PowerWater

POWER NETWORKS

Network Pricing Principles Statement and Pricing Proposal

Draft

January 2014

Executive Summary

This document is a requirement of the Regulatory Information Notice (RIN) issued to Power Networks by the Utilities Commission (the Commission). This document forms part of Power Networks' Initial Regulatory Proposal (the Proposal) for the 2014 Networks Price Determination (2014 NPD). The document provides:

- Power Networks' Network Pricing Principles Statement, including Power Networks' proposed pricing strategy for the 2014-19 regulatory control period; and
- Indicative network tariff schedules for standard control services for 2014/15.

This document also includes details of the principles used in establishing alternative control services and a proposed new alternative control service.

This document is based on the revenue calculated in Power Networks' Revised Regulatory Proposal and covers the issues raised in the Commission's Draft Determination.[1] This document is a draft and thus is a work in progress and includes indicative numbers only that have been updated since Power Networks' Initial Regulatory Proposal. It will be modified following the Final Determination on network revenue for 2014/15 by the Commission, to become Power Networks' Pricing Proposal.

The pricing principles and proposed tariff strategy have been developed in accordance with the requirements of the Electricity Networks Third Party Access Code (the Code) and 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 Code[2].

The form of the Power Networks' existing network tariffs has remained unchanged since their formation from bundled retail charges. Power Networks' proposals for future tariff development are principally driven by the requirement to improve the cost reflectivity of network pricing, as a greater proportion of customers become exposed to them through retail contestability. The revised tariffs will also provide more equitable outcomes for customers, whilst contributing to managing network demand. The majority of these options would be implemented during the next regulatory control period, commencing in July 2014. Some aspects of the proposed price restructuring were commenced in July 2013.

In line with the provisions of the Rules, Power Networks proposes to establish three *tariff classes* to which its existing and future network tariffs will be assigned. They are:

- *Domestic* (all domestic customers);

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1 Utilities Commission, Utilities Commission, 2014-19 Network Price Determination – Draft Determination, December 2012, p. 131.

2 Utilities Commission, *2014-2019 Network Price Determination Framework and Approach Decision Paper*, November 2013.

- *Commercial HV* (High Voltage connected Commercial kVA customers); and
- *Commercial LV (all other Commercial customers and Street Lighting & other Unmetered Supplies).*

Power Networks also proposes that the Rules provisions concerning side constraints would apply to these *tariff classes*. In the Draft Determination, the Commission proposed that the side constraint should apply to the individual tariffs of large customers. Power Networks does not accept this decision and proposes to demonstrate the reasonableness of the price change for large customers in the manner described in section 7.5.

Power Networks has developed a Cost of Supply model for the purpose of determining the direction of future price changes and demonstrating compliance with the provisions of the Code and Rules. A description is provided of this model and of preliminary outcomes for the indicative 2014/15 network tariffs. Further refinements will be made to this model during the 2014-19 regulatory control period.

Standard control services

Power Networks proposes to make alterations to the structure of some standard control services tariffs. These changes will be made progressively within the side constraint for the each *tariff class*. The proposed changes are as follows:

Domestic

- Progressively move from a declining to inclining block structure; and
- Introduce an additional block level to permit later tariff flexibility.

Small Commercial (<750 MWh annual consumption)

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

- Increase the level of the Service Availability Charge (SAC).

Street lighting & other Unmetered Supplies

- Introduce separate tariffs for Street Lighting (and similar night only supplies) and Traffic Lighting (and similar constant load supplies), to improve cost reflectivity.

Commercial kVA (>750 MWh annual consumption)

- Introduce separate, voltage based, kVA tariffs for Low Voltage and High Voltage connected customers;
- Simplify the tariff structure to a single demand and energy block and rebalance the components to provide greater cost reflectivity;
- Introduce a kVA capacity charge with annual reset (to be deferred until next regulatory control period); and
- For further consideration - adopt a seasonal tariff profile.

Interval meter rollout

- Propose the progressive rollout of interval meters to customers with annual consumption of less than 750 MWh, potentially down to 40 MWh. The rollout would be accompanied by the development of a kVA capacity tariff for customers with annual consumption less than 750 MWh; and
- Develop a trial for customers with annual consumption in the range of 0 to 40 MWh, to determine the cost effectiveness of proceeding with the rollout of interval meters to smaller customers, including larger domestic customers. This could be accompanied by more cost reflective tariffs for small customers, including capacity based and time of use (ToU) tariffs.

Cost of supply modelling

- Obtain interval data for representative samples of Domestic and Commercial customers to refine their cost-to-serve and potential benefits of further tariff initiatives.

This document contains the rationale for making these changes and demonstrates that the changes will be made in accordance with the provisions of the Code and Rules.

Approximately 56% of large commercial customers (with annual consumption more than 750 MWh) have power factor that falls outside the requirements of the Network Technical Code. These customers are being supplied with above-standard network services, at levels in excess of the mandated requirements. Power Networks therefore proposes to introduce a new alternative control service for the provision of standard control services to these customers, in excess of the mandated requirement.

Alternative control service

Commercial kVA (>750 MWh annual consumption)

- Introduce an Excess kVAr charge, as an incentive to customers to improve compliance with power factor specifications of the Network Technical Code.

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1 Background

The structure of Power and Water's network tariffs has remained unchanged since their formation from bundled retail antecedents. Their structure therefore reflects a subset of the overall cost of supply, rather than reflecting cost drivers that are appropriate for the network.

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 NEM jurisdictions in recent years. Amongst other things, reports by the 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[3,4,5]:

- 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:

- Prices should be kept as simple as possible and readily understandable by customers and market participants;
- Prices should be stable and predictable; and
- Prices and price components designed to signal customers to moderate demand should be aligned with the Long Run Marginal Cost (LRMC) of supply to customers.

Set against this backdrop, this pricing strategy document proposes ways in which Power and Water's network tariffs would be developed. This development commenced in 2013/14 and is proposed to continue throughout the 2014-19 regulatory control period.

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3 AEMC, Draft Report - *Power of choice - giving consumers options in the way they use electricity*, 6 September 2012.

4 Australian Government, *Electricity Network Regulatory Frameworks, Productivity Commission Draft Report*, October 2012.

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

2 Assignment of tariffs to *tariff classes*

2.1 Existing network tariffs

Power and Water has four existing network tariffs. These are:

- Domestic;
- Commercial;
- Street Lighting & other Unmetered Supplies; and
- Commercial kVA (for customers with annual consumption above 750 MWh).

The tariffs apply to the three regions of Darwin-Katherine, Alice Springs and Tennant Creek. In 2013/14 all tariffs in these three regions were equalised. The tariff structures are as follows:

- The Domestic and Commercial tariffs are characterised by a two-rate 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.
- The Street Lighting & other Unmetered Supplies tariff is a single energy rate for all estimated consumption (street and traffic lights and similar supplies are not metered).
- The Commercial kVA tariff has 2-rate time-of-use energy and demand components. There is now a 5-rate declining block structure for demand and a 5-rate declining rate block structure for energy (as some of the initial 7 tariff blocks have now been equalised).

2.2 Proposed tariff class assignment

The Code refers to reference tariffs and does not use the terminology of *tariff classes.* Nor does it contemplate such groupings of tariffs. However, as with tariffs, the *tariff class* groupings of customers proposed by Power Networks in section 2.2 differ between users because of:

- The user's electrical location (in the case of the Commercial HV tariff, where the associated customers connected at High Voltage do not make use of distribution transformers or the Low Voltage network)
- The pattern of network usage (as between domestic and commercial customers, which have different consumption patterns and average sizes); and
- The nature of the plant or equipment required to provide the network access service (in the case of the Commercial HV tariff, which does not make use of the Low Voltage network or distribution transformers).

Power Networks thus proposes to assign the existing network tariffs to three *tariff classes*, as shown in Table 1.

Table 1 – Proposed network *tariff classes*

Network Tariff	***Tariff class***
Domestic	*Domestic*
Commercial	*Commercial LV*
Commercial kVA connected at Low Voltage	
Street Lighting & other Unmetered Supplies	
Commercial kVA connected at High Voltage	*Commercial HV*

It should be noted that there may be more than one network tariff within a *tariff class*. In particular, the *Commercial LV tariff class* contains customers with similar characteristics that may be supplied on the Commercial (energy based) tariff, the Commercial kVA tariff, or the Street Lighting & other Unmetered Supplies tariff.

3 Cost of Supply modelling

Power Networks has developed a Cost of Supply model for the regulated networks. This model allocates the capital and operating costs of the network to tariffs and *tariff classes* and performs associated calculations.

Details concerning the structure of the Cost of Supply model are contained in Attachment 2.

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 component, tariff and *tariff class* basis;
- ensuring that tariffs reflect the efficient cost of supply, in accordance with clause 74(1)(a) of the Code;
- calculating the stand-alone and avoidable costs of *tariff classes*, to enable compliance to be demonstrated with clauses 6.18.5(a)(1) and 6.18.5(a)(2) of the Rules; and
- calculating the long run marginal cost of supply (LRMC) for tariffs and *tariff classes*, to enable compliance to be demonstrated with clause 6.18.5(b)(1) of the Rules.

3.1 Cost of Supply outcomes

The outcome of the Cost of Supply model cost allocation to tariffs and *tariff classes* is shown in Table 2.

Table 2 - Cost of Supply model allocations

Tariff and class		Cost Allocators						Network cost distribution						Common	Total
		Coincident kW		Customers		Consumption MWh		Trans	ZSS	HV net	Dist SS	LV net	Metering	Service	Alloc'n
Tariff	Domestic	88,940	24.3%	68,554	83.8%	586,110	33.0%	4.19%	5.16%	6.27%	2.74%	3.56%	2.01%	6.61%	30.5%
	Commercial	112,816	30.8%	13,089	16.0%	493,439	27.8%	5.31%	6.55%	7.95%	3.48%	0.68%	0.38%	5.56%	29.9%
	Street lights	813	0.2%	0	0.0%	28,504	1.6%	0.04%	0.05%	0.06%	0.03%	0.29%	0.00%	0.32%	0.8%
	Traffic lights	196.1	0.1%	0	0.0%	1,718	0.1%	0.01%	0.01%	0.01%	0.01%	0.07%	0.00%	0.02%	0.1%
	>750 LV	80,269	21.9%	166	0.2%	305,298	17.2%	3.78%	4.66%	5.66%	2.48%	0.03%	0.00%	3.44%	20.0%
	>750 HV	82,765	22.6%	32	0.04%	358,499	20.2%	3.90%	4.80%	5.83%			0.00%	4.04%	18.6%
Tariff Class	*Domestic*	88,940	24.3%	68,554	83.8%	586,110	33.0%	4.19%	5.16%	6.27%	2.74%	3.56%	2.01%	6.61%	30.5%
	Commercial LV	194,095	53.1%	13,255	16.2%	828,958	46.7%	9.14%	11.27%	13.68%	5.99%	1.06%	0.39%	9.35%	50.9%
	Commercial HV	82,765	22.6%	32	0.0%	358,499	20.2%	3.90%	4.80%	5.83%			0.00%	4.04%	18.6%
Total		365,800	100.0%	81,841	100.0%	1,773,567	100.0%	14.11%	10.55%	26.84%	8.29%	16.21%	4.00%	20.00%	100.0%

This allocated cost is compared with the cost recovery through tariffs in 2014/15. This comparison is shown in Table 3.

Table 3 - Cost of Supply model comparison with 2014/15 tariffs

Tariff and class		Total Alloc'n	Alloc Cost	Tariff 2014/15	Variation
Tariff	Domestic	30.5%	62.550	93.310	49%
	Commercial	29.9%	61.272	64.729	6%
	Street lights	0.8%	1.591	2.389	50%
	Traffic lights	0.1%	0.264	0.144	-46%
	>750 LV	20.0%	41.051	26.340	-36%
	>750 HV	18.6%	38.046	17.861	-53%
Tariff Class	*Domestic*	30.5%	62.550	93.310	49%
	Commercial LV	50.9%	104.178	93.601	-10%
	Commercial HV	18.6%	38.046	17.861	-53%
Total		100.0%	**204.773**	**204.773**	**100%**

It may be observed from the comparison in Table 3 that:

- The Domestic tariff and *tariff class* revenue is above the network cost;
- The Commercial tariff for small customers is above the network cost;
- The current single tariff for Street Lights and other Unmetered Supplies has been split into rates for night uses like Street Lights and constant uses like Traffic Lights, which have very different load profiles. The street light tariff is significantly over recovering and the traffic light tariff is significantly under recovering revenue, with over recovery when taken together;
- The Commercial kVA tariff for large customers connected to the LV network under recovers revenue;
- Overall, revenue is under recovered for the proposed *Commercial LV tariff class* containing the Commercial, Street Lights, Traffic Lights and LV connected Commercial kVA tariffs; and

- For large Commercial kVA customers connected to the HV network in the *Commercial HV tariff class*, revenue recovery is below the network cost.

The cost of supply model also calculates the stand-alone and avoidable costs for *tariff classes*, as required by clauses 6.18.5(a)(1) and 6.18.5(a)(2) 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.

3.2 Stand-alone cost

This is formulated by responding to this hypothetical question:

> "If only *Tariff class X* customers were connected to the network, to what extent could the network costs be reduced to still provide *Tariff class X* customers with the same level of standard control services?"

The outcome in terms of the network optimisation is shown in Table 4.

Table 4 – Stand-alone network costs

Network level	***Tariff class***		
	Commercial HV	**Commercial LV**	**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		80.0%	80.0%
LV network and services		40.0%	90.0%
Metering		15.6%	84.4%
Common service costs	100.0%	100.0%	100.0%

The costs in Table 4 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% is utilised for the supply of HV customers and would need to be retained if that customer class alone remained connected to the network. At the same voltage level, LV commercial customers are distributed across the Territory, thus 80% is required for LV commercial customers. Similar considerations apply at each of the network levels.

3.3 Avoidable cost

In this case the hypothetical question is:

> "If all of the customers of *Tariff class X* were no longer connected to the network, to what extent would the network costs be reduced and still supply the remaining *tariff classes* with the same level of standard control services?"

The outcome of this network optimisation is shown in Table 5, with similar consideration of the planning and capacity implications for the network as in Table 4.

Table 5 – Avoidable network costs

Network level	*Tariff class*		
	Commercial HV	Commercial LV	Domestic
Transmission	-5.0%	-3.0%	-5.0%
Zone substations	-5.0%	-10.0%	-5.0%
HV network	-5.0%	-10.0%	-5.0%
Distribution substations		-10.0%	-30.0%
LV network and services		-15.0%	-50.0%
Metering		-15.6%	-84.4%
Common service costs	0.0%	0.0%	0.0%

3.4 Long Run Marginal Cost

The LRMC is developed from the following components:

- Network growth related capital costs. This is a subset of the capex program, which has been developed for the 2014 NPD Proposal. Capital costs associated with new connections and demand growth fall into the category of "growth related". This forecast for the 2014 NPD is extrapolated over a period of 10 years.
- The demand (in kVA) for the respective *tariff classes*, forecast over the same period as the capex.

The resulting LRMC values are considered to underestimate the marginal cost per kVA of connecting load. They are based on a five-year outlook, 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 growth related capex that might otherwise have been required.

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", which has been in place for many years[6].

The LRMC 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 – the Commercial kVA customers connected at High Voltage. The LRMC for this *tariff class* exceeds the revenue derived from all charging parameters of the tariff (fixed, kVA demand and energy). There is therefore is no

[6] Energy Networks Association (UK), *CDCM model user manual Model Version: 102*, 28 February 2013.

over-signalling through any tariff charging parameter of the customers' demand.

On the contrary, it is evident that greater price signalling through the demand related component of the tariff would be appropriate. This is the step that Power Networks took in formulating the 2013/14 tariffs and the direction it proposes to pursue throughout the 2014-19 regulatory control period.

- The LRMC for the *Commercial LV tariff class* also exceeds the revenue for the *tariff class*. This *tariff class* comprises three network tariffs:
  - The kVA commercial tariff is currently the same as that applied to commercial customers connected to the HV network and the same considerations in terms of future tariff rebalancing apply as to its HV counterpart.
  - The Street Light and other Unmetered Supplies tariff has one charging component only, a single energy rate. This tariff is proposed in future to be split into two, for street lights and other night time loads and for 24 hour applications like traffic lights, which have a greater impact on the network.
  - The Commercial tariff has two charging components, 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.

    In addition, as noted in section 6.2, 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 component of this tariff.
- The *Domestic tariff class* contains one tariff – Domestic. As with the commercial tariff for smaller customers, this has two charging components, 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.

Power Networks has therefore demonstrated in the forgoing discussion that it has taken into account the LRMC of the network in setting the charging components of the 2013/14 tariffs, and in establishing its proposed pricing strategy for the 2014-19 regulatory control period.

3.5 Network tariff strategy

The tariff changes initiated in 2013/14, and those proposed for the 2014-19 regulatory control period, are described in this section.

All of the tariff changes have being 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 Commercial kVA tariffs, simplify their existing structure.

The proposed tariff changes will be implemented progressively, to contain the annual price changes to customers to within acceptable levels.

Power Networks' proposed network tariff strategy therefore is considered to comply with the relevant Code and Rule requirements, specifically:

- The reference 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 the 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 kVA Commercial customers;
  - The quantities in which the relevant network access service is to be supplied or is supplied, as measured by their energy consumption or the demand imposed on the network;
  - The pattern of network usage, as in the case of ToU energy and demand based tariffs and between the Street Light and Traffic Light tariffs;
  - 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 connected kVA Commercial customers; and
  - The periods for which the network access service is expected to be supplied, in the case of all ToU based tariffs and the Street Light and Traffic Light tariffs;
- Tariffs are transparent and will be published, as will the 2014 Pricing Proposal which will explain their development and future tariff movements; and
- Tariff changes represent an overall simplification of the existing structures and will be implemented with minimal additional administrative costs for Power Networks, its customers and Retailers.

With reference to the relevant pricing principles in the Rules, Power Networks will demonstrate each year that:

- the revenue from its proposed *tariff classes* will continue to lie between the stand-alone and avoidable costs of supply;

- each tariff and tariff charging component will be established having regard to the LRMC of supply;
- due regard will continue be given to the tariff transaction costs, by keeping the structure of tariffs and their charging components as simple as reasonably possible; and
- due regard will be given, in structuring tariffs, as to whether customers of the relevant *tariff class* are able or likely to respond to price signals.

Power Networks therefore considers its tariff changes in 2013/14, and the changes it proposes to implement during the 2014-19 regulatory control period, are compliant with the requirements of the Code and Rules. For an assessment of the way in which this Network Pricing Principles Statement and Indicative Tariff Schedules complies with the Code, Rules and RIN requirements, refer to Attachment 6.

3.6 Tariff class comparisons of cost

The Stand-alone and Avoidable Costs are compared with the tariff revenue for 2014/15 in Table 6.

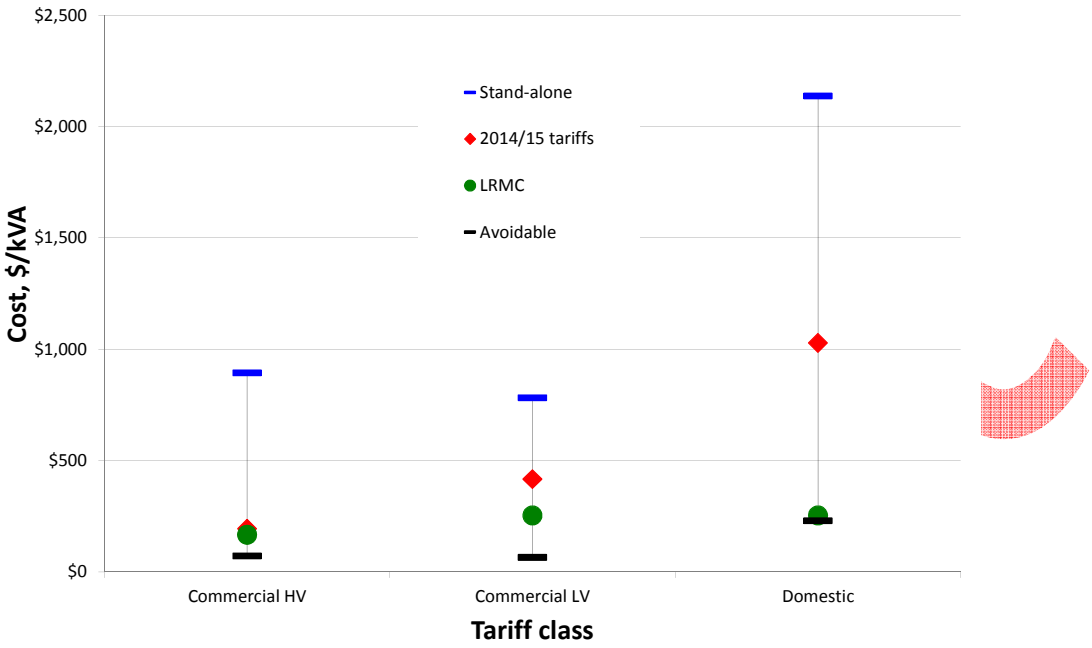
Table 6 – Stand-alone and avoidable costs of supply, $'000

	Tariff class			Total
	Commercial HV	Commercial LV	Domestic	
Stand-alone cost	82,215	175,756	193,964	451,935
Revenue through tariffs	17,861	93,601	93,310	204,773
Avoidable cost	11,283	78,941	72,486	162,710

Table 6 demonstrates that the weighted average revenue for each of the three the tariff classes lies between the Stand alone cost and the Avoidable cost.

These quantities and the Long Run Marginal Cost are displayed in Figure 1, where all have been expressed on the same $/kVA per annum basis.

Figure 1 – Cost comparison



The following discussion relates to the Stand-alone, Avoidable and Long Run Marginal Costs illustrated in Figure 1.

Stand-alone and Avoidable costs

For each *tariff class*, the revenue expected to be recovered lies between the stand-alone cost and the avoidable cost. As a consequence, the tariff classes do not contain economic cross subsidies.

Long Run Marginal Cost

The LRMC needs to be 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 – the Commercial kVA customers connected at High Voltage. The LRMC for this *tariff class* exceeds the revenue derived from all charging parameters of the tariff (fixed, kVA demand and energy). There is therefore no over-signalling through any tariff charging parameter of the customers' demand.

  On the contrary, it is evident that greater price signalling through the demand related component of the tariff would be appropriate. This is the step that Power Networks took in formulating the 2013/14 tariffs and the

direction it proposes to pursue throughout the 2014-19 regulatory control period.

- The LRMC for the *Commercial LV tariff class* also exceeds the revenue for the *tariff class*. This *tariff class* comprises three network tariffs:
  - The kVA Commercial tariff is currently the same as that applied to commercial customers connected to the HV network and the same considerations in terms of future tariff rebalancing apply as to its HV counterpart.
  - The Street Light and other Unmetered Supplies tariff has one charging component only, a single energy rate. This tariff is proposed in future to be split into two, for street lights and other night time loads and for 24 hour applications like traffic lights, which have a greater impact on the network.
  - The Commercial tariff has two charging components, 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.

    In addition, as noted in section 6.2, 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 component of this tariff.
- The *Domestic tariff class* contains one tariff – Domestic. As with the commercial tariff for smaller customers, this has two charging components, 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.

Power Networks therefore considers the requirements for efficient pricing in the Code and Rules has been met.

3.7 Compliance with tariff class side constraints

The percentage change in the weighted average revenue for each tariff class is shown in Table 7.

Table 7 - Compliance with tariff class side constraint in 2014/15

	2013/14 ($'000)	**2014/15** ($'000)	**Change (Nominal)**
Weighted average revenue	132,647	204,773	54.4%
Side constraint 2%			57.5%
Domestic	60,442	93,310	54.4%
Commercial LV	60,670	93,601	54.3%
Commercial HV	11,535	17,861	54.8%
Total	132,647	204,773	

It may be seen that the proposed tariffs are compliant with the side constraint of 2% in the Rules.

3.8 Compliance with revenue cap

Compliance with revenue cap in 2014/15 is illustrated in Table 8. Tariffs have been set for 2014/15 (using forecast volumes) to recover no more than the proposed revenue allowance.

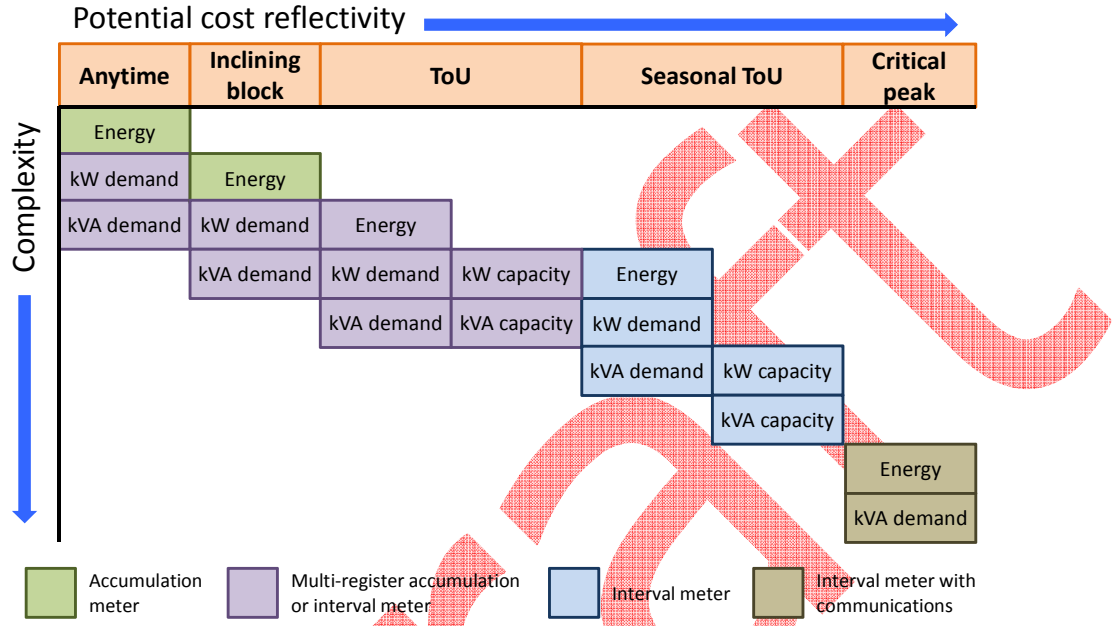
Table 8 - Compliance with revenue cap in 2014/15

Quantity	**Revenue $'000**
Proposed revenue allowance	204,772.891
Forecast revenue through tariffs	204,772.890
(Revenue Allowance – Forecast Revenue)	0.001

4 Feasible pricing options

The analysis in Attachments 1 and 2 are of Power Networks' costs. This assists in identifying what types of pricing structure would best reflect those costs. The range of tariff options, ranked in order of increasing cost reflectivity and complexity, is shown in Figure 2.

Figure 2 – Tariff options



An important consideration in Figure 2 is the type of metering required to implement the different forms of tariff. There is a very limited range of options available for accumulation-metered customers. The three-monthly billing cycle precludes the use of a seasonal component, because the meter reading is effectively continuous and a seasonal tariff needs to apply between specific dates.

Most utilities have a range of legacy multi-register accumulation meters, usually for Time of Use (ToU) and demand tariffs with fixed periods. These are progressively being replaced with electronic interval meters.

Seasonal tariffs require the use of an interval meter. With interval meters, the half-hourly interval data is usually gathered and the tariff calculations done off-site, allowing adjustments to be made for public holidays and the like.

There is also a range of options involving the combination of interval meters with communications. These have been termed "critical peak" in Figure 2, and all have the essential feature that the customer agrees to be notified of a tariff change in advance, for a supply system contingency or limitation. Such tariffs may either involve the use of:

- A stick, where the price increases during notified constraint periods; or
- A carrot, where a rebate is offered to the customer able to respond by reducing demand.

Communications with the meter may also be used for the direct control of appliances of equipment, often with a tariff incentive. SA Power Networks' "Peakbreaker" tariff is an example of this[7]. It is used to enable the direct control of air conditioning compressors, which are cycled to reduce demand during periods of constrained network capacity.

[7] ETSA Utilities (now SA Power Networks) *2012 Annual Demand Management Compliance Report*, August 2012, p.28.

5 Tariff charging components

Power Networks' existing 2013/14 and proposed 2014/15 tariffs and their charging components are described in this section.

5.1 Domestic tariff

The charging components for the domestic tariff are shown in Table 9.

Table 9 - Domestic tariff charging components

Charging Component	Tariff	
	Domestic 2013/14	Domestic 2014/15
Network Access 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.

5.2 Commercial tariff

The charging components for the Commercial tariff are shown in Table 10.

Table 10 - Commercial tariff charging components

Charging Component	Tariff	
	Commercial 2013/14	Commercial 2014/15
Network Access 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 customers' consumption characteristics and size distribution on the two tariffs differ.

5.3 Street Light and Other Unmetered Supplies tariff

This tariff has a single charging component – energy consumption. In 2014/15, this tariff is proposed to be offered as two separate tariffs: for street lights and similar night time supplies; and for traffic lights and other 24 hour supplies. The charging components are the same and are shown in Table 11.

Table 11 - Street Light and Other Unmetered Supplies tariff charging components

Charging Component	Tariff		
	Street Lighting & other unmetered supplies 2013/14	Street Lighting & other night supplies 2014/15	Traffic lights & other 24 hour supplies 2014/15
Energy ¢/kWh	Estimated energy consumed		

5.4 Commercial kVA tariff for large customers

The charging components for the Commercial kVA tariff for customers with annual consumption in excess of 750 MWh are shown in Table 10.

Table 12 - Commercial kVA tariff charging components

Charging Component	Tariff		
	Commercial 2013/14	Commercial LV 2014/15	Commercial HV 2014/15
Network Access Charge	$/day		
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		
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)	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		
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 number of block steps in the Commercial kVA tariffs will be progressively reduced throughout the 2014-19 regulatory control period as the rates for the blocks are aligned.

6 Power Networks' tariff strategy

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 this section. Sections 6.1 to 6.4 describe standard control services tariffs whereas section 6.5 covers the introduction of a proposed alterative control service tariff.

6.1 Domestic tariff (domestic tariff class)

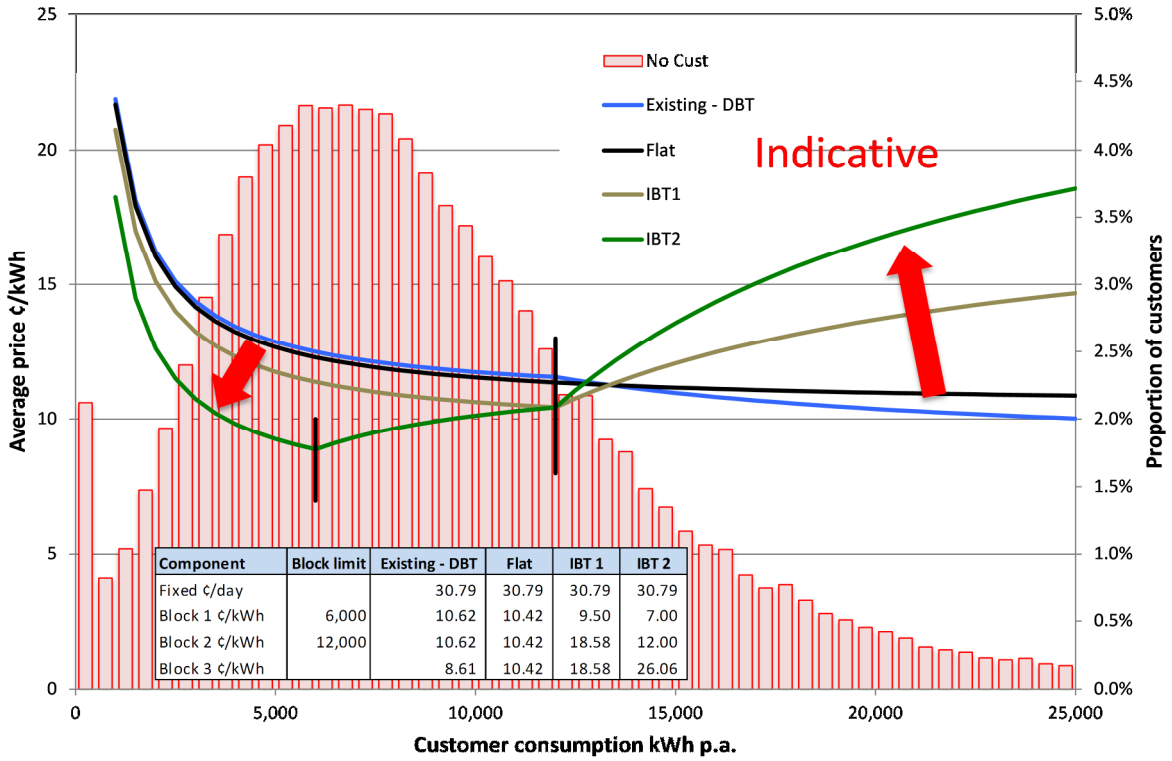
Domestic customers have accumulation meters, which limits the available options for tariff reform.

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

- 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 poor average load factor. Large customers 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 ToU 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 tariff are illustrated with reference to Figure 3. The actual customer size distribution for Power Networks' domestic tariff customers has been used. The average price shown for each of the four tariffs has been constructed on the basis of revenue neutrality for the tariff. 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



Component	Block limit	Existing - DBT	Flat	IBT 1	IBT 2
Fixed ¢/day		30.79	30.79	30.79	30.79
Block 1 ¢/kWh	6,000	10.62	10.42	9.50	7.00
Block 2 ¢/kWh	12,000	10.62	10.42	18.58	12.00
Block 3 ¢/kWh		8.61	10.42	18.58	26.06

The following comments pertain to Figure 3:

- 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.
- 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 a potentially significant price reduction to smaller customers.

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

- Progressively rebalance the existing declining block tariff to equalise the energy rates. The differential in rates was reduced in 2013/14 and this is likely to be achieved by 2015/16, within pricing side constraints and without causing significant price shocks to customers.
- The following year, introduce an additional block threshold at 6,000 kWh; and
- From 2016/17, progressively increase the differential in the pricing blocks. A differential between the upper and lower block prices of around 20-25% would be achieved over several years and would complement the progressive introduction of Time of Use or capacity based pricing to domestic customers.

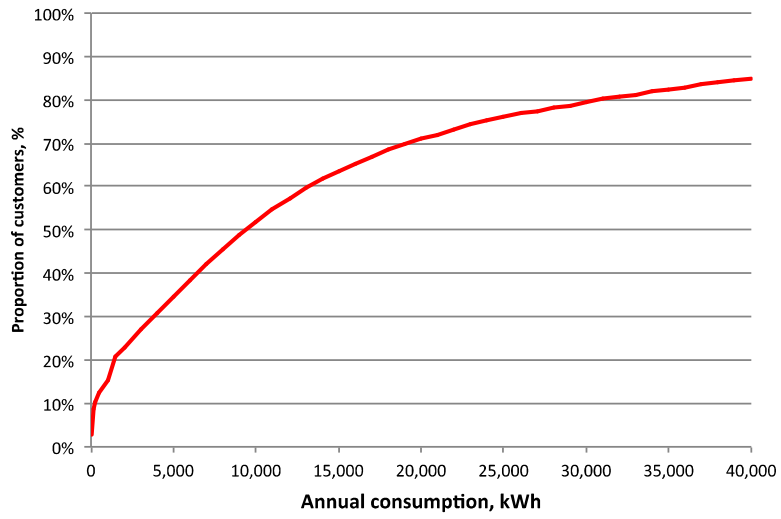
6.2 Commercial tariff (Commercial LV tariff class)

Commercial tariff customers have accumulation meters, which again limits the available options for tariff reform.

For the same rationale as the domestic 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 p.a.

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

Figure 4 – Commercial customer size distribution



What is evident from Figure 4 is that 21% 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. There is a robust case to increase the level of the Service Availability Charge and thereby improve customer equity.

This tariff change was initiated in 2013/14 and it is proposed to progressively increase this charging parameter throughout the 2014-19 regulatory control period until it reaches a cost reflective level.

6.3 Street Light tariff (Commercial LV tariff class)

Power and Water has an existing single Street Light and other Unmetered Supplies tariff that is applied to all unmetered supplies. This 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 using photo-electric (PE) cells 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*** were incandescent globes but have in recent times been superseded by more efficient light emitting diode devices. Regardless, 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 Light tariff will be retained but a new tariff for Traffic Lights and other constant-load unmetered supplies will be formed. Traffic lights and similar 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.

6.4 Commercial kVA tariff (Commercial LV and Commercial HV tariff classes)

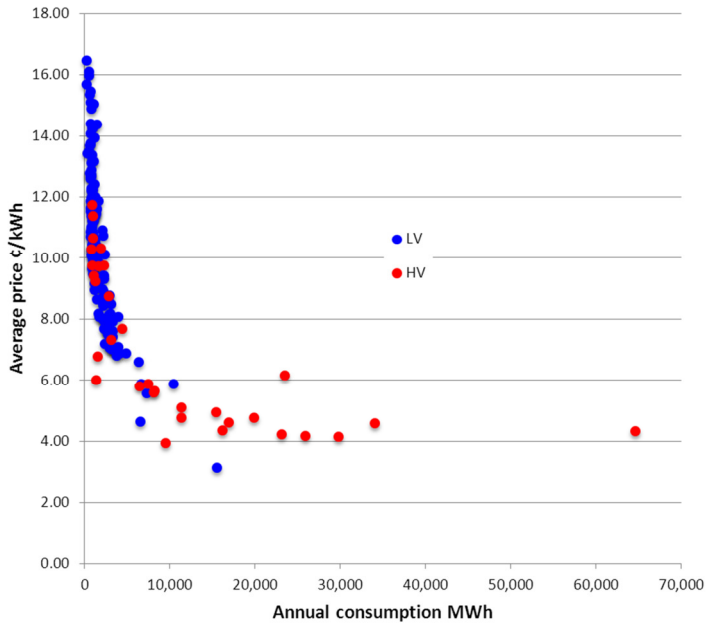
The Commercial kVA tariff is currently applied to larger commercial customers with annual consumption in excess of 750 MWh per annum. The existing tariff has a Time of Use (ToU) structure with peak and off peak periods. There is provision for a 6-step declining block kVA structure and a 7-step declining block energy structure (as some blocks are now equal, there is effectively a 5-step demand charge and a 5-step energy charge). These customers are equipped with interval meters and thus there is a broad range of tariff options available.

The use of ToU and kVA demand charging is appropriate for these customers. However, this overly complex network tariff structure is out of step with current industry practice and not cost reflective. Many other utilities use single demand and energy rates, but they also distinguish between the connection voltage and sometimes the connection location of the customer (ie. where the customer is connected at a zone or distribution substation as opposed to on a HV or LV feeder).

The existing kVA tariff is 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 average price in ¢/kWh for Commercial kVA 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 large 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 3 ¢/kWh. Moreover, there is no distinction between customers on the basis of their connection voltage (which affects the network equipment they use).

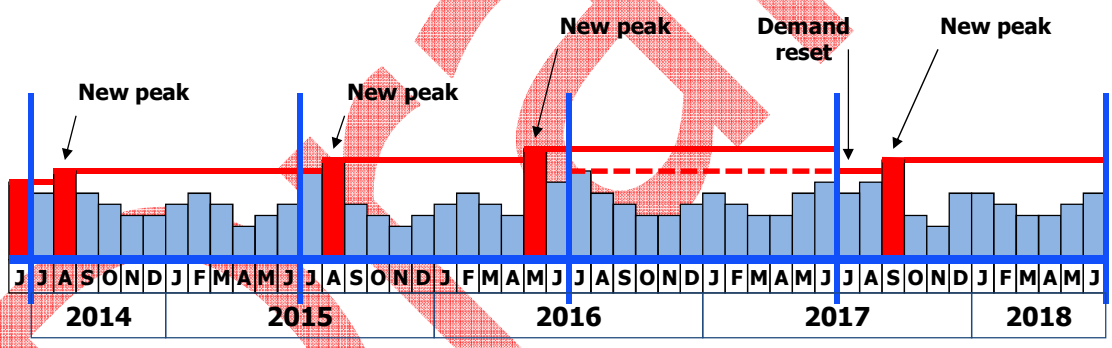
Power Networks proposes to modify the Commercial kVA tariff, as follows:

- Commencing in 2014/15, the Commercial kVA tariff will be split into two tariffs, for 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. High Voltage connected customers would not be allocated costs associated with distribution transformers or the Low Voltage network.

- With the voltage (and potentially, locational) distinction 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. This transition commenced in 2013/14 and is expected to take until 2015/16 to complete.
- The adoption of a kVA capacity charge to replace the monthly reset kVA demand charge is also proposed, to be implemented in the next regulatory control period, commencing 2019/20. This change will require billing system modifications and a customer education program to be developed. It will also require progressive introduction, to contain price changes to acceptable levels. The capacity charge is based on the highest monthly kVA consumption taking place in the previous rolling 12 month period. The operation of the capacity charge is illustrated in Figure 6.

Figure 6 – Capacity charge



Subject to further investigation as to the practicability, the capacity charge could be reset on a rolling 12 month basis, on an annual basis, or with a shorter period of "persistence".

This form of 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.

The implementation of the capacity charge will be subject to detailed investigation, as it will add some complication to the network data requirements and billing system. It is not envisaged that it could be implemented until the next regulatory control period (commencing 2019/20).

- The preliminary cost modelling in Attachment 1 highlights that the development of a seasonal tariff structure would provide much closer alignment with the network's costs. Both the energy and kVA capacity components could be so structured.
- Rebalancing of the tariff components to align with the LRMC has revealed that a relative increase in the demand/capacity charge and reduction in energy rates would provide improved cost reflectivity. This movement was initiated in 2013/14 and is proposed to continue throughout the 2014-19 regulatory control period.

6.5 Commercial kVA tariff (Commercial LV and Commercial HV tariff classes) – alternative control service

Power Networks proposes to introduce a new alternative control service to apply to kVA metered customers. The Excess kVAr charge will supplement the kVA component of the tariff and will provide significantly greater incentive for customers to compensate their load to achieve Code compliance. This proposal is described in Attachment 3. It should be noted that this approach has been successfully deployed by SA Power Networks (formerly ETSA Utilities).

As with the capacity charge, the implementation of the Excess kVAr charge needs further investigation, but may be implemented in 2014/15.

6.6 Summary of proposed tariff movements

The tariff strategy described in section 5 is summarised in terms of the proposed tariff component movements (in relative terms) in Table 13.

Table 13 - Summary of proposed tariff movements

Tariff	Network Access Charge	Energy				Demand			
Street lights and night use		—							
Traffic lights and 24 hr use		+							
		Block 1	Block 2		Block 3				
Domestic Inclining Block	-	—	-		+				
Commercial <750 MWh pa consumption Inclining Block	+	—	-		+				
		Peak		Off-peak		Peak		Off-peak	
		Lower blocks	Upper blocks	Lower blocks	Upper blocks	Lower blocks	Upper blocks	Lower blocks	Upper blocks
Commercial >750 MWh pa consumption LV connected	-	—	+	—	+	—	+	—	+
Commercial >750 MWh pa consumption HV connected	-	—	+	—	+	—	+	—	+

\+ increase relative to the price movement permitted by the Utilities Commission's 2014 NPD Final Determination.

— decrease relative to the price movement permitted by the Utilities Commission's 2014 NPD Final Determination.

\- no material change relative to the price movement permitted by the Utilities Commission's 2014 decision.

A blank cell indicates the corresponding charging parameter is not applicable to a particular tariff.

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 within tariff class side constraints.

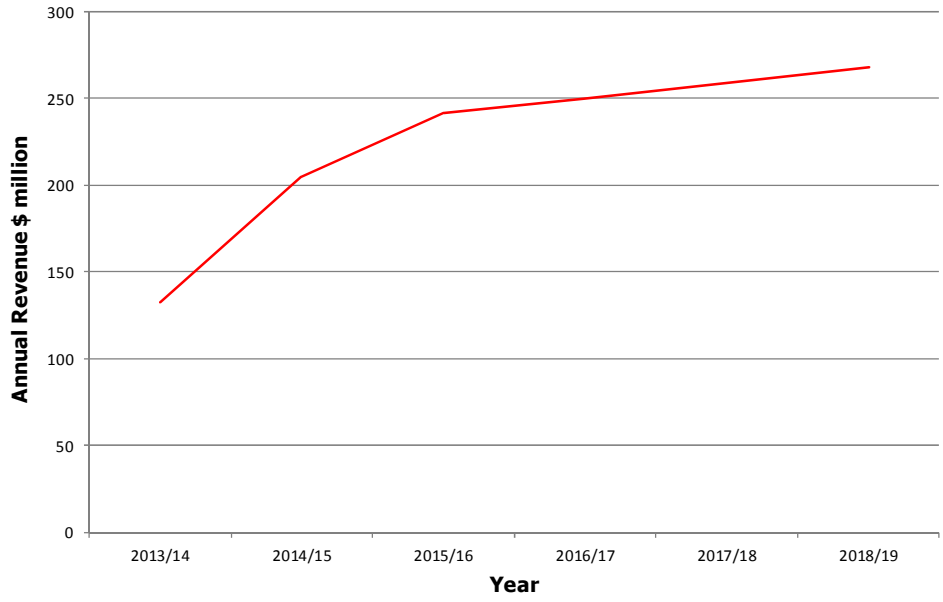
7 Power Networks' proposed tariffs for 2014/15

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.

7.1 Network revenue in the 2014-19 regulatory control period

The network revenue for standard control services in 2014/15 has been set at Power Networks' proposed value of $204.77 million. In the final version of this proposal, the revenue determined by the Commission in the 2014 NPD Final Determination will be substituted for this amount. The proposed revenue for standard control services throughout the 2014-19 regulatory control period is shown in Figure 7.

Figure 7 – Power Networks' revenue for standard control services (nominal)



This revenue must be converted into prices for standard control services. Power Networks is proposing that for 2014/15, all tariff charging components will be increased by a uniform percentage of 51.4% (nominal), with tariff restructuring and rebalancing postponed, to take place during the second and subsequent years of the regulatory control period, as described in section 6.

7.2 Tariff class price changes in the 2014-19 regulatory control period

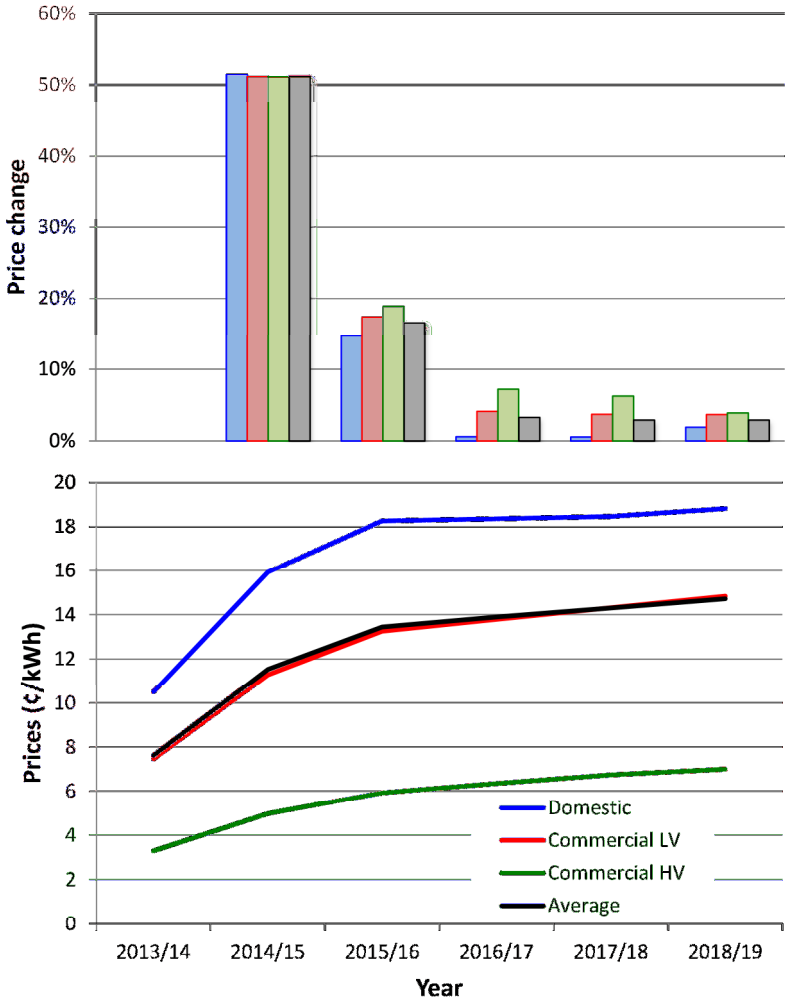
Based on the cost of supply modelling in section 3.1, Power Networks proposes to rebalance tariffs throughout the 2014-19 regulatory control period, in order to improve alignment with the cost of supply outcomes. The proposed pricing for customer classes will be adjusted as follows. Note that these price changes are indicative only and the final percentage change might vary:

- The *Domestic* tariff class is higher than the cost of supply and would reduce by 1.0% p.a. relative to the average price change;

- The *Commercial HV* tariff class is lower than the cost of supply and the single in this class (Commercial kVA >750 MWh, connected at HV) would be increased at 1.0% more than the average price change; and
- Within the *Commercial LV* tariff class, there are three tariffs:
  - The Commercial kVA >750 MWh tariff is recovering less than its cost of supply and would be increased at 1.0% more than the average price change;
  - Street lights and other unmetered supplies are recovering more than their allocated network cost and would be altered by 3% less than the average price change; and
  - The Commercial tariff is recovering slightly less than its allocated network cost and would be altered by 0.7% more than the average price change.

The outcome of the above proposed tariff movements at the tariff class level is displayed in Figure 8.

Figure 8 – Prices for customer classes in the 2014-19 regulatory control period (nominal)



7.3 Proposed Network tariffs for 2014/15

With the change from a Weighted Average Price Cap (WAPC) to a revenue cap, the expected revenue recovery is based on the consumption forecast submitted as part of the Initial Revenue Proposal (IRP). This forecast is shown in Table 14.

Table 14 – Energy consumption forecast for tariff setting, MWh

Customer tariff	2012/13 (e)		2013/14 (f)		2014/15 (f)	
	Anytime /Peak	Anytime /Off Peak	Anytime /Peak	Anytime /Off Peak	Anytime /Peak	Anytime /Off Peak
Domestic	564,128		575,006		586,110	
Commercial	475,242		484,246		493,439	
Unmetered	30,221		30,221		30,221	
Commercial >750 MWh	335,696	247,881	379,790	268,137	390,741	273,056
Total	1,653,169		1,737,400		1,773,567	
Total less unmetered	1,622,947		1,707,179		1,743,346	
Annual growth in total energy			5.1%		2.1%	

The resulting network tariffs for 2014/15 are described in the following sections 7.3.1 to 7.3.5 and Attachments 4 and 5.

7.3.1 Proposed Domestic tariff in 2014/15

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

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

Tariff component	2013/14	2014/15	Price change
System Availability Charge ¢/day	27.998	42.381	51.4%
First 500 kWh per month ¢/kWh	9.653	14.612	51.4%
Next 500 kW per month ¢/kWh	9.653	14.612	51.4%
Energy used above 1,000 kWh per month ¢/kWh	7.826	11.846	51.4%

7.3.2 Proposed Commercial tariff in 2014/15

The proposed commercial tariff for 2014/15 and the change in each charging component from 2013/14 is shown in Table 16.

Table 16 – Proposed Commercial tariff in 2014/15 (GST exclusive)

Tariff component	2013/14	2014/15	Price change
System Availability Charge ¢/day	48.863	73.965	51.4%
First 1000 kWh per month ¢/kWh	9.653	14.612	51.4%
Next 1000 kW per month ¢/kWh	7.826	11.846	51.4%
Energy used above 2,000 kWh per month ¢/kWh	7.826	11.846	51.4%

7.3.3 Proposed Street light and Unmetered supplies tariffs in 2014/15

The proposed Street light and Unmetered supplies tariffs for 2014/15 and the change in each charging component from 2013/14 is shown in Table 17.

Table 17 – Proposed Street light and Unmetered supplies tariffs in 2014/15 (GST exclusive)

Tariff component	2013/14	2014/15	Price change
Unmetered energy for street lights and similar applications ¢/kWh	5.536	8.380	51.4%
Unmetered energy for traffic lights and similar continuous applications ¢/kWh	5.536	8.380	51.4%

7.3.4 Proposed Commercial kVA Low Voltage tariff in 2014/15

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

Table 18 – Proposed Commercial kVA LV tariff in 2014/15 (GST exclusive)

Tariff component	2013/14	2014/15	Price change
System Availability Charge $/month	592.943	897.555	51.4%
Any further kVA per month ¢/kWh	8.440	12.776	51.4%
First 10,000 kWh per month ¢/kWh	7.403	11.206	51.4%
Next 20,000 kWh per month ¢/kWh	6.169	9.338	51.4%
Next 50,000 kWh per month ¢/kWh	4.888	7.399	51.4%
Next 100,000 kWh per month ¢/kWh	3.418	5.174	51.4%
Any further energy per month ¢/kWh	1.962	2.970	51.4%
First 10,000 kWh per month ¢/kWh	1.760	2.664	51.4%
Next 20,000 kWh per month ¢/kWh	1.362	2.062	51.4%
Next 50,000 kWh per month ¢/kWh	1.362	2.062	51.4%

Next 100,000 kWh per month ¢/kWh	1.026	1.553	51.4%
Any further energy per month ¢/kWh	4.968	7.520	51.4%
First 50 kVA per month $/kVA	3.769	5.705	51.4%
Next 100 kVA per month $/kVA	3.072	4.650	51.4%
Next 300 kVA per month $/kVA	2.594	3.927	51.4%
Next 500 kVA per month $/kVA	1.717	2.599	51.4%
Any further kVA per month $/kVA	4.697	7.110	51.4%
First 50 kVA per month $/kVA	3.343	5.060	51.4%
Next 100 kVA per month $/kVA	2.645	4.004	51.4%
Next 300 kVA per month $/kVA	2.155	3.262	51.4%
Next 500 kVA per month $/kVA	1.149	1.739	51.4%
Any further kVA per month $/kVA	592.943	897.555	51.4%

7.3.5 Proposed Commercial kVA High Voltage tariff in 2014/15

The proposed commercial kVA tariff for High Voltage connected customers in 2014/15 is shown in Table 19, with the change in each charging component from 2013/14.

Table 19 – Proposed Commercial kVA HV tariff in 2014/15 (GST exclusive)

Tariff component	2013/14	2014/15	Price change
System Availability Charge $/month	592.943	897.555	51.4%
Any further kVA per month ¢/kWh	8.440	12.776	51.4%
First 10,000 kWh per month ¢/kWh	7.403	11.206	51.4%
Next 20,000 kWh per month ¢/kWh	6.169	9.338	51.4%
Next 50,000 kWh per month ¢/kWh	4.888	7.399	51.4%
Next 100,000 kWh per month ¢/kWh	3.418	5.174	51.4%
Any further energy per month ¢/kWh	1.962	2.970	51.4%
First 10,000 kWh per month ¢/kWh	1.760	2.664	51.4%
Next 20,000 kWh per month ¢/kWh	1.362	2.062	51.4%
Next 50,000 kWh per month ¢/kWh	1.362	2.062	51.4%
Next 100,000 kWh per month ¢/kWh	1.026	1.553	51.4%
Any further energy per month ¢/kWh	4.968	7.520	51.4%
First 50 kVA per month $/kVA	3.769	5.705	51.4%
Next 100 kVA per month $/kVA	3.072	4.650	51.4%
Next 300 kVA per month $/kVA	2.594	3.927	51.4%
Next 500 kVA per month $/kVA	1.717	2.599	51.4%
Any further kVA per month $/kVA	4.697	7.110	51.4%
First 50 kVA per month $/kVA	3.343	5.060	51.4%
Next 100 kVA per month $/kVA	2.645	4.004	51.4%
Next 300 kVA per month $/kVA	2.155	3.262	51.4%
Next 500 kVA per month $/kVA	1.149	1.739	51.4%
Any further kVA per month $/kVA	592.943	897.555	51.4%

7.4 Impact on customers

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.

Table 20 below outlines the impacts of the proposed Network Tariff increase for each customer type, based on a sample of customers.

Table 20 – Impact on customers

Tranche	Customer Type	Average Increase	Increase Range
1-4	Medium to Large	11%	6-14%
5-6	Residential and Small Commercial	No Impact	

Please note that these impacts are indicative only, as the final 2014/15 Networks Pricing Proposal will be subject to the Commission's 2014 NPD Final Determination. In addition, the impact on each contracted customer will depend on its individual consumption and demand profile.

7.5 Tariff changes for customers with annual consumption in excess of 750 MWh

In 2014/15, Power Networks proposes to apply a uniform price change to each charging component of each tariff. All customers' prices therefore change by the same percentage and compliance with the *tariff class* side constraint is not an issue.

The Commission has proposed that a 2% side constraint should apply to the prices of individual customers, rather than at the *tariff class* level. Power Networks has explained in its Revised Regulatory Proposal why this is inappropriate, as it will unduly prolong much needed tariff reform for these customers.

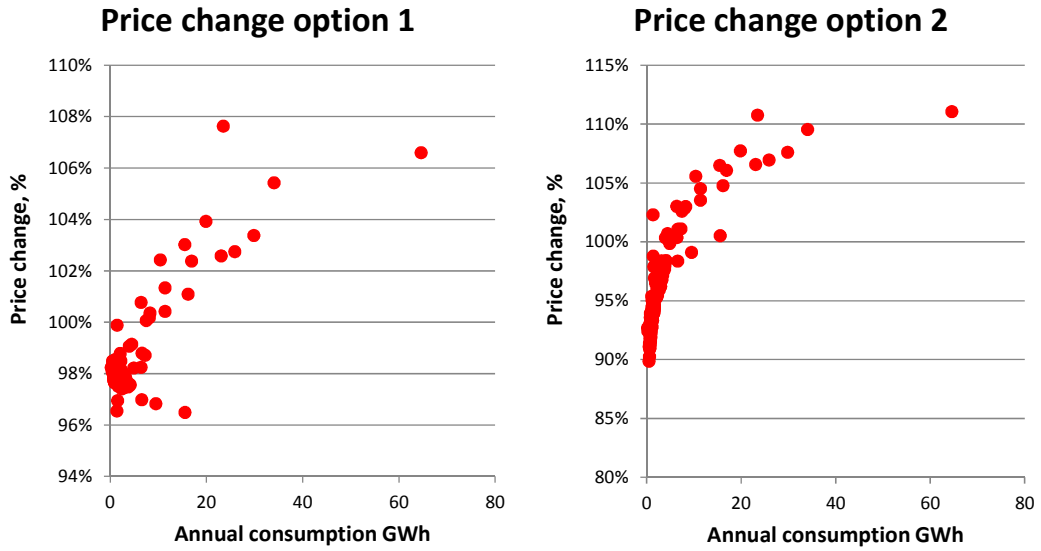
The approach used by distributors in NEM jurisdictions is to demonstrate with the aid of scatter diagrams how the prices may vary for individual customers with complex tariff structures, such as Power Networks' kVA demand tariffs.

For the purposes of illustration, restructuring of the kVA demand tariff in the manner proposed by Power Networks is considered. This could take place from 2015/16 and in these hypothetical examples:

1. The upper blocks of the peak kVA demand charge have been increased by 25% whilst the energy rates have been reduced by 2%, to retain revenue neutrality; and
2. All blocks of the peak kVA demand charge have been levelised at $8/kVA/month, whilst reducing the energy charge by 2% for revenue neutrality.

These pricing options are illustrated in Figure 9.

Figure 9 – Illustrative example of price changes for kVA customers



The scatter diagram in Figure 9 shows the effect of this price restructuring on individual customers. Less than 10% would pay more than they currently do; the remaining 90% would pay less.

If the Commission's maximum movement in individual customer price of 2% is applied, the following periods would be required to implement these price restructuring options:

Table 21 – Implementation times for pricing options

Pricing option	Number of years to implement
Increase the two lowest (highest threshold) peak kVA by 125% of 2014/15 demand rates and decrease energy rates by 4% (revenue neutrality)	4
Equalise all peak blocks at $8/kVA and decrease energy rates by 1% (revenue neutrality)	6

It is readily apparent that the Commission's proposal would result in extended periods for any meaningful pricing reform to place. The requirement to limit the price change to accommodate a single customer has an impact on the maximum price change for the whole customer class. This will result in greater network costs for all customers, due to the perpetuation of inefficient pricing arrangements that do not target customers' demand response.

It should be clarified that Power Networks does not intend to introduce price restructuring at a pace that subjects customers to large price changes. The pace of restructuring will be limited and carried out in accordance with the consultation process in the Rules, as with the NEM distributors.

7.6 Variations to tariffs and tariff classes

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.

Pending legal clarification of the scope for authorising such arrangements through the network price determination, in its Draft Determination the Commission accepted the following as pass through events for Power Networks for the forthcoming regulatory control period:

- the pass through events specified in the NER:
    - a regulatory change event;
    - a service standard event;
    - a tax change event; and
    - a terrorism event
- additional pass through events:
    - an insurance event;
    - a force majeure event; and
    - such other events that satisfy the following requirements: (i) the occurrence was not anticipated at the time of the network price determination was made, or were, while allowable, explicitly excluded from affecting the outcome of that determination on the grounds that the likely impact on PWC Networks was unknown or too difficult to quantify at the time, and (ii) the occurrence is not a result of actions of PWC's board or management or of decisions of the Territory Government in its capacity as owner or shareholder or guarantor of PWC.

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

8 Alternative control services

Power Networks provides a number of alternative control services. These services are detailed in the regulatory proposal and its attachments.

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.

9 Interval metering and ToU or capacity based tariffs for small customers

In other jurisdictions, customers with annual consumption much lower than 750 MWh usually have access to a ToU or demand/capacity tariff. Ausgrid and some other DNSPs offer a ToU tariff to all domestic and commercial customers, with no lower 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 ToU or capacity charges for small customers will require the rollout of interval meters. The details of such a rollout are yet to be considered, but it would logically prioritise larger customers, new customers and those that require meter replacements, and the consumption threshold would progressively be lowered. A voluntary opt-in would also be considered.

There is a reasonable case to be made, that the roll out of interval meters would benefit both Power Networks and its customers, if accompanied by more cost reflective tariffs that influence customers' consumption decisions. This would also be in line with the high-level policy objectives articulated in section 1.

There are many factors that must be considered in developing a meter rollout strategy, including:

- Meter reading, data warehousing and billing requirements, on much a larger scale than at present;
- The suitability of existing small customer switchboards and associated meter installation costs; and
- The potential of remote meter reading, with the availability of a number of different forms of communication.

The experiences of other utilities in these programs should provide valuable lessons. A pilot program is considered to be the best way to reduce the risks associated with estimating the cost of the roll out and the potential benefits through demand reduction. This project is included as 'Interval Meter Roll Out' Project (PRD30625) in Power Networks' capex forecast.

Attachment 1 - Efficient network pricing

An efficient network price is one that signals to the customer their contribution to the cost of providing network service. The network's costs are largely fixed - independent of the level of the customers' energy consumption or demand - up to the point at which the demand imposed on the network requires its capacity to be augmented. Efficient pricing must therefore reflect the cost of providing that additional network capacity.

Network assets have long lives and their provision requires significant lead times. Additional network capacity is planned for and provided to meet demand growth forecasts. The long run marginal cost (LRMC) of network expansion is generally taken to provide an efficient price signal to influence customer demand. Typically, a distribution network's LRMC averages around 80% of the total cost of supply.

An economically efficient price signal will therefore directly signal the customer's requirement for additional network capacity.

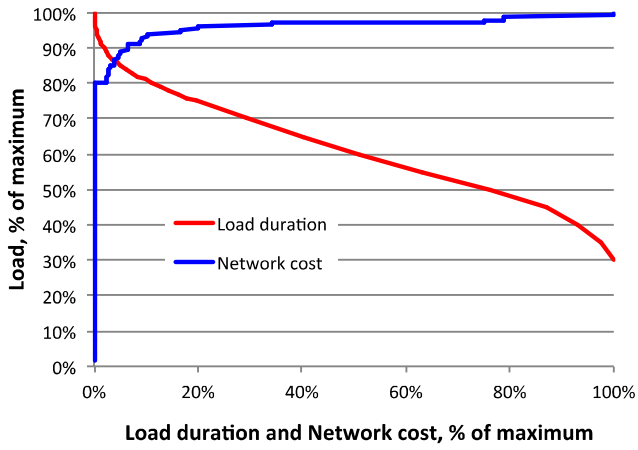
An individual customer's requirement for additional network capacity will depend upon the point to which they are connected, the network topology and the augmentation costs of the upstream network. Locational pricing is not practicable for other than the largest customers. Accordingly, the present discussion relates to pricing averaged over the entire utility.

A1.1 Network cost drivers

The network's LRMC is driven by the need to augment the network to accommodate additional demand. This need to supply additional demand is strongly associated with particular periods of time and seasons.

The circumstances of each utility will differ depending upon climactic conditions, their existing network and their customers' behaviour. The following indicative cost analysis is based upon examination of the Darwin-Katherine hourly load profile for the six years from 2006/07 to 2011/12. The load duration curve from this profile is shown in red in Figure 10.

Figure 10 – D-K load duration curve and network cost incidence



The load duration curve highlights the fact that the peak capacity of the network is required for very brief durations. The top 20% of capacity is used for about 10% of hours.

Virtually all of the growth related capital expenditure on the network is required to meet the demands taking place during this period. Accordingly, Figure 10 also illustrates how the average network cost can be allocated to the system load profile[8]. This is in order to determine the potential impact on the network augmentation cost by season, day type and time of day.

Using this approach, the network cost by season and by day type is shown in Figure 11.

Figure 11 – Darwin-Katherine network cost by season and day of the week

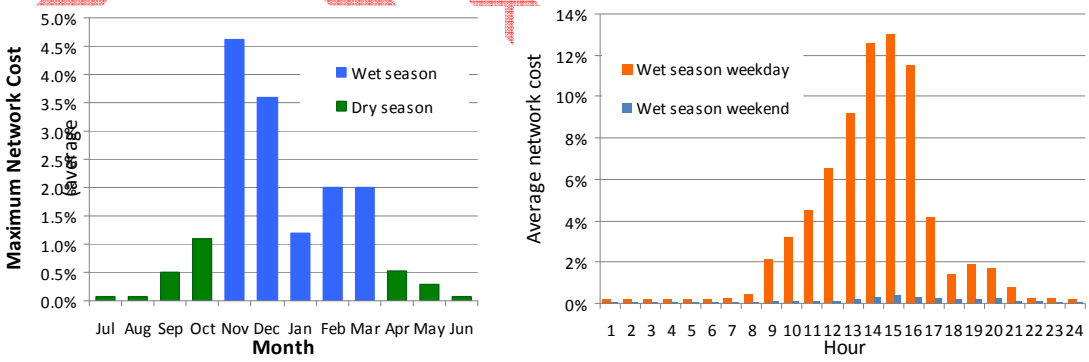
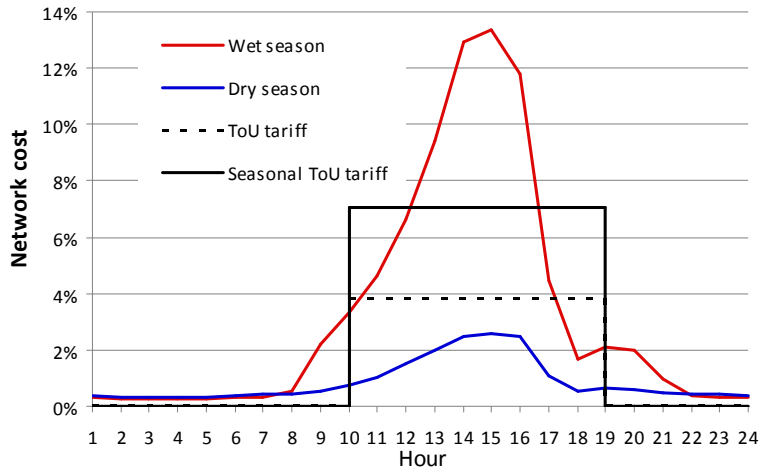


Figure 11 illustrates the desirability of using a seasonal network tariff, as the network cost associated with the wet season months of November through to March is significantly higher than the dry season months. It also indicates that a tariff that applies on weekdays (rather than including weekends) would be appropriate.

8 There are a number of assumptions inherent in this analysis, which is based upon a modified method of intercepts approach in which 80% of the cost of network reinforcement (the LRMC proportion) is assigned to the upper 20% of hours under the load duration curve.

The network cost by time of day is illustrated in Figure 12.

Figure 12 – Darwin-Katherine network cost by time of day



It is evident from Figure 12 that higher network costs are associated with the hours from around 10:00 to 19:00 on summer days. The average cost during this period has been shown as the 'Tariff' trajectory. This would be the logical target for the price signalling component of a seasonal time of use energy or demand tariff, although consideration of the thermal capacity of equipment may enable deferral of the commencement and completion of the peak period, perhaps by an hour. Note that a considerably increased price incentive can be obtained from tariffs with a seasonal rate, rather than a ToU rate that applies year-round.

The conclusion from the above analysis is that Power and Water's network is principally augmented to accommodate demand growth occurring:

- During the wet season months, from November to March;
- On weekdays[9]; and
- Between the hours of 11:00 and 19:00.

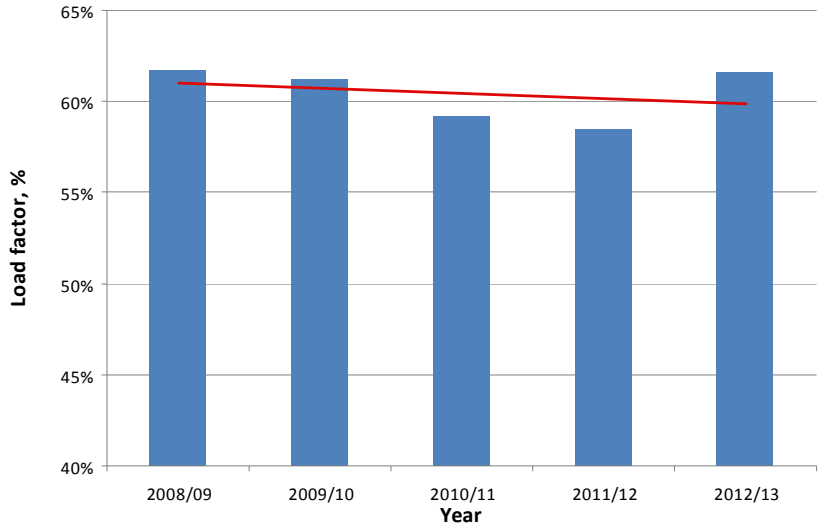
These considerations are important in structuring tariffs that will be effective in modifying customer's consumption preferences and thereby reducing network demand *when it is important to do so*. An efficient price will target the customer's demand at these times and seek to modify that behaviour. Outside these times, the average customer's demand currently does not impose costs to augment the network.

[9] Subject to more detailed analysis, potentially also excluding public holidays.

A1.2 Trends in load factor

The load factor for Darwin-Katherine is illustrated in Figure 13. Here, there a demonstrable trend in worsening load factor, which supports pricing reform targeted to reduce the incidence of network demand.

Figure 13 – Darwin-Katherine Load Factor

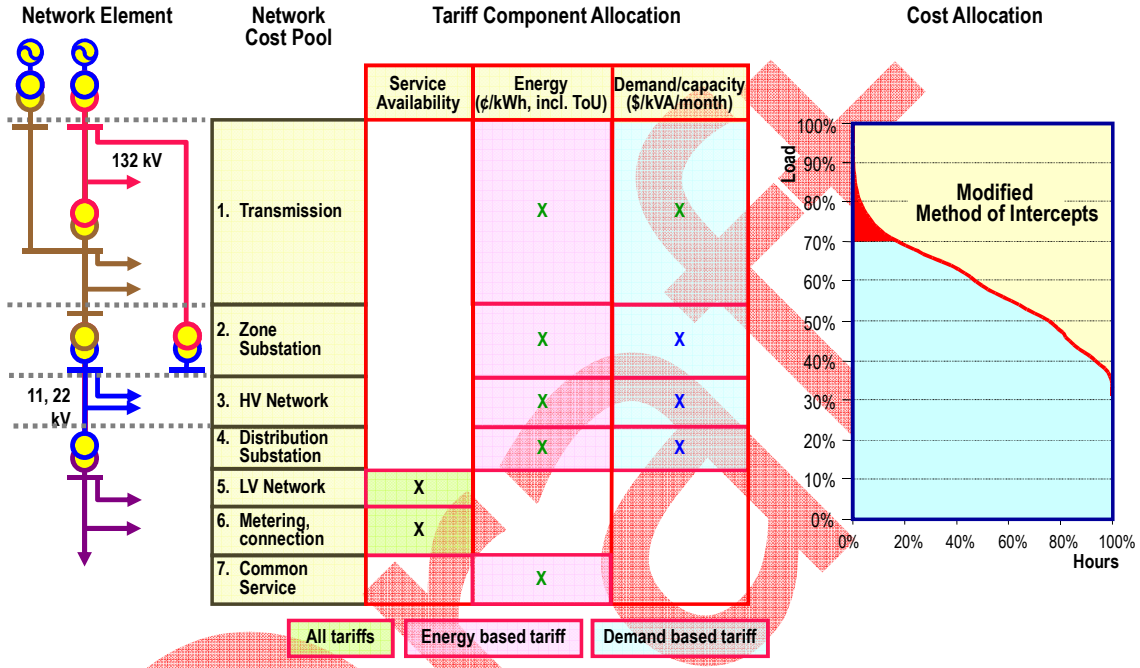


Attachment 2 – Cost of Supply modelling

Distribution 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 a pricing proposal for the 2014 NPD.

The general approach to cost of supply modelling is illustrated in Figure 14.

Figure 14 – 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 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. The HV customer is not allocated costs associated with distribution substations and the LV network. The tariff allocation table is then used to guide formulation of the appropriate price components.

The most appropriate allocation process for network costs is the "Modified Method of Intercepts" chart at right. The network is augmented for peak demand growth and thus its costs need to be 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 commercial

tariff classes and the demand allocation has been based on the estimated contribution of each tariff to the coincident system demand.

A2.1 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 asset pool. These have been based on the capital costs of the network, apportioned using the ODRC of the assets in each pool.
- Network operating costs by asset pool. Initially, an allocation the network's operating costs on the basis of the ORC of assets in each pool has been used, with the exception of metering costs. This allocation will be refined as the forecast of operating expenditure for the network for the 2014-19 regulatory control period is developed.

A proportion of 80% of the network's annual costs are allocated in this way, corresponding to the average LRMC of network supply. The remaining 20% are allocated as a common service charge.

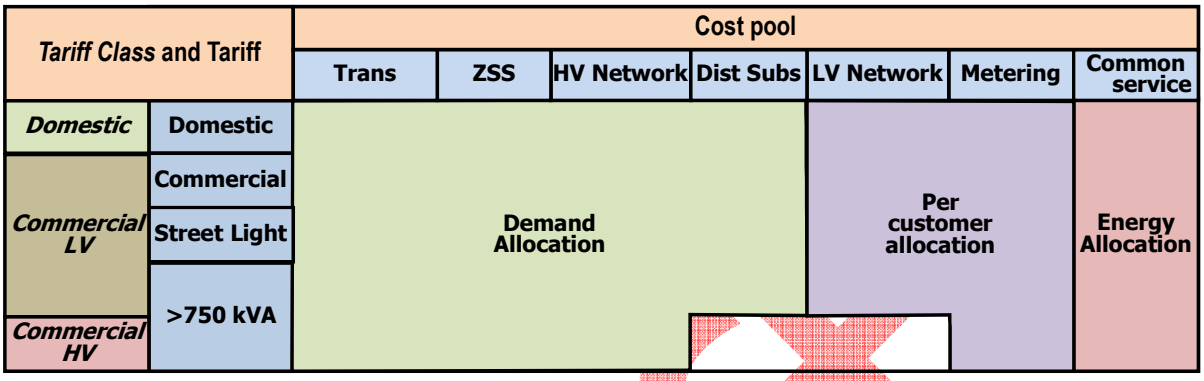
The network cost pools and the process by which they are allocated to tariffs are set out in Table 22.

Table 22 – Allocation of network costs

Cost pool	Allocation
Transmission	Coincident kW demand, as the principal driver of costs in these components of the network is customer demand.
Zone substations	
High Voltage network	
Distribution substations	
Low Voltage network	Per-customer allocation (the costs of the LV network and services are relatively independent of demand).
Metering	Per-customer allocation
Common Service	Energy consumption

The *tariff classes*, constituent tariffs and the allocation process in the Cost of Supply model are illustrated in Figure 15.

Figure 15 – Structure of the Cost of Supply model



The outcomes from the Cost of Supply model are discussed in sections 3.1 to 3.4.

Attachment 3 – Excess kVAr charge

This attachment explains how an excess kVA charge could be implemented for Power and Water's existing kVA metered customers and for new customers that are equipped with interval meters.

A3.1 Network Technical Code requirements

The current Network Connection Technical Code and the proposed revised Network Technical Code (NTC) with the Commission for approval imposes the following requirement on the power factor of customers.

Supply Voltage (nominal)	**Permissible *Power factor* Range** (half-hour average, unless otherwise specified by the *Network Operator*)
132 kV / 66 kV	0.95 lagging to unity
<66 kV	0.9 lagging to 0.9 leading

A significant proportion of business customers have power factors lower than these permissible levels.

A3.2 Rationale for an excess kVA charge

The existing kVA demand tariffs include peak and off-peak charges for the customer's monthly maximum kVA. Customers with a poor power factor will pay more for the additional kVA they consume. However this financial incentive is often insufficient to encourage customers to improve their power factor and the structure of the tariff is such that a low power factor customer will pay a lower price in $/kVA than a high power factor customer.

The additional charge should be scaled to ensure that a customer has sufficient financial incentive to install power factor correction equipment or take other measures, such as installing more efficient motors, to improve their power factor.

A3.3 SA Power Networks implementation

SA Power Networks introduced an excess kVAr charge for its business customers in July 2007. The initial charge of $40 per annum per excess kVAr has since been increased to $45[10].

[10] SA Power Networks, *Network Tariff & Negotiated Services,* 1 July 2012, p. 60.

The Excess kVAr charge was accompanied by a demand management program that targeted these customers for the installation of power factor correction[11]. SA Power Networks' program has been successful in improving the level of Rules compliance within that jurisdiction.

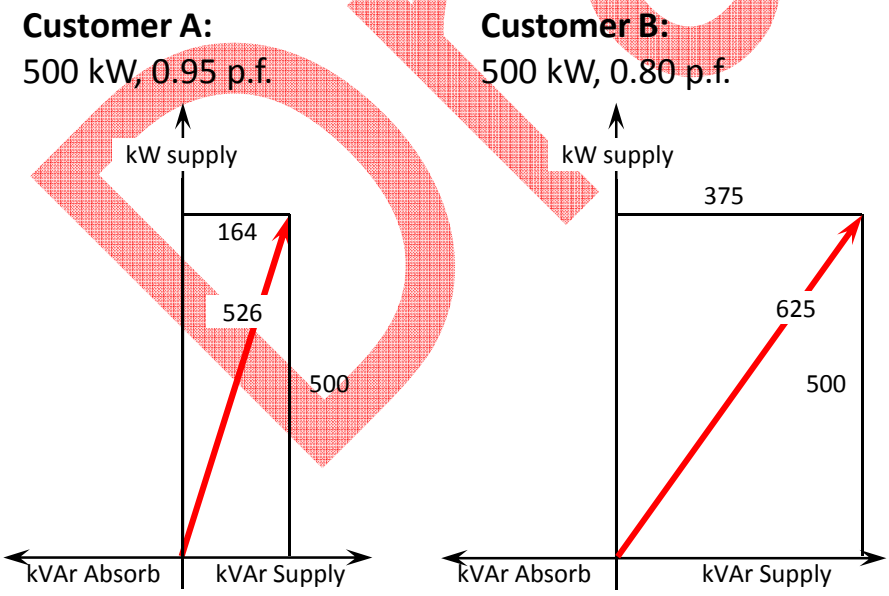
The Excess kVAr charge is classified in South Australia as an excluded service, for the provision of capacity in excess of the SA Network Code requirements. In the Northern Territory, Power and Water proposes this service to be classified as an Alternative Control Service, as outlined in Power and Water's Proposed Networks Services Classification.

A3.4 Charging arrangements

A significant proportion of Power Networks' Commercial kVA customers have power factors lower than the permissible levels set out in the NTC. Those customers that have low power factor place a greater demand on the network, which imposes additional costs on all customers through the need to augment network capacity, for the network to provide reactive power compensation (capacitor installations) and additional network losses.

The additional network capacity used by a customer with low power factor is illustrated in Figure 16. The two customers A and B each have the same active power demand of 500 kW, but different reactive power demands.

Figure 16 – Power factor and demand on the network

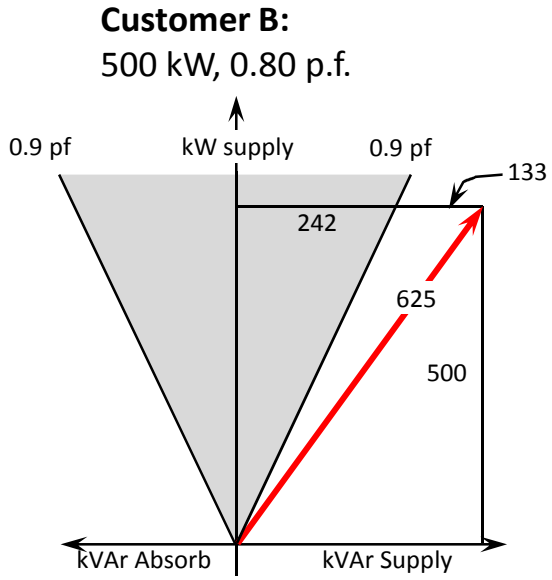


Customer A has a power factor of 0.95 and is compliant with the Code. Customer B, on the other hand, with a power factor of 0.8, is non-compliant. Customer B is consuming about 19% more network capacity than Customer A but, because of the tariff structure, does not pay 19% higher network charges.

[11] SA Power Networks, *Demand Management Program Interim Report No. 3*, June 2010, p. 17.

The permissible power factor is shown in Figure 17. In this diagram, the shaded area represents the power factor permitted by the NTC.

Figure 17 – Permissible power factor in the Network Technical Code



The reactive power demand of Customer B exceeds the Code limitation by 133 kVAr. This is the excess reactive power (termed "Excess kVAr") consumed by the customer.

Power Networks proposes to implement an Excess kVAr charge during the 2014-19 regulatory control period, to improve customer compliance with the NTC requirements, as an Alternative Control Service (Fee-Based Charge).

The power factor of loads on the network has a significant impact on the network capacity that needs to be provided to maintain supply. A non-compliant customer with a not unusually low power factor of 0.7 presents a total power demand that is 29 per cent greater than that of a Rules compliant customer with a power factor of 0.9. Each component of the network (Low Voltage, High Voltage etc.) must be designed to accommodate this additional demand. Moreover, the electrical losses in the network are proportionate to the square of the load and this non-compliant customer would contribute 65 per cent greater network losses. Power factor correction should thus be a matter deserving of enthusiastic regulatory support.

Power factor can be corrected at different levels of the network, using capacitors. The correction of small customers' loads is not usually economic. However, correction at large customers' premises is invariably the most effective solution, as it reduces the demand placed on the network at each upstream level. Power factor compensation at upstream locations is not as cost-effective as correction at the customers' premises.

The average costs of providing reactive power at different levels on the network can be readily estimated. The network must be designed to deliver kVA, and the

increment in network capacity arising from a lower power factor at the customers' premises is directly proportional to the increase in kVA. An example calculation of the incremental cost for the Low Voltage network, based on Power Networks' long run marginal cost (LRMC) for the Low Voltage network of $253/kVA, is shown in Table 4.1.

Table 23 - Average cost per excess kVAr

Power factor	**0.90**	**0.85**	**0.80**	**0.70**	**0.60**
kW	1.00	1.00	1.00	1.00	1.00
kVA	1.11	1.18	1.25	1.43	1.67
kVAr	0.48	0.62	0.75	1.02	1.33
Excess kVAr	0.00	0.14	0.27	0.54	0.85
LRMC	$253	$268	$285	$325	$379
Δ cost	-	$15	$32	$72	$126
$/Excess kVAr	**-**	**$110**	**$119**	**$135**	**$149**

The average cost of delivering excess kVAr to the Low Voltage level may thus be seen to be in the order of $110 to $150/kVAr.

The proportion of Power Networks' large customers that have a power factor lower than the Network Code requirement is significant. Although Power Networks already has kVA tariffs, the financial incentive for non-compliant customers to reduce their power factor is clearly insufficient and a small fraction of the cost these customers impose on the network. This has also been the experience of NEM distribution network service providers, where power factor improvements have only been obtained as a result of direct negotiation with the customers concerned or, in the case of SA Power Networks, through the use of their innovative Excess kVAr charge.

A3.5 Illustrative example of Excess kVAr charge

Based on the two customers of Figure 16, and Power and Water's current kVA demand tariff, the monthly bill for two customers with typical consumption volumes would be as shown in Figure 18.

Figure 18 - Illustrative example of Excess kVAr charge

	Customer A	Customer B
Consumption		
kW demand	500.0	500.0
Power factor	0.95	0.80
kVA demand	526.3	625.0
kVAr demand	164.3	375.0
kVAr limit	242.2	242.2
Excess kVAr	0	132.8
kWh per month	182,500	182,500
… peak	146,000	146,000
… off peak	36,500	36,500
kVA per month		
… peak	526.3	625.0
… off peak	421.1	500.0
Monthly bill		
SAC	$593	$593
Peak kWh	$4,499	$4,499
Off peak kWh	$1,310	$1,310
Peak kVA	$3,386	$3,868
Off peak kVA	$643	$751
	$10,431	$11,021
Excess kVAr		
$10.28/kVAr/mth		$1,366
Total charge	**$10,431**	**$12,837**
Average $/kVA	**$19.82**	**$19.82**

In this example, a charge of $10.28/kVAr/month is required with Power Networks' current tariff structure to achieve an equitable outcome (ie. to apply the same average $/kVA rate to both customers). This has effectively increased Customer B's financial incentive to correct its power factor to the same level as Customer A.

Attachment 4 – Tariffs for 2014/15, excluding GST

Schedule 1 - All Regions 2014/15 EXCLUDING GST

A - For High Voltage connected Customers

Reference Service[1] Provided: Normal Transmission and Distribution of Electricity consumed through customer's metering for customers supplied and metered at high voltage

	System Availability Charge	$/kVA peak[2]	$/kVA off peak[2]	¢/kWh peak[2]	¢/kWh off peak[2]
System Availability Charge					
Dollars per month	897.555				
Plus charges related to monthly demand					
First 50 kVA per month		$12.776	$2.970		
Next 100 kVA per month		$11.206	$2.664		
Next 300 kVA per month		$9.338	$2.062		
Next 500 kVA per month		$7.399	$2.062		
Any further kVA per month		$5.174	$1.553		
Plus charges related to energy metered					
First 10,000 kWh per month				7.520	7.110
Next 20,000 kWh per month				5.705	5.060
Next 50,000 kWh per month				4.650	4.004
Next 100,000 kWh per month				3.927	3.262
Any further energy per month				2.599	1.739

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

Reference Service[1] Provided: Normal Transmission and Distribution of Electricity consumed through customer's 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	897.555				
Plus charges related to monthly demand					
First 50 kVA per month		$12.776	$2.970		
Next 100 kVA per month		$11.206	$2.664		
Next 300 kVA per month		$9.338	$2.062		
Next 500 kVA per month		$7.399	$2.062		
Any further kVA per month		$5.174	$1.553		
Plus charges related to energy metered					
First 10,000 kWh per month				7.520	7.110
Next 20,000 kWh per month				5.705	5.060
Next 50,000 kWh per month				4.650	4.004
Next 100,000 kWh per month				3.927	3.262
Any further energy per month				2.599	1.739

C - For Customers with consumption below 750 MWh per year

Reference Service[1] Provided: Normal Transmission and Distribution of Electricity for customers supplied at low voltage in the Darwin and Katherine network areas.

	Domestic	*Commercial*
System Availability Charge		
Cents per day	42.381	73.965
Plus charges related to energy metered	¢/kWh anytime	¢/kWh anytime
First 500 kWh per month	14.612	14.612
Next 500 kWh per month	14.612	14.612
Next 1000 kWh per month	11.846	11.846
Energy used above 2,000 kWh per month	11.846	11.846
(pro-rated per billing period)		
Street lighting and similar unmetered supplies		8.380
Unmetered 24 hour supplies		8.380

[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.

Attachment 5 – Tariffs for 2014/15, including GST

Schedule 1 - All Regions 2014/15 INCLUDING GST

A - For High Voltage connected Customers

Reference Service[1] Provided: Normal Transmission and Distribution of Electricity consumed through customer's metering for customers supplied and metered at high voltage

	System Availability Charge	$/kVA peak[2]	$/kVA off peak[2]	¢/kWh peak[2]	¢/kWh off peak[2]
System Availability Charge					
Dollars per month	987.311				
Plus charges related to monthly demand					
First 50 kVA per month		$8.272	$7.821		
Next 100 kVA per month		$6.276	$5.566		
Next 300 kVA per month		$5.115	$4.404		
Next 500 kVA per month		$4.319	$3.588		
Any further kVA per month		$2.859	$1.913		
Plus charges related to energy metered					
First 10,000 kWh per month				14.053	3.267
Next 20,000 kWh per month				12.327	2.931
Next 50,000 kWh per month				10.272	2.268
Next 100,000 kWh per month				8.139	2.268
Any further energy per month				5.691	1.708

B - For Low Voltage connected Customers with consumption above 750

Reference Service[1] Provided: Normal Transmission and Distribution of Electricity consumed through customer's 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	987.311				
Plus charges related to monthly demand					
First 50 kVA per month		$8.272	$7.821		
Next 100 kVA per month		$6.276	$5.566		
Next 300 kVA per month		$5.115	$4.404		
Next 500 kVA per month		$4.319	$3.588		
Any further kVA per month		$2.859	$1.913		
Plus charges related to energy metered					
First 10,000 kWh per month				14.053	3.267
Next 20,000 kWh per month				12.327	2.931
Next 50,000 kWh per month				10.272	2.268
Next 100,000 kWh per month				8.139	2.268
Any further energy per month				5.691	1.708

C - For Customers with consumption below 750 MWh per year

Reference Service[1] Provided: Normal Transmission and Distribution of Electricity for customers supplied at low voltage in the Darwin and Katherine network areas.

	Domestic	*Commercial*
System Availability Charge		
Cents per day	46.620	81.362
Plus charges related to energy metered	¢/kWh anytime	¢/kWh anytime
First 500 kWh per month	16.073	16.073
Next 500 kWh per month	16.073	16.073
Next 1000 kWh per month	13.031	13.031
Energy used above 2,000 kWh per month (pro-rated per billing period)	13.031	13.031
Street lighting and similar unmetered supplies		9.218
Unmetered 24 hour supplies		9.218

[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.

Attachment 6 - Compliance with the Code, Rules and RIN

This attachment cross-references the Network Pricing Principles Statement and Indicative Tariff Schedules against the Code, Rules and RIN requirements.

A5.1 Code requirements

The requirements of the Code in relation to network pricing are set out in clause 74, shown in Table 24.

Table 24 – Code requirements on network pricing

Code clause	Proposal section
74.Objectives of network pricing (1) The reference tariffs are – (a) to reflect efficient costs of supply;	Section 3 demonstrates that the 2014/15 reference tariffs have been constructed to: • Recover the proposed revenue; • Do not contain economic cross subsidies; and • Have been set with due regard to the LRMC.
(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;	Section 2.2 regarding creation of *Commercial HV* tariff class and tariff.
(ii) the quantities in which the relevant network access service is to be supplied or is supplied;	Section 2.2 regarding retention of Commercial and Commercial kVA tariffs.
(iii) the pattern of network usage;	Section 3.1 regarding split of Street light and Unmetered supplies into two tariffs.
(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	Section 2.2 regarding creation of *Commercial HV* tariff class and tariff.
(vi) the periods for which the network access service is expected to be supplied;	Section 3.1 regarding split of Street light and Unmetered supplies into two tariffs.
(c) to be transparent and published in order to provide pricing signals to network users;	Publication of tariff schedules at Attachments 4 and 5.
(d) to promote price stability; and	Section 7.2 on tariff movements.
(e) to reflect a balancing of the quest for detail against the administrative costs of doing so which would be passed through to end-use customers.	Section 5 on tariff structural changes.

A5.2 Rule requirements

The relevant requirements of the Rules on distribution pricing are set out in Section I, clause 6.18, concerning DNSPs' Pricing Proposals. Network tariffs are firstly assigned to *tariff classes*, in accordance with 6.18.3. The associated principles of assignment are in clause 6.18.4.

The requirements of clause 6.18.4 are set out in Table 25.

Table 25 – Tariff classes

Code clause	Proposal section
6.18.4 Principles governing assignment or re-assignment of retail customers to *tariff classes* and assessment and review of basis of charging (a) In formulating provisions of a distribution determination governing the assignment of *retail customers* to *tariff classes* or the re-assignment of *retail customers* from one *tariff class* to another, the *AER* must have regard to the following principles: (1) *retail customers* should be assigned to *tariff classes* on the basis of one or more of the following factors: (i) the nature and extent of their usage; (ii) the nature of their *connection* to the *network*; (iii) whether remotely-read interval metering or other similar metering technology has been installed at the *retail customer's* premises as a result of a *regulatory obligation or requirement*;	Section 2.2 regarding creation of *Commercial HV* tariff class and tariff. Not applicable
(2) *retail customers* with a similar *connection* and usage profile should be treated on an equal basis; (3) however, *retail customers* with micro-generation facilities should be treated no less favourably than *retail customers* without such facilities but with a similar load profile; (4) a *Distribution Network Service Provider's* decision to assign a customer to a particular *tariff class*, or to re-assign a customer from one *tariff class* to another should be subject to an effective system of assessment and review. **Note:** If (for example) a customer is assigned (or reassigned) to a *tariff class* on the basis of the customer's actual or assumed *maximum demand*, the system of assessment and review should allow for the reassignment of a customer who demonstrates a reduction or increase in *maximum demand* to a *tariff class* that is more appropriate to the customer's *load* profile.	Section 2.2 on creation of *Commercial LV* tariff class There is no distinction between tariffs or tariff classes on the basis of whether the customer has generation. If Power Networks were to receive representations from a customer on the tariff class assignment the matter would initially be reviewed by Power Networks and referred to the Commission if the tariff class assignment were unable to be resolved between Power Networks and the customer.

The network pricing principles in the Code are set out in clause 6.18.5, and the side constraint requirements in 6.18.6 (only the relevant parts of clause 6.18.6 are included in Table 26).

Table 26 – Network pricing principles and side constraints

Code clause	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 *retail customers* who belong to that class; and (2) a lower bound representing the avoidable cost of not serving those *retail customers*.	Sections 3.2, 3.3 and 3.6 demonstrate that the revenue from tariff classes lies between the bounds of the stand alone and avoidable cost.
(b) A tariff, and if it consists of 2 or more *charging parameters*, each *charging parameter* for a *tariff class*: (1) must take 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 (2) must be determined having regard to: (i) transaction costs associated with the tariff or each *charging parameter*; and (ii) whether *retail customers* of the relevant *tariff class* are able or likely to respond to price signals.	Sections 3.4 and 3.6 demonstrate the LRMC for tariff classes and describe how it has been taken into account in structuring tariff components. Section 5 discusses the charging parameters for each tariff, including the simplification of the Commercial kVA tariffs. Customers are or will be exposed to network tariffs through retail competition. Price signals are similar to those of other distributors.
(c) If, however, as a result of the operation of paragraph (b), the *Distribution Network Service Provider* may not recover the expected revenue, the provider must adjust its tariffs so as to ensure recovery of expected revenue with minimum distortion to efficient patterns of consumption.	Not applicable.
6.18.6 Side constraints on tariffs for standard control services (b) The expected weighted average revenue to be raised from a *tariff class* for a particular *regulatory year* of a *regulatory control period* must not exceed the corresponding expected weighted average revenue for the preceding *regulatory year* in that *regulatory control period* by more than the permissible percentage.	
(c) The permissible percentage is the greater of the following: (1) the CPI-X limitation on any increase in the *Distribution Network Service Provider's* expected weighted average revenue between the two *regulatory years* plus 2%; (2) CPI plus 2%. **Note:** The calculation is of the form (1 + CPI)(1 + 2%)	The weighted average revenue change for each *tariff class* is the same as the weighted average change in Power Networks' revenue in 2014/15.

A5.3 RIN requirements

The requirements of the Commission's RIN in relation to the pricing principles in this document are set out in Table 27.

Table 27 – RIN requirements on pricing principles

Code clause		Proposal section
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.	This document sets out the pricing principles Power Networks has used for direct control services in section 3 and for alternative control services in section 8.
16.2	Explain how tariff classes have been constituted, having regard to:	In section 2.2 Power Networks explains how tariff classes have been constituted.
	(a) the need to group *customers* together on an economically efficient basis; and	Customer tariffs have been grouped together on the basis of similar characteristics and consumption patterns (*Domestic* and *Commercial LV*), and in the case of *Commercial HV*, the utilisation of components of the network. This grouping of *tariff classes* is therefore considered to be economically efficient.
	(b) the need to avoid unnecessary transaction costs.	By keeping the number of *tariff classes* to a minimum, Power Networks believes that unnecessary transaction costs associated with customers changing between *tariff classes* will be minimised.
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;	Section 2.2 regarding creation of *Commercial HV and Commercial LV* tariff class and tariff
	(b) the quantities in which the relevant network access service is to be supplied or is supplied;	Section 2.2 regarding creation of *Commercial HV and Commercial LV* tariff class and tariff

Code clause	Proposal section
(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.	Section 2.2 regarding retention of Commercial and Commercial kVA tariffs Section 3.1 regarding split of Street light and Unmetered supplies into two tariffs Section 3.1 regarding split of Street light and Unmetered supplies into two tariffs
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.	 Sections 3.4 and 3.6 demonstrate the LRMC for tariff classes and describe how it has been taken into account in structuring tariff components. Section 5 discusses the charging parameters for each tariff, including the simplification of the Commercial kVA tariffs. Customers are or will be exposed to network tariffs through retail competition. Price signals are similar to those of other distributors.
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;	Power Networks has provided an excerpt from the cost of supply mode.

The requirements of the Commission's RIN in relation to tariff schedules are set out in Table 28.

Table 28 – RIN requirements on tariff schedules

Code clause		Proposal section
18.	**INDICATIVE TARIFF SCHEDULES**	
18.1	Provide, for the regulatory year commencing 1 July 2014, an indicative Network Pricing Proposal and Tariff Schedules, suitable for publication, that:	This document sets out Power Networks Pricing Proposal and Attachments 4 and 5 contain tariff schedules suitable for publication.
	(a) sets out the tariff classes that are to apply for the relevant *regulatory year*;	Section 2 sets out the *tariff classes* and network tariffs Power Networks proposes for 2014/15.
	(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;	Section 5 sets out the charging parameters of each of Power Networks tariffs.
	(d) sets out, for each tariff class related to standard control services, the expected weighted average revenue for the relevant *regulatory year*; and	Section 3.7 sets out the expected weighted average revenue for each tariff and tariff class for 2014/15.
	(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	Section 7.6 sets out the circumstances in which a variation or adjustment to tariffs could occur during 2014/15.
	(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***;	Section 3 demonstrates how the Network Pricing Principles have been applied in the formulation of tariffs for 2014/15.
	(g) demonstrates compliance with the principles set out in Chapter 7 of the NT Network Access Code;	Chapter 7 of the Code deals with requirement for Power Networks to ring fence its operations. Power Networks does so in accordance with the provisions of the Ring Fencing Code[12]. In addition, Power Networks has established a Cost Allocation Methodology which is used to allocate costs of standard control services and alternative control services.

[12] Utilities Commission, *Northern Territory Electricity Ring Fencing Code, Third version,* 1 January 2009.

Code clause	Proposal section
(h) demonstrates compliance with any applicable *network price determination*, including any side constraints; and	Section 3.8 demonstrates compliance with the proposed revenue allowance. Section 0 demonstrates that the price change in 2014/15 does not exceed the tariff side constraints. In future years a demonstration of compliance with the overs and unders mechanism will be included in the Pricing Proposal.
(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*.	Section 7 sets out the extent of the changes to network prices in 2014/15 and 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 will provide an excerpt from the cost of supply model.