peak demand growth and thereby, network costs;
- Improving demand side participation and energy efficiency; and
- Rolling out smart meters and time based pricing, to reduce demand during peak periods.

These emerging policy directions are also applicable to the Northern Territory.

There are some other important objectives to be borne in mind for pricing, such as:

- Price should be stable and predictable;
- Prices should be kept as simple as possible and readily understandable by customers and market participants; and
- Prices must take into account the Long Run Marginal Cost (LRMC) of supply to customers.

Set against this backdrop, the 2014/15 Network Pricing Proposal proposes ways in which Power and Water's network tariffs will be developed and progressively implemented throughout the 2014-19 regulatory control period.

1.1 Uniform tariffs in the Northern Territory

Over a period of several years, Power Networks has progressively been aligning the network tariffs in the three regulated network systems of Darwin-Katherine, Alice Springs and Tennant Creek. In 2013/14, the network tariffs were merged and a single set of uniform network tariffs applied across the Northern Territory.

⁸ AEMC, Final Report - *Power of choice - giving consumers options in the way they use electricity*, 30 November 2012.

⁹ Australian Government, *Electricity Network Regulatory Frameworks, Productivity Commission Inquiry Report*, April 2013.

¹⁰ Australian Government, *Energy White Paper 2012 - Australia's energy transformation*, October 2012.

1.2 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.

1.2.1 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 services¹¹. This is referred to as the Network Pricing Principles Statement (NPPS).

For the 2014 Networks Price Determination, the Commission sought to implement the provisions of the National Electricity Rules (the Rules) and the Australian Energy Regulator's (AER) approach to distribution regulation, where they are compatible with the legislation under which Power Networks operates. The Commission's Regulatory Information Notice (RIN) for the 2014 Networks Price Determination (2014 NPD) outlines the requirements of the NPPS¹², addressing some of the matters required in Chapter 6 (Part I) of the Rules¹³.

1.2.2 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 Code¹⁴. The Commission's RIN outlines the requirements of the Network Pricing Proposal¹⁵, addressing many of the matters required by a Pricing Proposal in Chapter 6 (Part I) of the Rules.

¹¹ Electricity Networks (Third Party Access) Code, clause 75(5).

¹² 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.

¹³ National Electricity Rules, Version 62, Chapter 6, Part I: Distribution Pricing Rules.

¹⁴ Electricity Networks (Third Party Access) Code, clause 78(1) & clause 78(2).

¹⁵ 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.

1.3 Structure of Power Networks' NPPS and Network Pricing Proposal

The structure of Power Networks' NPPS and 2014/15 Network Pricing Proposal is shown in Table 1.

Table 1 – Structure of the NPPS and 2014/15 Network Pricing Proposal

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: NETWORK PRICING PRINCIPLES 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: 2014/15 NETWORK PRICING 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 & Tariff Changes – 2014/15	Sets out the expected weighted average revenue for each tariff class and the increase to each tariff charging parameter in 2014/15.
13	Customer Impacts	Considers the impact of the 2014/15 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 2014/15 regulatory year.
15	Price Modelling	Describes the Pricing Proposal Model (confidential) that is submitted as an attachment to this document.

Chapter	Title	Purpose
PART C: ATTACHMENTS		
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 2014/15	Power Networks' proposed standard control network tariffs for 2014/15.
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 (2014/15 Pricing Proposal Model)	Modelling of the cost of providing standard network access services.

1.4 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 to the customer concerned.

The Rules provides 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 2014/15 Pricing Proposal contains sensitive confidential information specific to individual distribution network users:

Confidential Attachment 6 – Cost of Supply Model (2014-15 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 and Water is the major provider of electricity, water and waste water services throughout the Northern Territory, to metropolitan areas and to isolated communities.

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, Alice Springs and Tennant Creek stand-alone systems, are the subject of the NPPS and 2014/15 Network Pricing Proposal.

In effectively managing network services for its customers, Power Networks must take account of a range of regional, climatic, customer and asset issues. Some of the key issues that affect the Power Networks business and are relevant to its provision of network services include:

- The supply area is very diverse and subject to generally harsh climatic conditions, ranging from arid inland areas to the tropical environment in the northern part of the Territory;
- Power Networks has lower customer/load densities than most other distribution network service providers and higher costs to provide network services;

- Power Networks also services rapidly growing commercial and domestic development areas in and around the Darwin area;
- The extended hot and humid conditions in the northern part of the Territory in the wet season have resulted in the almost universal adoption of air conditioning, which is used for extended periods. The resulting high and sustained electrical demand in the wet season makes obtaining access to network equipment for maintenance or repairs problematic; and
- The climactic conditions in the Territory lead to the premature ageing of electrical equipment. Whilst a significant program of refurbishment and replacement work was carried out on major equipment in the 2009-14 regulatory control period, the refurbishment and replacement of a range of assets and equipment is necessary and ongoing.

3 Regulatory Requirements

3.1 Requirements of the TPA Code

The requirements of the TPA Code in relation to network pricing are set out below.

74. Objectives of network pricing

- (1) The reference tariffs are –
 - (a) to reflect efficient costs of supply;
 - (b) 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 –
 - (i) the user's geographical and electrical location;
 - (ii) the quantities in which the relevant network access service is to be supplied or is supplied;
 - (iii) the pattern of network usage;
 - (iv) the technical characteristics or requirements of the user's load or generation;
 - (v) the nature of the plant or equipment required to provide the network access service; and
 - (vi) the periods for which the network access service is expected to be supplied;
 - (c) to be transparent and published in order to provide pricing signals to network users;
 - (d) to promote price stability; and
 - (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.
- (2) In the event that the regulator considers there to be a conflict between the requirements set out in subclause (1) and the requirements set out in clause 63, the requirements in clause 63 are to take precedence.

75. Structure of regulated network prices

- (1) The network provider is to be responsible for establishing the pricing structure that best gives effect to the principles in clause 74.
- (2) In determining the pricing structure, the network provider may distinguish tariffs and charges for the following categories of standard network access services –
 - (a) entry services that include the asset-related costs and services provided to serve a generator user at its connection point;
 - (b) exit services that include the asset-related costs and services provided to serve a load user at its connection point;
 - (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

- (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.
- (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 –
 - (a) demand levels (maximum kW or kVA per period);
 - (b) energy quantities involved (kWh or kVAh per 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.
- (6) The regulator must approve the statement for use by the network provider unless, in the opinion of the regulator, the statement is not consistent with the principles in clause 74.

77. Publication of network tariffs

- (1) At least 30 days before the start of each financial year, the network provider must publish a pricing schedule.
- (2) The pricing schedule must specify the reference tariffs to apply during the relevant period to standard network access services with regard to the network provider's network and, where appropriate, distinguish between –
 - (a) voltage level;
 - (b) load class; and/or
 - (c) pricing zone,
 to apply to load users and generator users.
- (3) {deleted}
- (4) The pricing schedule need not include the charges the network provider expects to levy on those services excluded from price regulation under clause 72.

78. Role of regulator

- (1) 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 services it will be supplying that will apply in the relevant period with respect to a network.
- (2) The statement must detail how the tariffs and charges have been calculated by application of the principles in this Chapter.

3.2 Requirements of the Commission's RIN

In clause 16 of the RIN, the Commission has set out the requirement for Power Networks to provide a Network Pricing Principles Statement¹⁶, which mirrors some of the requirements set out in the Rules.

16. Network Pricing Principles Statement

- 16.1 Provide a draft statement (Network Pricing Principles Statement), suitable for publication, setting out the principles and methods to be used for defining the individual direct control services, both standard control services and alternative control services, to be supplied by PWC Networks and for establishing the reference tariffs to apply to the standard control services.
- 16.2 Explain how tariff classes have been constituted, having regard to:
 - (a) the need to group customers together on an economically efficient basis; and
 - (b) the need to avoid unnecessary transaction costs.
- 16.3 In establishing the reference tariffs to apply to direct control services, explain whether and how PWC Networks has taken into consideration:
 - (a) the user's geographical and electrical location;
 - (b) the quantities in which the relevant network access service is to be supplied or is supplied;
 - (c) the pattern of network usage;
 - (d) the technical characteristics or requirements of the user's load or generation;
 - (e) the nature of the plant or equipment required to provide the network access service;
 - (f) the periods for which the network access service is expected to be supplied.
- 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, PWC Networks has:
 - (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
 - (b) had regard to:
 - (i) transaction costs associated with the tariff or each charging parameter; and
 - (ii) whether customers of the relevant tariff class are able or likely to respond to price signals.

¹⁶ Utilities Commission, *Regulatory Information Notice under Section 25 of the Utilities Commission Act and Clause 22 of Network Licence*, April 2013, clause 18.

- 16.5 Provide a copy of the model(s) that have been used in the development of the draft Network Pricing Principles Statement, including any proprietary model(s) provided by a third party;

In clause 18 of the RIN, the Commission has set out the requirement for Power Networks to provide an indicative Network Pricing Proposal and Tariff Schedules¹⁷, which mirrors many of the requirements set out in the Rules.

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:
- (a) sets out the tariff classes that are to apply for the relevant regulatory year;
 - (b) sets out the proposed tariffs for each tariff class;
 - (c) 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 regulatory year; and
 - (e) sets out the nature of any variation or adjustment to the tariff that could occur during the course of the regulatory year and the basis on which it could occur; and
 - (f) details how the tariffs and charges have been calculated by application of the principles and methods set out in the Network Pricing Principles Statement;
 - (g) demonstrates compliance with the principles set out in Chapter 7 of the NT Network Access Code;
 - (h) demonstrates compliance with any applicable network price determination, including any side constraints; and
 - (i) describes the nature and extent of change from the previous regulatory year, including the impact on customers, and demonstrate that the changes comply with the NT Network Access Code and any applicable network price determination.
- 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;

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;

¹⁷ Utilities Commission, *Regulatory Information Notice under Section 25 of the Utilities Commission Act and Clause 22 of Network Licence*, April 2013, clause 18.

- 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)¹⁸. This classification is set out in Appendix 1.

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 formula¹⁹:

$$\sum_{i=1}^n \sum_{j=1}^m p_t^{ij} \times q_t^{ij} \leq R_{t-1} \times (1 + CPI_t) \times (1 - Xt) \times (1 \pm passthrough_t) \pm \Delta R_t$$

where:

R_{t-1}	is the revenue in regulatory year $t-1$
CPI_t	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 regulatory year t of the 2014-19 regulatory control period as determined by the Commission
$passthrough_t$	is any positive pass through amount or negative pass through amount in regulatory year t determined by the Commission, expressed as a percentage of the annual revenue requirement
ΔR_t	is the overs and unders adjustment to the annual revenue requirement in regulatory year t
n	is the number of network tariffs
m	is the number of tariff components
$p_{i,j}^t$	is the price of component i of tariff j in regulatory year t
$q_{i,j}^t$	is the forecast volume of component i of tariff j in regulatory year t

¹⁸ Utilities Commission, *2014 Network Price Determination Final Determination Part A – Statement of Reasons*, April 2014, Appendix A, p. 160.

¹⁹ Ibid., p. 39.

In the 2014/15 Network Pricing Proposal, Power Networks demonstrates that its network tariffs have been set in a manner that complies 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 formula²⁰:

$$\frac{\sum_{j=1}^m p_t^j \times d_{t-2}^j}{\sum_{j=1}^m p_{t-1}^j \times d_{t-2}^j} \leq (1 + CPI_t) \times (1 - X_t) \times (1 + Y_t) \times (1 \pm passthrough_t)$$

CPI_t is the annual percentage change in CPI from March in regulatory year $t-2$ to March in regulatory year $t-1$

X_t 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

Y_t is the side constraint on revenue recovered from a tariff class from regulatory year $t-1$ to regulatory year t of the 2014-19 regulatory control period as determined by the Commission

$passthrough_t$ is any positive pass through amount or negative pass through amount in regulatory year t determined by the Commission, expressed as a percentage of the annual revenue requirement

m is the number of tariff components

p_t^j is the proposed price for component j of the tariff class in year t

p_{t-1}^j is the price charged for component j of the tariff class in year $t-1$

d_{t-2}^j is the actual volume of component j of the tariff class in year $t-2$

Power Networks demonstrates in the 2014/15 Network Pricing Proposal that the proposed network tariffs for 2014/15 are compliant with the tariff class side constraint.

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 annually adjust the term ΔR_t to permit the revenue recovery through prices to track the allowable revenue. The mechanism to achieve this is the Overs and Unders account.

²⁰ Ibid., p. 40.

In the 2014 NPD Final Determination, the Commission confirmed the appropriate formulation of this adjustment, as set out in Table 2²¹.

Table 2 - Unders and Overs calculation

Element	Year t-2 Actual	Year t-1 Expected	Year t Forecast
Opening Balance	$Opening_{t-2}$	$Opening_{t-1}$ $= Closing_{t-2}$	$Opening_t$ $= Closing_{t-1}$
Interest on opening balance	$Opening_{t-2} \times W$	$Opening_{t-1} \times W$	N/A
Under/over recovery for the year	ΔR_{t-2}	ΔR_{t-1}	ΔR_t
Interest on under/over recovery	$\Delta R_{t-2} \times V$	$\Delta R_{t-1} \times V$	N/A
Closing balance	$Closing_{t-2}$ $= Opening_{t-2} \times (1+W)$ $+ \Delta R_{t-2} \times (1+V)$	$Closing_{t-1}$ $= Opening_{t-1} \times (1+W)$ $+ \Delta R_{t-1} \times (1+V)$	$Closing_t$ $= Opening_{t-1}$ $+ \Delta R_{t-1}$

Where:

$Opening_t$ is the balance of the unders and overs as at opening balance in year t

ΔR_t is the difference between the annual revenue requirement and revenue recovered in regulatory year t

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. $V = \sqrt{W+1} - 1$)

$Closing_t$ is the unders and overs closing balance in regulatory year t

The tolerance limits to apply to the adjustment to revenues for unders or overs recoveries for the 2014-19 regulatory control period are:

- Less than 2 per cent – the unders or overs is to be cleared within one regulatory year;
- Between 2 per cent and 5 per cent – the unders or overs may be spread over two regulatory years; and
- Greater than 5 per cent – Power Networks must submit a plan to the Commission detailing how it proposes to clear the balance.

Power Networks notes that the overs and unders provision will be first implemented in 2015/16 as there is no under or over recovery through tariffs in 2013/14 under the current weighted average price cap form of price control. Power Networks will demonstrate the application of this mechanism in future annual Pricing Proposals.

²¹ Utilities Commission, *2014 Network Price Determination: Final Determination Part B – Network Price Determination*, April 2014 Schedule 5, p. 53.

3.4 Requirements of the Rules

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 2014/15 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 address the Commission's requirements for a Network Pricing Principles Statement (NPPS), set out in clause 16 of the RIN²² and clause 75(5) of the TPA Code²³.

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 Determination²⁴.

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 and proposed tariff classes

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

Table 3 - Current tariff classes & tariff

Tariff Class	Tariff
>750 MWh pa	Commercial customers consuming >750 MWh pa
<750 MWh pa: Commercial	Commercial customers consuming <750MWh pa
Unmetered	Unmetered customers
Domestic	Domestic customers

The existing structures for the tariff charging parameters of each tariff are as follows:

- The energy charging parameters for the <750 MWh per annum Commercial and Domestic tariffs are characterised by a declining block structure. There is a fixed daily charge and the first 1,000 kWh energy block per month is priced at a higher level than consumption in the second block.

²² 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.

²³ Northern Territory Electricity Networks (Third Party Access) Code.

²⁴ Utilities Commission, *2014 Network Price Determination Final Determination Part A – Statement of Reasons*, April 2014, Appendix A, p. 160.

- The energy charging parameter for the Unmetered tariff is a single energy rate for all estimated consumption (street lighting, traffic lights, and similar supplies are not metered).
- The energy and demand charging parameters for the >750 MWh per annum Commercial tariff are characterised by a declining block structure. There is a fixed daily charge and peak and off peak demand and energy rates with a five step declining block structure. The existing demand charging parameter applies to customers regardless of the voltage of their connection.

Figure 1 illustrates Power Networks’ 2012/13 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, 2012/13

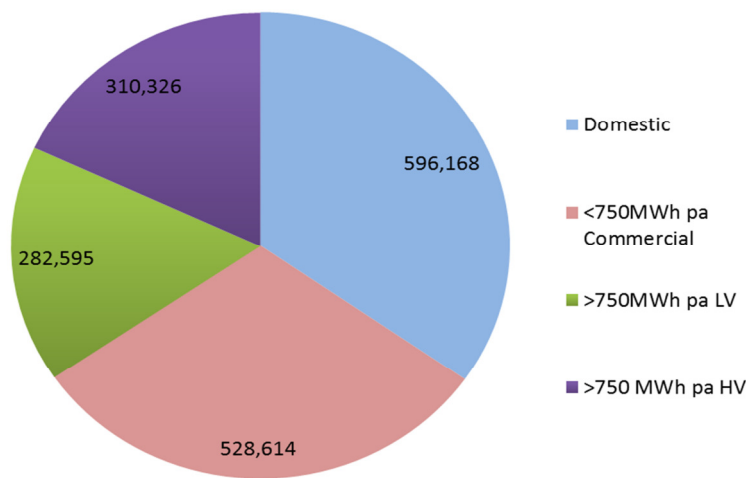
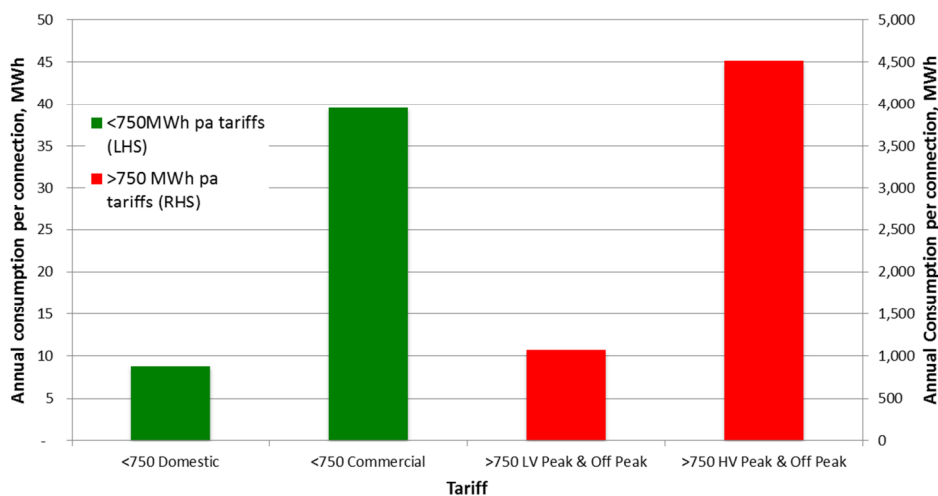


Figure 2 illustrates the average annual energy consumption per customer connection for 2012/13. This figure demonstrates that there is significant diversity in the average energy consumption between users on different tariffs.

Figure 2 – Energy consumption (MWh) per customer connection, 2012/13²⁵



²⁵ Excluding unmetered consumption.

This diversity is one of the factors that support Power Networks' constitution of tariff classes. The tariff class groupings of customers proposed by Power Networks for the 2014-19 regulatory control period have been established in compliance with the RIN provisions. Power Networks has thus assigned the existing network tariff classes to three tariff classes, as shown in Table 4.

Table 4 – Proposed network tariff classes

2009-14	2014-19	
Tariff Class	Tariff Class	Tariff
>750 MWh pa	Commercial HV	>750 MWh pa Commercial HV: Commercial customers consuming >750 MWh pa connected to the HV network
	Commercial	>750 MWh pa Commercial LV: Commercial customers consuming >750 MWh pa connected to the LV network
<750 MWh pa: Commercial	Commercial	<750 MWh pa Commercial: Commercial customers consuming <750 MWh pa
Unmetered	Commercial	Unmetered: <ul style="list-style-type: none"> • Street lighting and similar consumption profiled unmetered supplies; & • Traffic lights and similar unmetered 24 hour supplies.
Domestic	Domestic	Domestic

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).

Power Networks believes 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 Domestic tariff, 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:
 - 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 <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:
 - 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;
 - Shops, offices, warehouses and industrial/manufacturing plants;
 - Mining enterprises; and
 - 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 Unmetered tariff 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 Commercial HV tariff, 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 proposes to establish 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

The structure of Power and Water's network tariffs has remained unchanged since it was first introduced in 2000. It is an overly complex tariff structure that is out of step with current industry practice and is no longer cost reflective.

In order to avoid some customers experiencing increases in network tariffs higher than the initial required tariff change, and to meet the tariff class side constraint, Power Networks is proposing 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 5.

Table 5 – Power Networks’ consideration of pricing principles

Pricing principles RIN clause 16.3; & TPA Code clause 74(1)(b)	Power Networks’ consideration
(a) the user's geographical and electrical location;	<p>Uniform network tariffs were established across Power Networks’ three regulated systems (Darwin-Katherine, Alice Springs and Tennant Creek) in 2013/14. A network user’s electrical location is much more reflective of costs, and in the interests of balancing different pricing objectives, Power Networks has chosen to apply uniform network tariffs to reduce the level of complexity.</p> <p>In 2014/15, Power Networks proposes that the network tariffs for larger customers (with annual consumption in excess of 750 MWh) will be split to form separate tariffs for high voltage and low voltage connected customers, thereby reflecting their electrical location. Whilst initially the tariffs will be the same, Power Networks proposes that over time these reference tariffs will be trended to more closely reflect the costs of providing the service.</p>
(b) the quantities in which the relevant network access service is to be supplied or is supplied;	<p>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.</p> <p>Power Networks also proposes to move from the existing declining block structure for its <750 MWh per annum commercial and domestic tariffs. In 2014/15, an additional block will be established for these customers and the tariffs progressively adjusted to an inclining block structure.</p>
(c) the pattern of network usage;	<p>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.</p> <p>In addition, in 2014/15, Power Networks proposes to provide two separate tariffs for unmetered services:</p> <ul style="list-style-type: none"> • Street lighting and similar consumption profiled

Pricing principles RIN clause 16.3; & TPA Code clause 74(1)(b)	Power Networks' consideration
	unmetered supplies; & <ul style="list-style-type: none"> • Traffic lights and similar unmetered 24 hour supplies. Separate tariffs will be progressively introduced.
(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. In 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 2014/15 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 have been reduced 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 2014/15 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 6.

Table 6 – Power Networks’ consideration of efficient pricing

Efficient costs RIN clause 16.4; & TPA Code clause 74(1)(a)	Power Networks’ consideration
<p>(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</p>	<p>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.</p> <p>Section 14.3.1 of Power Networks’ 2014/15 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.</p> <p>In summary:</p> <ul style="list-style-type: none"> • Energy based tariffs provide very poor signalling of LRMC through the energy charging parameter (as the only alternative charging parameter is the fixed charge). Power Networks proposes to increase the proportion of the fixed charge recovered from commercial customers during the 2014-19 regulatory control period. Future changes to the proportion of fixed charge recovered from domestic customers will be made with due consideration to minimising the impact of significant price shocks to customers. • The tariffs of large commercial customers have peak period demand and energy charging parameters that approximate the LRMC for those tariff classes. Power Networks proposes to progressively restructure these tariffs to provide improved cost reflectivity.

Efficient costs RIN clause 16.4; & TPA Code clause 74(1)(a)	Power Networks' consideration
<p>(b) had regard to:</p> <ul style="list-style-type: none"> (i) transaction costs associated with the tariff or each charging parameter; and (ii) whether customers of the relevant tariff class are able or likely to respond to price signals. 	<p>Power Networks is proposing to simplify the tariffs of larger (annual consumption greater than 750 MWh) commercial customers, by progressively reducing the number of energy and demand blocks.</p> <p>In the case of the <750 MWh per annum commercial and domestic customers, Power Networks will be introducing an additional consumption block (taking the number of blocks from two to three). This is not considered to introduce a material transaction cost and is in line with tariffs used by other Australian utilities.</p> <p>This matter is addressed in more detail in section 14.4.</p> <p>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.</p> <p>This matter is addressed in more detail in section 14.5.</p>

8 Price Modelling

As per clause 16.5 of the RIN, Power Networks has provided its Cost of Supply Model (2014-15 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 2014/15. 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 B: 2014-15 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 RIN²⁶ and clauses 78(1) and (2) of the TPA Code²⁷.

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.

9.1 Network tariff objectives

The major objectives of network pricing are 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, although moves towards efficient pricing need to be tempered to limit their impact on some customers;
- **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.

²⁶ 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.

²⁷ Northern Territory Electricity Networks (Third Party Access) Code.

The tariff changes proposed for 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 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; and
 - 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 2014-15 Network Pricing Proposal, which explains their development and future tariff movements.
- Tariff changes have been proposed with a view to limiting the rate of change to acceptable levels and thereby promoting price stability.
- Tariff changes represent an overall rationalisation of the existing structures and will be implemented with minimal additional administrative costs for Power Networks, its customers and retailers.

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 2014/15 are compliant with the requirements of the TPA Code and the RIN.

In addition, for the 2014/15 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 14.3.

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 features of an inclining block energy tariff are illustrated with reference to Figure 3 and Table 7. The 2012/13 customer size distribution for Power Networks' domestic tariff customers has been used with the 2013/14 tariffs as a base. The average price shown for each of the four tariffs has been constructed on the basis of revenue neutrality for the cohort. The IBT1 and IBT2 rates below have been chosen to exaggerate the price changes, for the purpose of illustrating this approach to tariff reform.

Figure 3 – Inclining block tariff structures

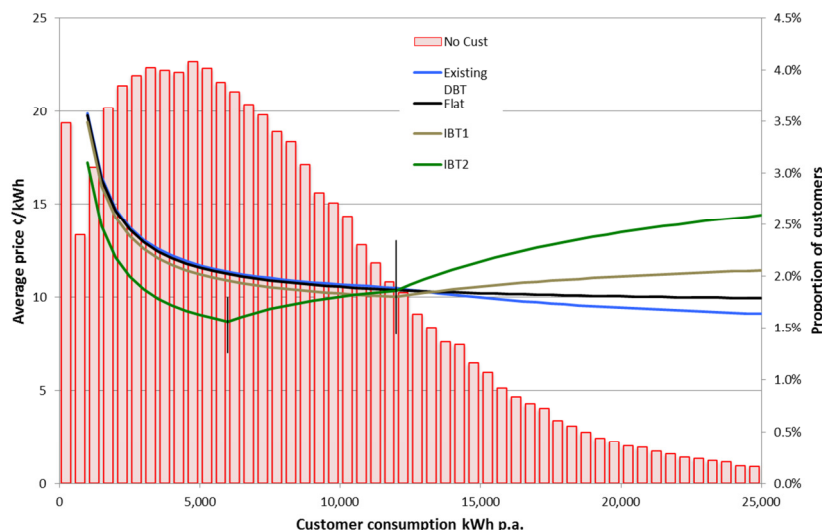


Table 7 – Illustrative tariff rates

Parameter	Block limit – per annum	Existing DBT	Flat	IBT 1	IBT 2
SAC ¢/day		27.998	27.998	27.998	27.998
Block 1 ¢/kWh	6,000	9.653	9.535	9.170	7.000
Block 2 ¢/kWh	12,000				12.000
Residual ¢/kWh	>12,000	7.826		12.736	18.150

The following comments pertain to the illustrative example in Figure 3 and Table 7:

- The existing declining block tariff (DBT) structure has a first block consumption threshold of 12,000 kWh p.a. and offers the lowest average price for large customers.
- With the flat tariff, the upper and lower block rates have been aligned. This slightly increases the average price for large customers, but makes negligible difference to rate for smaller customers; and
- With IBT 1, the existing two-block structure and 12,000 kWh threshold has been maintained and the rates of the two blocks rebalanced to provide an inclining block structure. Because of the positioning of the existing break point at a relatively high consumption level, the change in average price for smaller customers is not great.
- IBT 2 introduces a third block, with the threshold of Block 1 set a little below the average customer consumption level, at 6,000 kWh p.a. This permits a much greater differential in the rates and potentially more significant price reduction for smaller customers, offset by increases for larger customers.

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

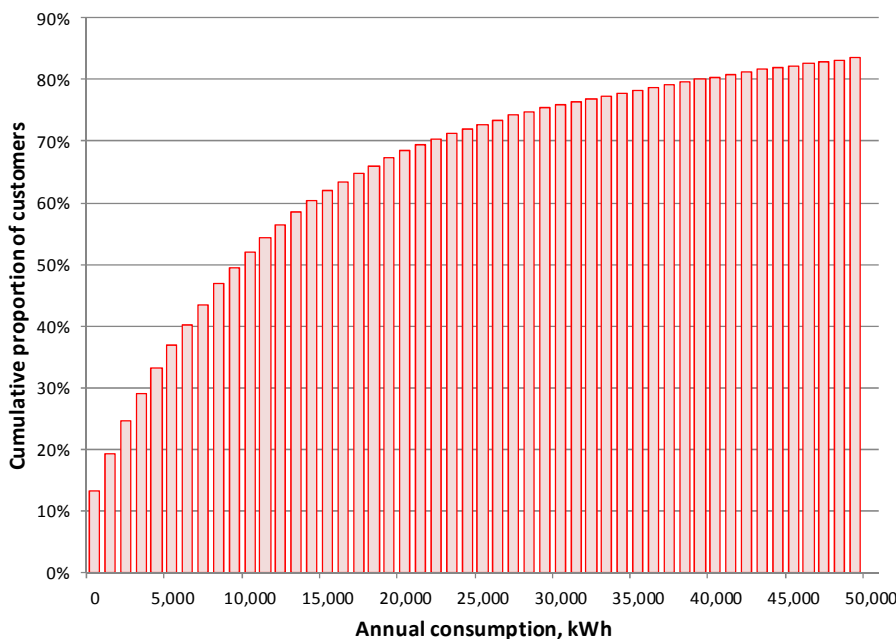
- In 2014/15, introduce an additional block threshold at 6,000 kWh per annum (500 kWh per month) to provide for future tariff rebalancing.
- Progressively rebalance the existing declining block tariff. This will be accomplished within pricing side constraints and without causing significant price shocks to customers.
- Once a flat tariff is achieved, progressively increase the differential in the pricing blocks to create an inclining block structure.

9.3.2 <750 MWh pa Commercial (Commercial tariff class)

For the same rationale as the domestic energy tariff, Power Networks proposes to progressively replace the declining block tariff structure with an inclining block structure over a similar implementation timeframe. Because of the larger range of customer sizes, however, it is proposed to retain the existing block threshold at 12,000 kWh annual consumption and introduce the second block threshold level at 24,000 kWh annual consumption.

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 is shown in Figure 4.

Figure 4 – <750 MWh pa Commercial customer size distribution, 2012/13



What is evident from Figure 4 is that approximately 20 per cent of customers have an annual consumption less than 1,500 kWh. The result is that 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 approximately \$326 per customer connection per annum²⁸, much more than the 2013/14 Service Availability Charge of \$178 per annum (excluding GST). There is therefore a robust case to increase the level of the Service Availability Charge and thereby improve customer equity.

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

²⁸ Referring to Table 25 for the Commercial tariff, $\$326 = (\$184.738\text{M} \times (2.00\% + 0.33\%)) / 13,199 \times 10^6$.

9.3.3 Unmetered (Commercial tariff class)

Power Networks has an existing single “Street Light and other Unmetered Supplies” energy tariff that is applied to all unmetered supplies. It is 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 much greater relative contribution to the network demand than street lights.

In the interests of improving the cost reflectivity of the supply to unmetered loads it is proposed that in 2014/15, the street lighting and similar consumption profiled unmetered supplies tariff will be retained but a new tariff for traffic lights and similar unmetered 24 hour supplies will be formed. Traffic lights and similar unmetered supplies will be transferred to this tariff. Over a period of several years, the price differential between the two will be increased until both tariffs become cost reflective.

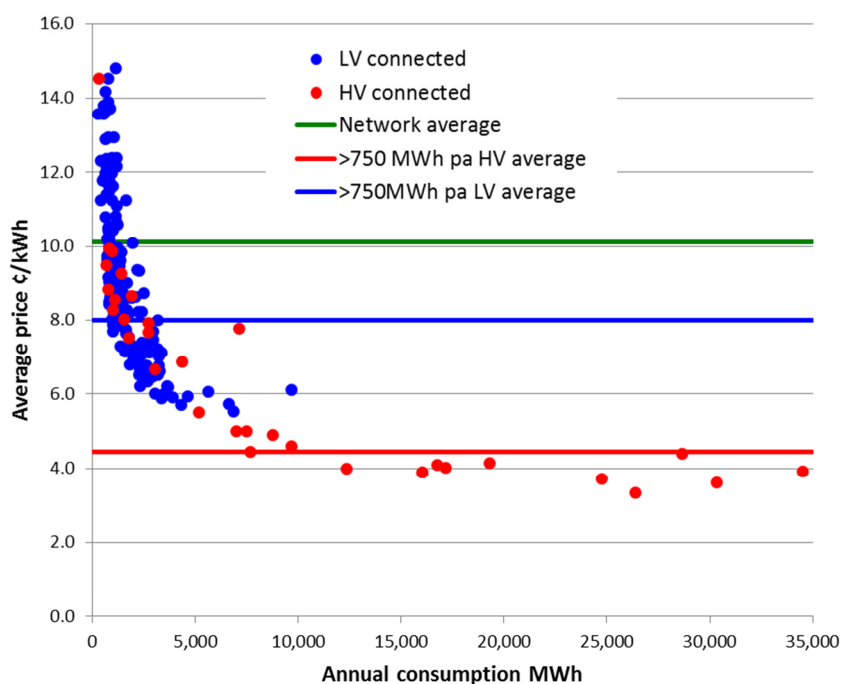
9.3.4 >750 MWh pa Commercial LV & HV (Commercial and Commercial HV tariff classes)

The energy and demand tariff charging parameters for the current >750 MWh per annum Commercial tariff are characterised by a five step declining block structure. There is 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 average price in ¢/kWh for >750 MWh per annum Commercial customers is 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 differences in the average cost of supply in ¢/kWh are due to the tariff reflecting significant differences in the load factor of the customers and in the ratio of peak to off peak consumption.

Figure 5 – Average price for >750 MWh per annum customers



It is apparent that the declining block tariff structure provides the largest customers in this group, with an extremely low network cost of around 4 ¢/kWh (the average network cost is around 10.1 ¢/kWh). Moreover, there is no distinction between customers on the basis of their connection voltage (or the network equipment they use).

Power Networks proposes to modify the tariffs that apply to >750 MWh pa Commercial customers, as follows:

- Commencing in 2014/15, the tariffs will be split by low voltage and high voltage connection. Subject to further review, the range of tariffs could later be extended to include a separate tariff for customers connected to the high voltage busbar of a zone substation. Whilst initially in 2014/15 the tariffs will be the same, when different rates are developed, high voltage connected customers will not be allocated costs associated with distribution substations or the low voltage network.
- With the voltage distinction (and potentially the locational distinction, if a zone substation tariff is introduced) between tariffs described above, 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 all 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 movement 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 very significant 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.

The implementation of the Excess kVAr charge is currently proposed for 2015/16, 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 Summary of proposed tariff movements

Power Networks' tariff strategy is summarised in terms of the proposed tariff charging parameter movements (in relative terms) in Table 8.

Table 8 - Summary of proposed tariff movements over the 2014-19 regulatory control period

Tariff	System Availability Charge	Energy				Demand			
Street lighting & similar consumption profiled unmetered supplies		—							
Traffic lights & similar unmetered 24 hour supplies		+							
		Block 1	Block 2	Block 3					
Domestic inclining block	0	—	0	+					
<750 MWh pa Commercial inclining block	+	—	0	+					
		Peak		Off-peak		Peak		Off-peak	
		Lower blocks	Upper blocks	Lower blocks	Upper blocks	Lower blocks	Upper blocks	Lower blocks	Upper blocks
>750 MWh pa Commercial LV connected	0	—	+	—	+	—	+	—	+
>750 MWh pa Commercial HV connected	0	—	+	—	+	—	+	—	+
<p>+ increase relative to the price movement as per the Utilities Commission's 2014 NPD Final Determination.</p> <p>— decrease relative to the price movement as per the Utilities Commission's 2014 NPD Final Determination.</p> <p>0 no material change relative to the price movement as per the Utilities Commission's 2014 NPD Final Determination.</p> <p>A blank cell indicates the corresponding charging parameter is not applicable to a particular tariff.</p>									

In addition to the changes outlined in the table above, Power Networks is also proposing 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 all of the proposed tariff movements will take place over a number of years, to limit the price changes to customers to acceptable levels and ensure compliance with tariff class side constraints. Power Networks will also review the effectiveness of network tariffs in meeting their objectives and if necessary modify this strategy.

9.5 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. Capacity based tariffs are in use overseas and SA Power Networks is conducting a trial of a capacity based price for domestic customers.

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 Classes and Tariffs – 2014/15

In accordance with RIN clause 18.1(a) and 18.1(b), the table below sets out the tariff classes that are to apply for the 2014/15 regulatory year and sets out the proposed tariffs for each tariff class.

Table 9 - Tariff Class and Tariff

Tariff Class	Tariff
Commercial HV	>750 MWh pa Commercial HV: Commercial customers consuming >750 MWh pa connected to the HV network
Commercial	>750 MWh pa Commercial LV: Commercial customers consuming >750 MWh pa connected to the LV network
	<750 MWh pa Commercial: Commercial customers consuming <750 MWh pa
	Unmetered: <ul style="list-style-type: none"> • Street lighting and similar consumption profiled unmetered supplies; and • Traffic lights and similar unmetered 24 hour supplies.
Domestic	Domestic

11 Tariff Charging Parameters – 2014/15

Power Networks' existing 2013/14 and proposed 2014/15 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).

11.1 Domestic tariff

The charging parameters for the domestic tariff are shown in Table 10.

Table 10 - Domestic tariff charging parameters

Charging Parameter	Tariff	
	Domestic 2013/14	Domestic 2014/15
System Availability Charge	¢/day	
Energy ¢/kWh	≤ 1,000 kWh per month	≤ 500 kWh per month
		>500 and ≤1,000 kWh per month
	>1,000 kWh per month	

The introduction of an additional consumption block step and threshold is proposed for 2014/15.

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 impact on low consumption domestic customers, Power Networks has no plans to increase the proportion of the network charge recovered through the fixed charging parameter. However, the introduction of the inclining block structure will improve the cost reflectivity of the marginal consumption for larger customers.

11.2 <750 MWh pa Commercial tariff

The charging parameters for the <750 MWh per annum Commercial tariff are shown in Table 11.

Table 11 - <750 MWh pa Commercial tariff charging parameters

Charging Parameter	Tariff	
	<750 MWh pa Commercial 2013/14	<750 MWh pa Commercial 2014/15
System Availability Charge	¢/day	
Energy ¢/kWh	≤ 1,000 kWh per month	
	>1,000 kWh per month	>1,000 and ≤2,000 kWh per month
		>2,000 kWh per month

As with the Domestic tariff, the introduction of an additional consumption block step and threshold is proposed for 2014/15. 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 domestic tariff.

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).

11.3 Unmetered tariff

This tariff has a single charging parameter – energy consumption. In 2014/15, this tariff is proposed to be offered as two separate tariffs: 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 12.

Table 12 - Unmetered tariff charging parameters

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

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

11.4 >750 MWh pa Commercial (HV and LV) tariffs

The charging parameter for the >750 MWh per annum Commercial (HV & 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 13.

Table 13 - >750 MWh pa Commercial – HV & LV tariffs charging parameters

Charging Parameter	Tariff (>750 MWh pa)		
	Commercial 2013/14	>750 Commercial LV 2014/15	>750 Commercial HV 2014/15
System Availability Charge	\$/day		
Peak energy ¢/kWh (a) ; & Off-peak energy ¢/kWh (a)	First 10,000 kWh per month		
	Next 20,000 kWh per month		
	Next 50,000 kWh per month		
	Next 100,000 kWh per month		
	Any further energy per month		
Peak demand \$/kVA/month (a) ; & Off-peak demand \$/kVA/month (a)	First 50 kVA per month		
	Next 100 kVA per month		
	Next 300 kVA per month		
	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-peak period rates apply at other times.			

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 (revenue less LRMC) would be recovered in the least distortionary manner, ideally all through a fixed charge, but in practice through 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.

12 Power Networks' Revenue & Tariff Changes – 2014/15

Power Networks' proposed network tariffs for 2014/15 have been adjusted from the 2013/14 tariffs, so as to recover the allowed revenue for 2014/15.

12.1 Network standard control revenue for 2014/15

In the 2014 NPD Final Determination, the Commission determined Power Networks' revenue for standard control services in 2014/15 at \$184.738 million (nominal).

In accordance with RIN clause 18.1(d), the table below sets out, for each tariff class related to standard control services, the expected weighted revenue for the 2014/15 regulatory year. The table also demonstrates that Power Networks complies with the 2014/15 annual revenue requirement as per the Commission's 2014 NPD Final Determination.

Table 14 - Expected weighted revenue by tariff class

2014-15	
Tariff Class	Expected Weighted Revenue \$'000
Commercial HV	\$15,232
Commercial	\$84,967
Domestic	\$84,539
Total	\$184,738

12.2 Network tariff changes for 2014/15

The network tariffs for 2014/15 and the changes from the previous regulatory year are described in the following sections 12.2.1 to 12.2.5, in accordance with clause 18.1(i) of the RIN.

12.2.1 Domestic tariff in 2014/15

The proposed domestic tariff for 2014/15 and the change in each charging parameter from 2013/14 are shown in Table 15.

Table 15 – Domestic tariff in 2014/15 (GST exclusive)

Tariff charging parameter	2013/14	2014/15	Price change
System Availability Charge ¢/day	27.998	36.487	30.3%
First 500 kWh per month ¢/kWh	9.653	12.580	30.3%
Next 500 kW per month ¢/kWh	9.653	12.580	30.3%
Energy used above 1,000 kW per month ¢/kWh	7.826	10.199	30.3%

12.2.2 <750 MWh pa Commercial tariff in 2014/15

The proposed <750 MWh pa commercial tariff for 2014/15 and the change in each charging parameter from 2013/14 are shown in Table 16.

Table 16 – >750 MWh pa Commercial tariff in 2014/15 (GST exclusive)

Tariff charging parameter	2013/14	2014/15	Price change
System Availability Charge ¢/day	48.863	63.678	30.3%
First 1,000 kW per month ¢/kWh	9.653	12.580	30.3%
Next 1,000 kW per month ¢/kWh	7.826	10.199	30.3%
Energy used above 2,000 kWh per month ¢/kWh	7.826	10.199	30.3%

12.2.3 Unmetered tariffs in 2014/15

The proposed unmetered tariffs for 2014/15 and the change in each charging parameter from 2013/14 are shown in Table 17.

Table 17 – Unmetered tariffs in 2014/15 (GST exclusive)

Tariff charging parameter	2013/14	2014/15	Price change
Unmetered energy for street lighting and similar consumption profiled unmetered supplies ¢/kWh	5.536	7.215	30.3%
Unmetered energy for traffic lights and similar unmetered 24 hour supplies ¢/kWh	5.536	7.215	30.3%

12.2.4 >750 MWh pa Commercial Low Voltage tariff in 2014/15

The proposed tariff for low voltage connected commercial customers with consumption of more than 750 MWh per annum in 2014/15 is shown in Table 18, with the change in each charging parameter from 2013/14.

Table 18 – >750 MWh pa Commercial LV tariff in 2014/15 (GST exclusive)

Tariff charging parameter	2013/14	2014/15	Price change
System Availability Charge \$/month	592.943	772.723	30.3%
Peak period energy (c/kWh)			
First 10,000 kWh per month	4.968	6.474	30.3%
Next 20,000 kWh per month	3.769	4.912	30.3%
Next 50,000 kWh per month	3.072	4.003	30.3%
Next 100,000 kWh per month	2.594	3.381	30.3%
Any further kWh per month	1.717	2.238	30.3%
Off peak period energy (c/kWh)			
First 10,000 kWh per month	4.697	6.121	30.3%
Next 20,000 kWh per month	3.343	4.357	30.3%
Next 50,000 kWh per month	2.645	3.447	30.3%
Next 100,000 kWh per month	2.155	2.808	30.3%
Any further kWh per month	1.149	1.497	30.3%
Peak period demand (\$/kVA)			
First 50 kVA per month	8.440	10.999	30.3%
Next 100 kVA per month	7.403	9.648	30.3%
Next 300 kVA per month	6.169	8.039	30.3%
Next 500 kVA per month	4.888	6.370	30.3%
Any further kVA per month	3.418	4.454	30.3%
Off peak period demand (\$/kVA)			
First 50 kVA per month	1.962	2.557	30.3%
Next 100 kVA per month	1.760	2.294	30.3%
Next 300 kVA per month	1.362	1.775	30.3%
Next 500 kVA per month	1.362	1.775	30.3%
Any further kVA per month	1.026	1.337	30.3%

12.2.5 >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 2014/15 is shown in Table 19, with the change in each charging parameter from 2013/14.

Table 19 – >750 MWh pa Commercial HV tariff in 2014/15 (GST exclusive)

Tariff charging parameter	2013/14	2014/15	Price change
System Availability Charge \$/month	592.943	772.723	30.3%
Peak period energy (c/kWh)			
First 10,000 kWh per month	4.968	6.474	30.3%
Next 20,000 kWh per month	3.769	4.912	30.3%
Next 50,000 kWh per month	3.072	4.003	30.3%
Next 100,000 kWh per month	2.594	3.381	30.3%
Any further kWh per month	1.717	2.238	30.3%
Off peak period energy (c/kWh)			
First 10,000 kWh per month	4.697	6.121	30.3%
Next 20,000 kWh per month	3.343	4.357	30.3%
Next 50,000 kWh per month	2.645	3.447	30.3%
Next 100,000 kWh per month	2.155	2.808	30.3%
Any further kWh per month	1.149	1.497	30.3%
Peak period demand (\$/kVA)			
First 50 kVA per month	8.440	10.999	30.3%
Next 100 kVA per month	7.403	9.648	30.3%
Next 300 kVA per month	6.169	8.039	30.3%
Next 500 kVA per month	4.888	6.370	30.3%
Any further kVA per month	3.418	4.454	30.3%
Off peak period demand (\$/kVA)			
First 50 kVA per month	1.962	2.557	30.3%
Next 100 kVA per month	1.760	2.294	30.3%
Next 300 kVA per month	1.362	1.775	30.3%
Next 500 kVA per month	1.362	1.775	30.3%
Any further kVA per month	1.026	1.337	30.3%

13 Customer Impacts

13.1 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 20 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 20 – Indicative Impact on customers

Consumption	Average Increase	Increase Range
>750 MWh pa	6%	4-9%
<750 MWh pa	No Impact	

Please note that these impacts are indicative only, as the impact on each contracted customer will depend on its individual consumption and demand profile.

13.2 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 Determination²⁹:

- 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.

²⁹ 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 Commission³⁰:

- 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 Determination³¹.

14 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).

14.1 Compliance with the revenue cap

Compliance with revenue cap in 2014/15 is illustrated in Table 21. Note that there is no carry over amount associated with overs and unders in the first year of the regulatory control period. Tariffs have been set for 2014/15 (using forecast volumes) to recover slightly less than the proposed revenue allowance.

Table 21 - Compliance with the revenue cap in 2014/15

Quantity	Revenue (\$'000)
Proposed revenue allowance	184,738.206
Forecast revenue through tariffs	184,738.169
(Revenue less Tariffs)	0.037

³⁰ Ibid., clause 13.80, p. 136.

³¹ Utilities Commission, *2014 Network Price Determination: Final Determination Part B – Network Price Determination*, April 2014, clause 3.3, p. 25.

14.2 Compliance with the tariff class side constraints

The percentage change in the weighted average revenue for each tariff class is shown in Table 22. As specified by the 2014 NPD Final Determination, this comparison is based on 2012/13 consumption volumes.

Table 22 - Compliance with the tariff class side constraint in 2014/15

Tariff Class	2013/14 (\$'000)	2014/15 (\$'000)	Change	Side Constraint
Domestic	62,371	81,284	30.32%	35.81%
Commercial	55,724	72,621	30.32%	35.81%
Commercial HV	6,417	8,363	30.32%	35.81%

The table above demonstrates that the proposed tariffs are compliant with the side constraint for tariff classes.

14.3 Compliance with LRMC, avoidable and stand alone cost requirements

14.3.1 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 63 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) and the tariff's revenue recovery through the price signalling tariff charging parameters (peak demand and peak energy) is 65 per cent. There is therefore 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 56 per cent of the tariff class revenue. This tariff class comprises three network tariffs:
 - The >750 MWh per annum Commercial LV tariff is currently the same as that applied to commercial customers connected to the high voltage network and 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 64 per cent of the tariff's revenue, which is a little greater than the current estimate of LRMC for the tariff class.
 - The current Street Light and other Unmetered Supplies tariff have one charging parameter only, a single energy rate. This tariff is proposed in future to be split into two, for street lighting (and similar consumption profiled unmetered supplies) and for traffic lights (and similar unmetered 24 hour supplies), which have a greater impact on the network.
 - 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. Power Networks proposes 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 72 per cent of the tariff's revenue, which is higher 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.

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

14.3.2 Stand alone and avoidable costs

The stand-alone and avoidable costs for Power Networks' tariff classes are compared with the tariff revenue for 2014/15, in Table 23.

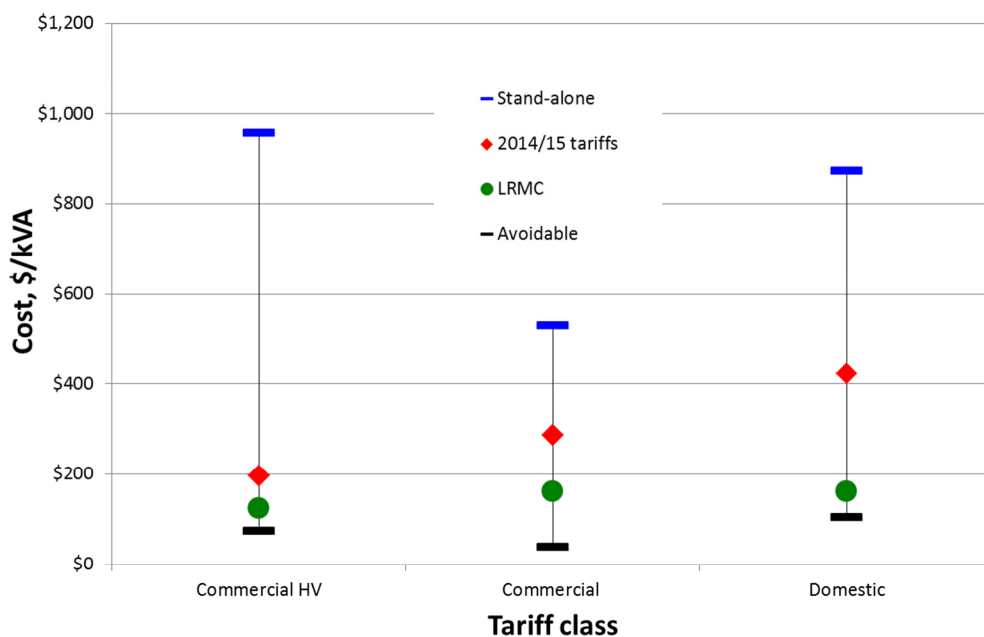
Table 23 – Stand-alone and avoidable costs of supply, \$'000

	Tariff class			Total
	Commercial HV	Commercial	Domestic	
Stand-alone cost	73,995	156,890	174,756	405,641
Revenue through tariffs	15,232	84,967	84,539	184,738
Avoidable cost	5,701	11,496	20,730	37,926

Table 23 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 2014/15 in Figure 6, where all have been expressed on the same \$/kVA per annum basis.

Figure 6 – Cost comparison



14.4 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 2014/15 Network Pricing Proposal.

Power Networks has introduced new tariff structures for domestic and commercial customers, with the addition of a third energy rate and consumption threshold. However, this is not considered to introduce significant complexity or material additional transaction costs and is in line with tariffs for similar customers of other distribution network service providers.

14.5 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.

15 Price Modelling

As per clause 16.5 of the RIN, Power Networks has provided its Cost of Supply Model (2014-15 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 2014/15. 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)	<p>Network services include:</p> <ul style="list-style-type: none"> • planning, designing and constructing the electricity network; • maintaining and operating the electricity network; and • emergency response and administrative support; <p>to the standards provided for in the Network Technical Code, and in accordance with good electricity industry practice.</p> <p>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.</p>
Unmetered supply (energy delivery) service	<p>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.</p>
Connection services (mandated standard)	<p>Connection services include:</p> <ul style="list-style-type: none"> • commissioning of connection assets; • service connection; • installation inspection; and • operating and maintaining connection assets, <p>to the standard provided for in the Network Technical Code, and in accordance with good electricity industry practice.</p> <p>Connection Services are provided at the request of a network user and are dedicated to the individual network user.</p> <p>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.</p>

Service group	Activities description
Metering services (mandated standard)	<p>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.</p> <p>Metering services include, but are not necessarily limited to:</p> <ul style="list-style-type: none"> • provision, installation and commissioning of metering assets; and • periodic accuracy testing, maintenance and replacement of metering assets, <p>to meet legislated accuracy requirements and conform to good electricity industry practice.</p> <p>Meter data services include by are not necessarily limited to:</p> <ul style="list-style-type: none"> • meter reading, either locally or remotely; • collection, storage and management of metering data; and • routine transfer of data to participant billing systems, <p>to meet legislated accuracy requirements and conform to good electricity industry practice.</p> <p>Where supply is unmetered, consumption is estimated at the connection point.</p>

Excluded network access services not subject to effective competition

Service group	Activities description
<u>Quoted services</u>	
Quoted network services	<p>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</p> <p>Quoted Network Services include above standard or non-standard services associated with:</p> <ul style="list-style-type: none"> • planning, designing and constructing the electricity network; • maintaining and operating the electricity network; • emergency response and administrative support; and • other associated services, <p>to the performance standard agreed with the network user.</p> <p>Under Quoted Network Services, network users are only charged the incremental cost of the work above the cost of the mandated standard Network Service.</p> <p>Quoted Network Services exclude above standard or non-standard Connection Services which make use of dedicated assets.</p>
Quoted connection services	Connection services provided at the request of a network user with higher (or lower, where permissible) quality or reliability

Service group	Activities description
	<p>standards than are required under applicable legislation, codes or other regulatory instruments</p> <p>Quoted connection services include above standard or non-standard services associated with:</p> <ul style="list-style-type: none"> • commissioning of connection assets; • service connection; • installation inspection; and • operating and maintaining connection assets <p>to the performance standard agreed with the network user.</p> <p>Quoted Connection Services also include:</p> <ul style="list-style-type: none"> • supply abolishment; and • ancillary Connection Services. <p>Associated services for which PWC Networks may seek payment from the user include, but are not necessarily limited to:</p> <ul style="list-style-type: none"> • responding to enquiries in relation to the provision of the above standard or non-standard connection services; • provision of technical specifications in relation to the connection; • provision of duplicate or underground supply where requested by a network user; and • preliminary communications with potential or existing network user where more than 6 hours work is or is likely to be required. <p>Under Quoted Connection Services, network users are only charged the incremental cost of the work above the cost of the mandated standard Connection Service.</p> <p>Connection Services are provided at the request of a network user and are dedicated to the individual network user.</p> <p>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.</p>
Quoted metering services	<p>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.</p> <p>Quoted metering services include, but are not necessarily limited to:</p> <ul style="list-style-type: none"> • provision, installation and commissioning of additional or above standard or non-standard metering assets; • periodic accuracy testing of additional or above standard or non-standard metering assets; and • maintenance and replacement of additional or above standard or non-standard metering assets. <p>Quoted meter data services include:</p> <ul style="list-style-type: none"> • reading, either locally or remotely, of additional or above standard or non-standard meters provided at the request of the network user;

Service group	Activities description
	<ul style="list-style-type: none"> installing and maintaining communications for additional or above standard or non-standard remotely read meters; and 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. <p>Quoted ancillary Metering Services include:</p> <ul style="list-style-type: none"> non-standard read of a standard meter, either locally or remotely; and non-routine transfer of meter data to participant billing systems or network users. <p>Under Quoted Metering Services, network users are only charged the incremental cost of the work above the cost of the mandated standard Metering Service.</p> <p>Several of the more commonly provided excluded metering services are subject to standard fees (Fee based services).</p>
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	<p>Services associated with temporary supply include:</p> <ul style="list-style-type: none"> provision electric plant or stand-by generator for temporary supply at the request of a network user; and provision of temporary supplies at both low and high voltage at the request of a network user.
Illegal connections and damage to network equipment	<p>Costs incurred by PWC Networks as a result of a network user not complying with relevant contractual obligations.</p> <p>Repair of equipment damaged by a network user or third party.</p>
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	<p>Fee-Based Metering service provided at the request of a network user include, but are not necessarily limited to:</p> <ul style="list-style-type: none"> out of sequence (unscheduled) meter reading services;

Service group	Activities description
	<ul style="list-style-type: none"> • meter program changes; • testing or inspection of metering assets; • removal or relocation of metering assets; • the exchange or replacement of metering assets; • installation of prepayment meters; and • provision of a permanent three-phase service. <p>The provision of less routine services is subject to quotation (Quoted Services).</p>
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	<p>This includes but is not necessarily limited to:</p> <ul style="list-style-type: none"> • installation of tiger tails on PWC Networks assets; • polylogger test equipment at the user's premises; and • rental cost of minor equipment.
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

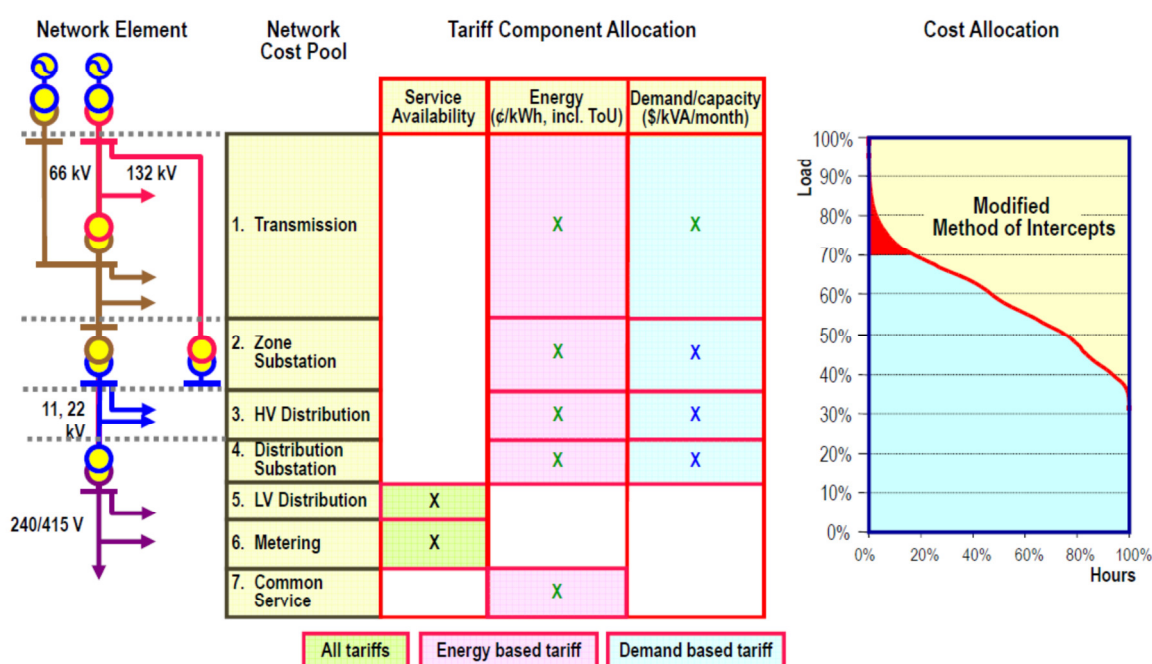
Service group	Activities description
Equipment rental for non-network purposes	<p>Equipment rental charges may be but are not necessarily limited to the following:</p> <ul style="list-style-type: none"> • for the attachment of communications services such as coaxial or fibre optic cables; • for pole attachments, ducts or conduits; and • for the use of tunnels or ducts by communications or other services.
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 2014/15 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 has 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 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 pricing³²:

- 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.

The network cost pools and the process by which they are allocated to tariffs are set out in Table 24.

Table 24 – Allocation of network costs

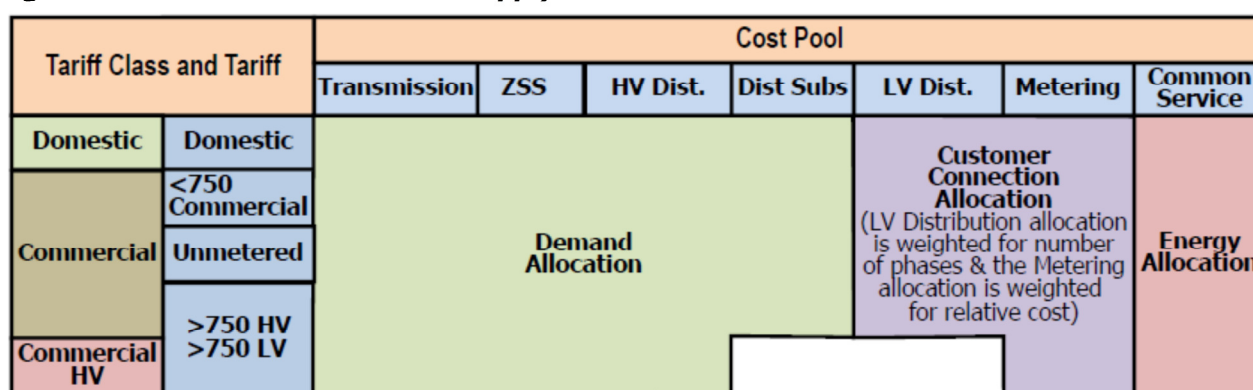
Cost pool	Allocation
Transmission	Coincident kVA demand, as the principal driver of costs in these components of the network is customer demand.
Zone Substations	
High Voltage Distribution	

³² 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.

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

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



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 25.

Table 25 - Cost of Supply Model allocations

Tariff and class		Cost Allocators				Network cost distribution							Common Service	Total Alloc'n	
		Coincident kVA		Customer Connections		Consumption MWh		Trans	ZSS	HV Dist.	Dist SS	LV Dist.			Metering
Tariff	Domestic	199,803	34.9%	70,467	83.9%	619,398	33.9%	6.12%	7.36%	7.99%	3.53%	5.35%	1.74%	6.78%	38.9%
	Commercial	211,247	36.8%	13,199	15.7%	518,250	28.4%	6.47%	7.78%	8.45%	3.73%	2.00%	0.33%	5.67%	34.4%
	Street lights	488	0.1%	0	0.0%	28,504	1.6%	0.01%	0.02%	0.02%	0.01%	0.10%	0.00%	0.31%	0.5%
	Traffic lights	196.1	0.0%	0	0.0%	1,718	0.1%	0.01%	0.01%	0.01%	0.00%	0.04%	0.00%	0.02%	0.1%
	>750 LV	84,301	14.7%	270	0.3%	311,452	17.0%	2.58%	3.10%	3.37%	1.49%	0.06%	0.01%	3.41%	14.0%
	>750 HV	77,285	13.5%	73	0.09%	348,325	19.1%	2.37%	2.85%	3.09%			0.01%	3.81%	12.1%
Class	Domestic	199,803	34.9%	70,467	83.9%	619,398	33.9%	6.12%	7.36%	7.99%	3.53%	5.35%	1.74%	6.78%	38.9%
	Commercial	296,233	51.7%	13,469	16.0%	859,923	47.1%	9.08%	10.91%	11.84%	5.23%	2.20%	0.34%	9.41%	49.0%
	Commercial HV	77,285	13.5%	73	0.1%	348,325	19.1%	2.37%	2.85%	3.09%			0.01%	3.81%	12.1%
Total		573,321	100.0%	84,010	100.0%	1,827,647	100.0%	17.57%	21.12%	22.92%	8.75%	7.55%	2.08%	20.00%	100.0%

This allocated cost is compared with the cost recovery through tariffs in 2014/15, which is shown in Table 26.

Table 26 - Cost of Supply Model comparison with 2014/15 tariff revenue

Tariff and class		Total Alloc'n	Alloc Cost	Tariff 2014/15	Variation
Tariff	Domestic	38.9%	71.795	84.539	18%
	Commercial	34.4%	63.605	58.389	-8%
	Street lights	0.5%	0.871	2.057	136%
	Traffic lights	0.1%	0.153	0.124	-19%
	>750 LV	14.0%	25.918	24.398	-6%
	>750 HV	12.1%	22.395	15.232	-32%
Tariff Class	<i>Domestic</i>	38.9%	71.795	84.539	18%
	<i>Commercial</i>	49.0%	90.548	84.967	-6%
	<i>Commercial HV</i>	12.1%	22.395	15.232	-32%
Total		100.0%	184.738	184.738	100%

It is observed from the comparison in Table 26 that:

- 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;
- The current single tariff for Street Lights and other Unmetered Supplies has been split into two rates that have very different load profiles. The street light tariff is over recovering and the traffic light tariff is under recovering;
- The >750 MWh per annum LV Commercial tariff for customers with an annual consumption more than 750 MWh connected to the low voltage network slightly 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 27, with similar consideration of the planning and capacity implications for the network as in Table 28.

Table 27 – Stand-alone network costs

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%

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 28.

Table 28 – 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 28 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

Power Networks has calculated the LRMC for the network 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 years³³.

³³ Energy Networks Association (UK), CDCM model user manual Model Version: 102, 28 February 2013.

Attachment 3 – Tariffs for 2014/15

A3.1 2014/15 tariffs excluding GST

Schedule A - All Regions 2014/15				EXCLUDING GST	
A - For High Voltage Connected Customers with consumption above 750 MWh per year					
Reference Service ¹ Provided: Normal transmission and distribution of electricity consumed through customers' metering for customers supplied and metered at high voltage					
	System Availability Charge	\$/kVA peak²	\$/kVA off peak²	¢/kWh peak²	¢/kWh off peak²
System Availability Charge					
Dollars per month per meter	\$772.723				
Plus charges related to monthly demand					
First 50 kVA per month		\$10.999	\$2.557		
Next 100 kVA per month		\$9.648	\$2.294		
Next 300 kVA per month		\$8.039	\$1.775		
Next 500 kVA per month		\$6.370	\$1.775		
Any further kVA per month		\$4.454	\$1.337		
Plus charges related to energy metered					
First 10,000 kWh per month				6.474	6.121
Next 20,000 kWh per month				4.912	4.357
Next 50,000 kWh per month				4.003	3.447
Next 100,000 kWh per month				3.381	2.808
Any further kWh per month				2.238	1.497

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

^[2] 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 2014/15

EXCLUDING GST

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

Reference Service¹ Provided: Normal transmission and distribution of electricity consumed through customers' metering for customers supplied and metered at low voltage

	System Availability Charge	\$/kVA peak ²	\$/kVA off peak ²	¢/kWh peak ²	¢/kWh off peak ²
System Availability Charge					
Dollars per month per meter	\$772.723				
Plus charges related to monthly demand					
First 50 kVA per month		\$10.999	\$2.557		
Next 100 kVA per month		\$9.648	\$2.294		
Next 300 kVA per month		\$8.039	\$1.775		
Next 500 kVA per month		\$6.370	\$1.775		
Any further kVA per month		\$4.454	\$1.337		
Plus charges related to energy metered					
First 10,000 kWh per month				6.474	6.121
Next 20,000 kWh per month				4.912	4.357
Next 50,000 kWh per month				4.003	3.447
Next 100,000 kWh per month				3.381	2.808
Any further kWh per month				2.238	1.497

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

^[2] 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 2014/15

EXCLUDING GST

C - For Customers with consumption below 750 MWh per year

Reference Service¹ Provided: Normal transmission and distribution of electricity consumed through customers' connection.

System Availability Charge	
Cents per day per meter - Domestic	36.487
Cents per day per meter - Commercial	63.678
Plus charges related to energy metered	¢/kWh anytime
Domestic	
First 500 kWh per month	12.580
Next 500 kWh per month	12.580
Energy used above 1,000 kWh per month (pro-rated per billing period)	10.199
Commercial	
First 1,000 kWh per month	12.580
Next 1,000 kWh per month	10.199
Energy used above 2,000 kWh per month (pro-rated per billing period)	10.199
Unmetered	
Street lighting and similar consumption profiled unmetered supplies	7.215
Traffic lights and similar unmetered 24 hour supplies	7.215

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

Attachment 4 – Compliance Checklist

This attachment cross-references the chapters and sections of the Network Pricing Principles Statement and 2014/15 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 29.

Table 29 – TPA Code requirements on network pricing

TPA Code clause	Pricing Proposal section
<p>74. Objectives of network pricing</p> <p>(1) The reference tariffs are –</p> <p>(a) to reflect efficient costs of supply;</p>	<p>Chapter 14 demonstrates that the 2014/15 reference tariffs have been constructed to:</p> <ul style="list-style-type: none"> • Recover the proposed revenue; • Do not contain economic cross subsidies; and • Have been set with due regard to the LRMC. <p>Chapter 7 also discusses efficient network pricing.</p>
<p>(b) 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 –</p> <p>(i) the user’s geographical and electrical location;</p> <p>(ii) the quantities in which the relevant network access service is to be supplied or is supplied;</p> <p>(iii) the pattern of network usage;</p> <p>(iv) the technical characteristics or requirements of the user’s load or generation;</p> <p>(v) the nature of the plant or equipment required to provide the network access service; and</p> <p>(vi) the periods for which the network access service is expected to be supplied;</p>	<p>Table 5, at section 6.1, demonstrates Power Networks’ consideration of pricing principles.</p>
<p>(c) to be transparent and published in order to provide pricing signals to network users;</p>	<p>Tariff schedules at Attachment 3 will be published.</p>
<p>(d) to promote price stability; and</p>	<p>Section 12.2 on tariff movements.</p>
<p>(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.</p>	<p>Chapter 11 on tariff structural changes.</p>

TPA Code clause	Pricing Proposal section
<p>75. Structure of regulated network prices</p> <p>(1) The network provider is to be responsible for establishing the pricing structure that best gives effect to the principles in clause 74.</p> <p>(2) In determining the pricing structure, the network provider may distinguish tariffs and charges for the following categories of standard network access services –</p> <ul style="list-style-type: none"> (a) entry services that include the asset-related costs and services provided to serve a generator user at its connection point; (b) exit services that include the asset-related costs and services provided to serve a load user at its connection point; (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 (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. <p>(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 –</p> <ul style="list-style-type: none"> (a) demand levels (maximum kW or kVA per period); (b) energy quantities involved (kWh or kVAh per period); and (c) time of use. <p>(4) If quantities are used in determining tariffs and charges, these quantities may refer to minimum, maximum or actual quantities.</p> <p>(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.</p>	<p>Part A: Network Pricing Proposal Statement</p>
<p>78. Role of regulator</p> <p>(1) 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</p>	<p>Part B: 2014/15 Network Pricing Proposal</p>

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

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 30.

Table 30 – RIN requirements on pricing principles

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

RIN clause	Pricing Proposal section
<p>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:</p> <p>(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</p> <p>(b) had regard to:</p> <p>(i) transaction costs associated with the tariff or each charging parameter; and</p> <p>(ii) whether <i>customers</i> of the relevant tariff class are able or likely to respond to price signals.</p>	<p>Table 6, in Chapter 7, demonstrates Power Networks' consideration of efficient pricing.</p>
<p>16.5 Provide a copy of the model(s) that have been used in the development of the draft Network Pricing Principles Statement, including any proprietary model(s) provided by a third party;</p>	<p>Power Networks' Cost of Supply Model (2014/15 Pricing Proposal Model) has been made available to the Commission on a confidential basis.</p>

The requirements of the Commission's RIN in relation to a Network Pricing Proposal and Tariff Schedules are set out in Table 31.

Table 31 – RIN requirements on a Network Pricing Proposal and Tariff Schedules

RIN clause	Pricing Proposal section
<p>18. INDICATIVE TARIFF SCHEDULES</p> <p>18.1 Provide, for the regulatory year commencing 1 July 2014, an indicative Network Pricing Proposal and Tariff Schedules, suitable for publication, that:</p>	<p>Part B: 2014/15 Network Pricing Proposal; and Attachment 3: Tariff Schedules</p>
<p>(a) sets out the tariff classes that are to apply for the relevant <i>regulatory year</i>;</p> <p>(b) sets out the proposed tariffs for each tariff class;</p>	<p>Chapter 10 sets out the tariff classes and proposed tariffs for each tariff class.</p>
<p>(c) sets out, for each proposed tariff, the charging parameters and the elements of service to which each charging parameter relates;</p>	<p>Chapter 11 sets out, for each proposed tariff, the charging parameters and the elements of service to which each charging parameter relates.</p>
<p>(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</p>	<p>Section 12.1 sets out the expected weighted average revenue for each tariff class for 2014/15.</p>
<p>(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</p>	<p>Section 13.2 sets out the circumstances in which a variation or adjustment to tariffs could occur.</p>

RIN clause	Pricing Proposal section
<p>(f) details how the tariffs and charges have been calculated by application of the principles and methods set out in the <i>Network Pricing Principles Statement</i>;</p> <p>(g) demonstrates compliance with the principles set out in Chapter 7 of the TPA Code;</p>	Chapter 9 demonstrates compliance with these requirements.
(h) demonstrates compliance with any applicable <i>network price determination</i> , including any side constraints; and	Chapter 14 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 2014/15 and Chapter 13 describes the impact on customers.
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 the table below.

Table 32 – 2014 NPD Final Determination requirements

2014 NPD Final Determination requirement	Pricing Proposal section
<p>The principal elements of the Commission's 2014 NPD Final Determination pertaining to pricing are the following Final Decisions:</p> <ul style="list-style-type: none"> • 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. 	<p>Chapter 4 discusses the classification of network services.</p> <p>Chapter 14 demonstrates compliance with the revenue cap and side constraint control mechanisms.</p> <p>The overs and unders provision will be first implemented in 2015/16 as there is no under or over recovery through tariffs in 2013/14 under the current weighted average price cap form of price control. Power Networks will demonstrate the application of this mechanism in future annual Pricing Proposals.</p>

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 2014/15 Pricing Proposal, with the following pricing principle in clause 6.18.5(a) of the Rules.

Table 33 – 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: (1) an upper bound representing the stand alone cost of serving the <i>retail customers</i> who belong to that class; and (2) a lower bound representing the avoidable cost of not serving those <i>retail customers</i> .	Section 14.3 demonstrates that the revenue from tariff classes lies between the bounds of the stand alone and avoidable cost.

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 A
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 A
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 A
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