Energex

Tariff Structure Statement – Explanatory notes

1 July 2017 to 30 June 2020

energex

positive energy

Version control

Version	Date	Description
V.1	4 October 2016	Reasons in support of Energex's revised TSS proposal submitted to the AER for approval
V.2	23 February 2017	Page 42, 2 instances of 'NTC74000' replaced with 'NTC7400' Page 42, last bullet point, 'NTC4500' replaced with 'NTC4000' Page 48, fourth bullet point, 'kilowatt' replaced with 'kVA' **Page 49, replaced ($/day) with ($/day/$M-CAV and $/day/$M-NCCAV)** Page 50, second bullet point, 'kilowatt' replaced with 'kVA' Page 54, added $/kVA/month unit to capacity charges for NTC1000

Energex Limited (Energex) is a Queensland Government Owned Corporation that builds, owns, operates and maintains the electricity distribution network in the growing region of South East Queensland. Energex provides distribution services to almost 1.4 million domestic and business connections, delivering electricity to a population base of around 3.4 million people.

Energex's key focus is distributing safe, reliable and affordable electricity in a commercially balanced way that provides value for its customers, manages risk and builds a sustainable future.

Energex
GPO Box 1461
BRISBANE QLD 4001

Table of Contents

1 Background

These Explanatory Notes accompany Energex's revised 2017-20 Tariff Structure Statement (TSS) submitted to the Australian Energy Regulator (AER) on 4 October 2016. The purpose of the Explanatory Notes is to set out the basis upon which Energex has developed its revised TSS.

In preparing the revised TSS, the AER has requested that Energex submit:

- A document (the revised TSS) that contains each of the elements outlined in clause 6.18.1A of the National Electricity Rules (the Rules)
- A separate document (the Explanatory Notes) that contains the distributor's reasons for each of these proposed elements, and the distributor's overall tariff strategy and/or future tariff plans (where specified).

This document incorporates the following information:

- Details included in Energex's initial TSS submitted in November 2015 which remain relevant for the revised TSS.
- New details in support of minor updates included in the revised TSS.
- Additional information that further clarifies a small number of matters raised by the AER in its Draft Decision on Energex's initial TSS proposal.[1]

In addition to the revised TSS and these Explanatory Notes, Energex has also submitted to the AER an updated engagement report which summarises stakeholder feedback relating to new or revised elements of Energex's tariff strategy which have been added to the revised TSS proposal.

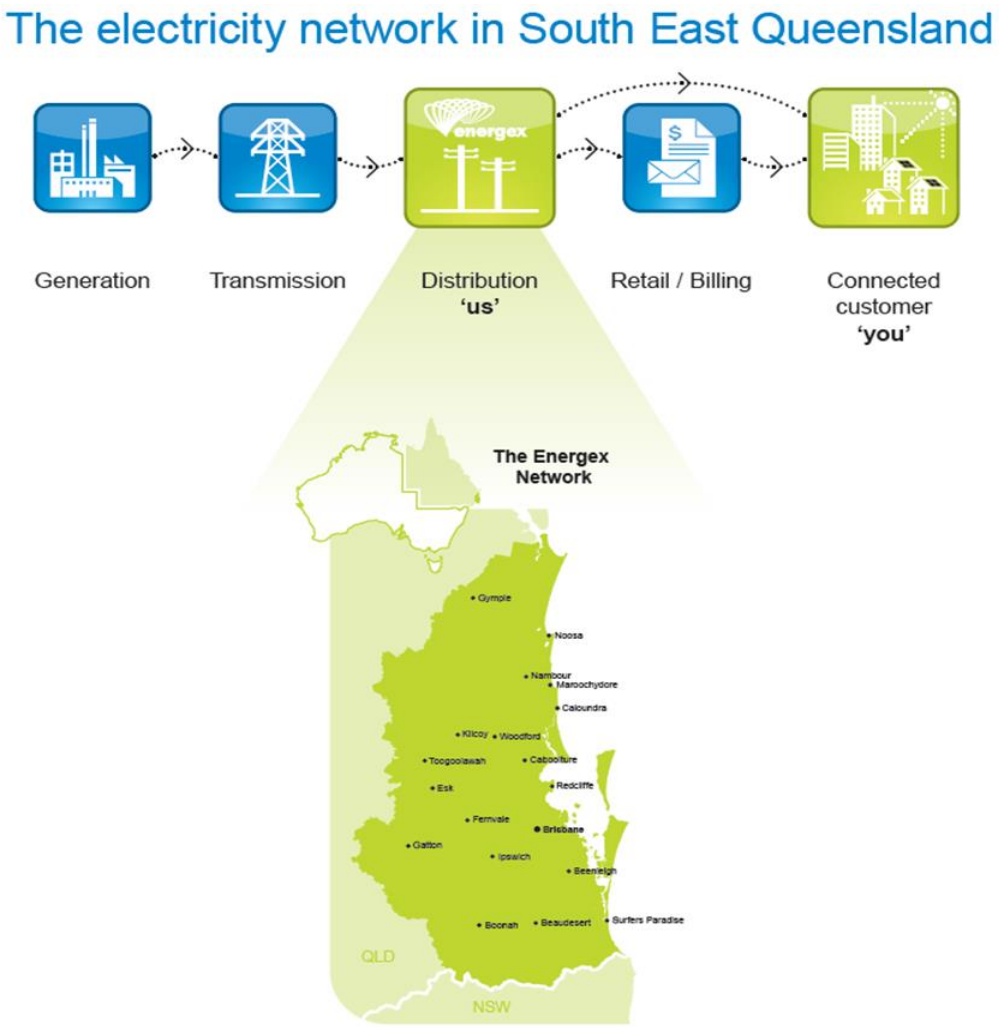
Energex's revised TSS, these Explanatory Notes and the Engagement Report are available on Energex's and AER's websites.

1.1 About Energex

Energex Limited (Energex) is a distribution business owned by Energy Queensland that owns, operates, builds and maintains the electricity distribution network in the growing region of South East Queensland. Energex's network spans approximately 25,000 square kilometres and provides distribution services to approximately 1.4 million domestic and business customers, including over 298,000 solar PV connections, and delivers electricity to a population of around 3.3 million people in the region.

[1] Australian Energy Regulator, Draft Decision Tariff Structure Statement Proposal Energex & Ergon Energy, August 2016.

Figure 1-1 - Electricity supply chain in South East Queensland



Energex's network consists of property, plant and equipment assets valued at approximately $12 billion. The bulk of electricity distributed by Energex is carried by Powerlink to Energex connection points across large distances, because base-load generation is located remotely. However, Energex also enables connection of distributed generation, such as solar PV and embedded generators.

Energex's network is characterised by:

- Connection to Powerlink's high voltage transmission network at 28 connection points
- High density/central business district (CBD) areas such as the Brisbane CBD and Gold Coast and Sunshine Coast city areas which are typically supplied by 110/11kV, 110/33kV, 132/33kV or 132/11kV substations
- Urban and rural areas where 110/33kV or 132/33kV bulk supply substations are typically used to supply 33/11kV zone substations

- Inner suburban areas close to the CBD which have extensive older, meshed 33kV underground cable networks that supply zone substations
- Outer suburbs and growth areas to the north, south and west of Brisbane which are supplied via modern indoor substations of modular design that enable further modules to be readily added
- New subdivisions in urban areas which are supplied by underground networks with padmount substations
- One of the highest observed solar PV penetration rates worldwide.

1.2 What is a tariff structure statement?

The Rules require network tariffs to reflect the efficient costs of providing network services and set out the pricing principles that Energex must comply with in setting the structure and level of network prices.

Clause 6.18.1 of the Rules requires Energex to develop a TSS that sets out network price structures and indicative network tariffs that will apply during a regulatory control period. Section 11.73.2 of Chapter 11 of the Rules provides that Energex's initial TSS will apply for the last three years of the current 2015-20 regulatory control period.

In addition to the TSS, clause 6.8.2(c1a) of the Rules requires Energex to provide an overview paper of how it has engaged with customers and retailers in developing the proposed TSS, and how it has addressed any concerns identified as a result of that engagement. Energex developed an Overview Paper Engagement for Tariff Reform (Engagement Report) as part of the TSS proposal submitted in November 2015. Energex has also prepared a supplementary engagement report detailing stakeholder feedback relating to new or revised elements of Energex's tariff strategy which have been added to the revised TSS. These documents are available on Energex's and AER's websites.

Energex's revised TSS seeks to provide clear and accessible information on its network tariffs and how these may change in the future. It includes the following information:

- Tariff classes - Retail customers with similar characteristics such as consumption patterns and voltage levels will be grouped together. Each tariff class includes a number of tariffs.
- Tariff structures - Each network tariff has its own particular tariff structure, representing how customers are charged for their use of the network and reflecting customer preferences. The components of each tariff constitute its tariff structure, for example daily supply charge, usage and/or demand components.
- Charging parameters - A tariff charging parameter represents the components of tariffs and the associated settings (e.g. demand peak period set between 4pm to 8pm on weekdays).
- Demonstration of compliance with the pricing principles.

- Indicative price levels – Indicative cost per kilowatt (kW), kilowatt hour (kWh) or kilovolt-ampere (kVA) calculated for each tariff in accordance with the tariff's specific charging parameters and for each year of the 2017-20 period.

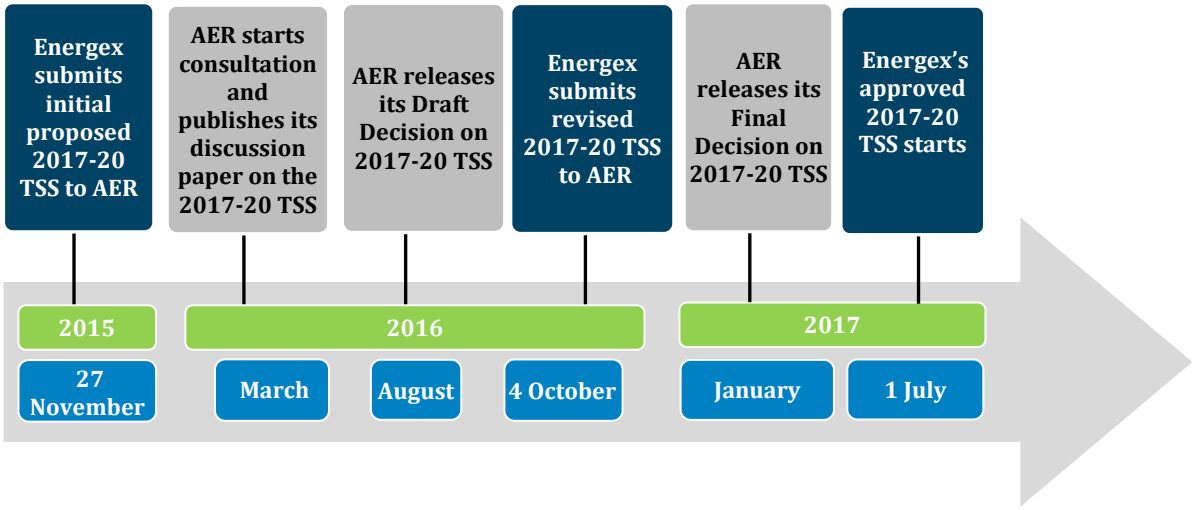
Under the pricing arrangements set out in the Rules, Energex is also required to publish annual pricing proposals to disclose the annual price levels based on the price structures set out in the TSS approved by the AER. The 2017-18 Pricing Proposal will be the first annual pricing proposal prepared in accordance with the TSS requirements.

1.3 The AER's review process

In accordance with the Rules, the role of the AER is to review the tariff structures in the TSS, ensuring that they comply with the requirements set out in the Rules. Energex submitted its initial TSS proposal in November 2015. Following a period of consultation, the AER released its Draft Decision in August 2016, approving Energex's TSS proposal subject to minor updates and clarifications listed in Appendix 1 of these Explanatory Notes.

The AER's review process and key timeframes are detailed in Figure 1-2 below.

Figure 1-2 - AER's review process for the proposed 2017-20 TSS



Once approved by the AER, a TSS can be amended only with the AER's approval if the distribution network service provider (DNSP) can demonstrate that there was an event requiring a change which was beyond the reasonable control of the firm and could not have been foreseen at the time the TSS was approved.[2]

[2] National Electricity Rules, Chapter 6, clause 6.18.1B(b).

2 Network tariffs

This chapter outlines the mechanism used by Energex to recover its allowed revenue. It provides information on how distribution network services are classified, and tariffs, tariff structures and charging parameters are developed.

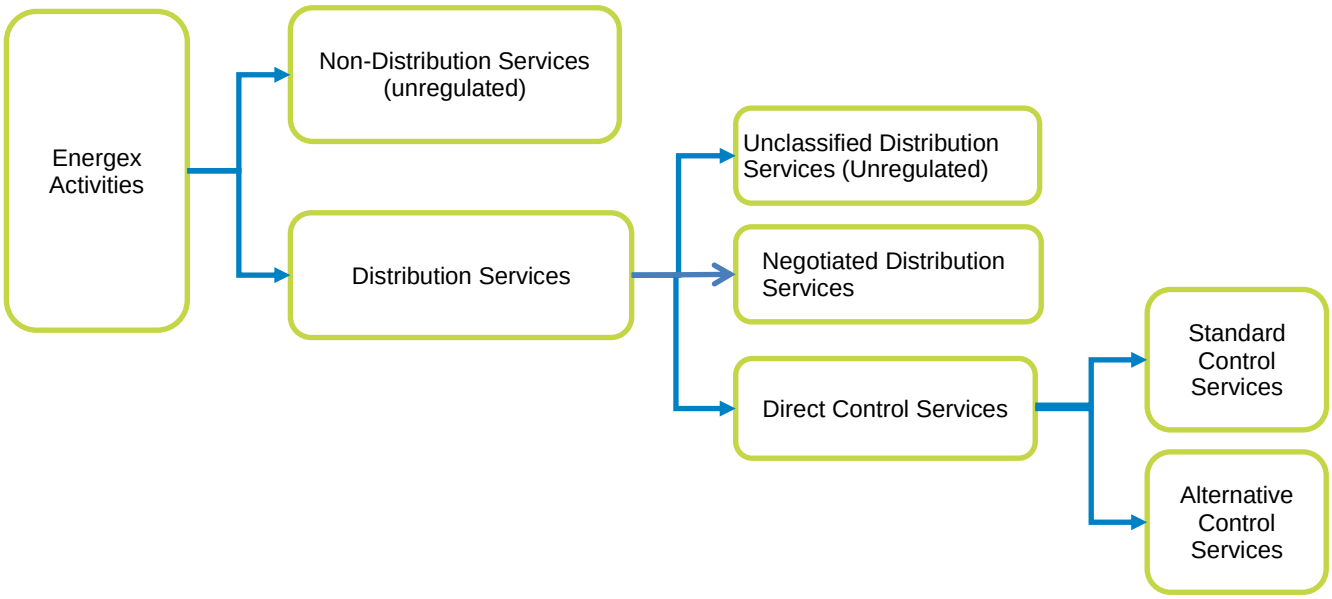
2.1 Recovering Energex's costs

The AER determines how Energex's distribution services are classified and in turn the nature of the economic regulation. This is important as it determines how prices will be set and how charges are recovered from customers.

Services incorporated within the customer's electricity bill relate to services that are central to electricity supply using Energex poles and wires. These services are classified as Standard Control Services (SCS). Customer specific or customer requested services are charged separately. These are generally classified as Alternative Control Services (ACS).

Energex's TSS relates to the tariffs for those distribution services classified by the AER as direct control services (SCS or ACS) as shown in Figure 2-1 below.

Figure 2-1 - Classification of Energex's distribution services



The AER approved Energex's allowed revenue in its Final Determination for the 2015-20 regulatory control period on 29 October 2015.[3] There are three primary sources of revenue that Energex recovers through network tariffs:

- Distribution Use of System revenue

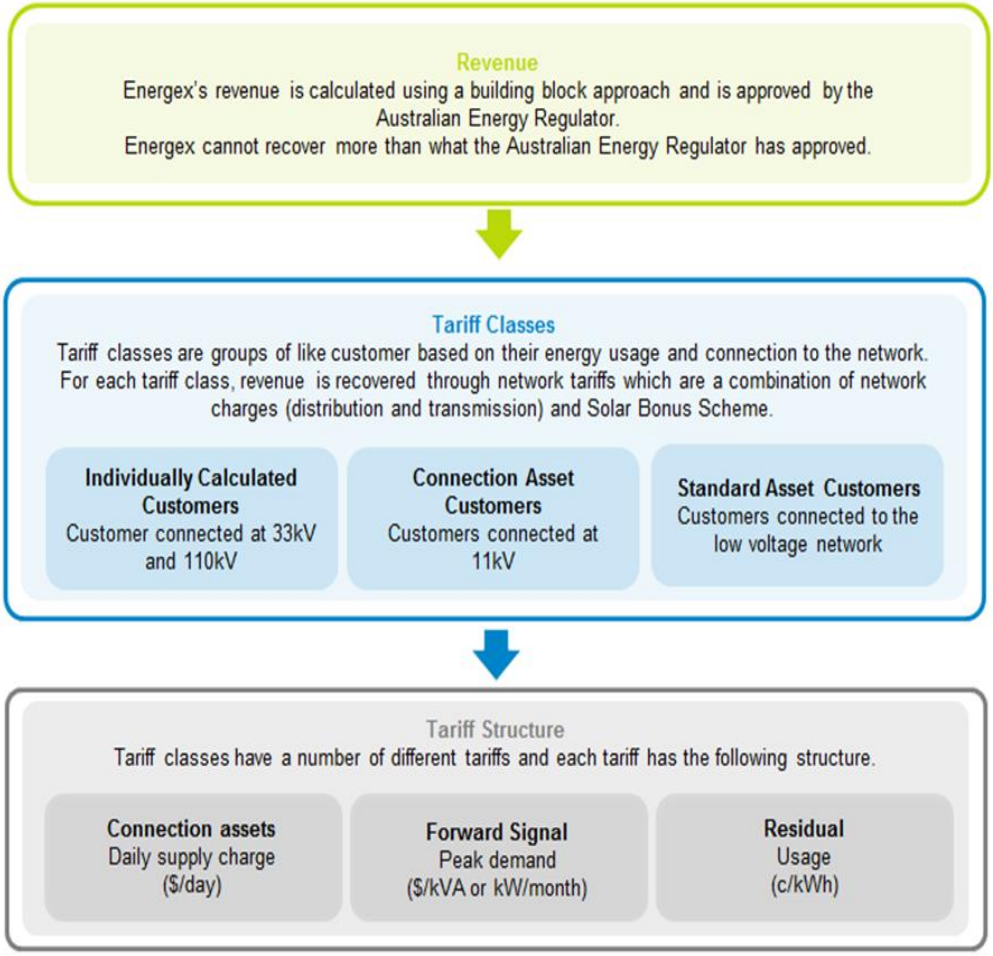
[3] Available on the AER's website: https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/energex-determination-2015-2020.

- Recovery of Solar PV Feed-in Tariff – Jurisdictional Scheme
- Designated Pricing Proposal Charge (transmission network) revenue.

Energex recovers its allowed revenue through network tariffs in a way that is consistent with the pricing principles set out under the Rules. The tariff structures outlined in this revised TSS do not affect how much revenue Energex can earn. Instead, they determine how much revenue is recovered from particular customer groups.

Energex charges network use of system (NUoS) charges to electricity retailers. Customers may not see Energex's network tariffs itemised on their retail electricity bill, as the retailer may incorporate Energex's network tariffs in their retail prices and charges, along with other costs of producing and supplying electricity. In 2015-16, network costs comprised approximately 45 per cent of the bill.[4] Energex's allocation of allowed revenue is illustrated in Figure 2-2 below.

Figure 2-2 - Energex allocation of its allowed revenue to its tariff classes and tariffs



Further to these NUoS charges, additional charges may apply where a customer requests the provision of specific or one-off services (such as special meter reads or disconnections).

[4] Queensland Competition Authority's Regulated Electricity Prices 2015-16 Final Report Fact Sheet - Electricity prices from 1 July 2015.

The prices Energex can charge for these services, known as ACS, are regulated by the AER.

2.2 Components that make up our tariff schedule

Energex's network tariff schedule is underpinned by key concepts, including tariff classes, tariff structures, and charging parameters and levels.

The sections below provide further explanation of these concepts as they apply to Energex.

2.2.1 Tariffs and tariff classes

Energex has approximately 1.4 million residential and business customers, with a range of different characteristics. Energex groups customers that have similar characteristics together so that similar customers are assigned to the same tariffs that are available under their tariff class.

At the broadest level, Energex differentiates between tariff classes based on the voltage level at which a customer is connected to its network and the amount of electricity that they consume annually.

The key voltage levels used for tariff setting purposes are the sub-transmission, high and low voltage levels of the network. The majority of Energex's customers – residential and small business – are connected at the low voltage level of the network, with a relatively small number of large business customers connected at the sub-transmission or high voltage levels of the network.

Further information on Energex's tariff classes is outlined in Energex's revised TSS proposal and pricing proposals available on Energex's website.

2.2.2 Tariff structures

After Energex has grouped its customers into tariff classes, it determines the number and structure of tariffs that will be made available to each tariff class.

Energex generally has more than one network tariff available to customers in each tariff class, recognising that some tariffs may not be appropriate for a customer given the capability of the meter attached to their premises. For example, a customer with a basic meter cannot access a Time of Use (ToU) or demand tariff because the meter cannot record consumption by time of day.

2.2.3 Charging parameters and levels

The individual charges within each network tariff (such as the daily and variable charges discussed below) are known as the tariff charging parameters.

Having determined the structure of each tariff, Energex sets the level of each charging parameter, for example, the number of dollars per day (for the daily charge) or per kWh (for the usage charge) or per kW (for demand charge).

Energex's overall objective in determining the levels of the charging parameters is to set them such that the revenue it expects to recover from each tariff class will allow the recovery of its total allowed revenue and no more.

2.3 Network tariff charging parameters

A network tariff may be made up of several separate charging parameters. The charging parameters that may be used when constructing network tariffs include the following:

- Daily supply charge (also known as fixed charge)
- Flat charge (also known as energy or volumetric charge)
- Time of Use (ToU) energy charge
- Demand charge
- Capacity charge.

Depending on whether a network tariff is designed for large or small customers, these different charging parameters can also serve different purposes as explained further below.

2.3.1 Daily supply charge

The daily supply charge is a $/day charge applied regardless of usage to each energised connection point.

There are a number of 'fixed' costs that Energex must recover for assets that have already been built and must be maintained for a long period of time. For small customers, daily supply charges are designed to recover costs associated with a customer's connection to the network. Portions of the residual shared network costs are also collected through daily supply charges. For large customers, daily supply charges reflect the costs associated with the connection and management of the customer.

2.3.2 Energy usage charges

Flat charge

This charge is calculated in cents per kilowatt hour (c/kWh), and is applied to the total usage at a connection point. This charge recovers costs that are not recovered from the daily supply charge. This charge remains the same regardless of the time of the day.

Time of Use (ToU) charge

This charge is calculated in c/kWh, with different rates applying to the electricity consumed at a connection point at different times of the day. For small customers, ToU usage charges can recover costs that have not been recovered from a demand charge or daily supply charge.

These charges are designed to incentivise the reduction of demand on the network during peak times by encouraging customers to switch non-essential electricity usage to off-peak and/or shoulder times.

2.3.3 Demand charges

Demand is the key driver of network costs specifically future network augmentation. Network expansion becomes necessary where there is a likelihood of demand exceeding available capacity.

Demand charges are reflective of augmentation costs associated with customer demand activity. Demand charges are levied on the basis that network users who place greater pressure on the network should incur higher charges.

This is a monthly charge calculated as a $/kilowatt (kW) or $/kilovolt ampere (kVA) rate for the maximum (or peak) demand recorded at a point in time at a customer's connection point, rather than usage measured over a period of time. This is the key difference between a usage and demand charge.

Demand charges deliver stronger user-pays pricing than a usage charge alone as it incorporates the incremental cost of augmenting the capacity of the network to meet future demand. This means that customers who place more pressure on the network by using more electricity at peak times are charged more. As a result, these charges encourage customers to reduce their maximum demand. Further information on the approach used to signal future investment costs is included in Energex's revised TSS proposal.

2.3.4 Capacity charge

This charging parameter is similar to a monthly maximum demand charge. The capacity charge reflects the amount of network capacity which is set aside for an individual customer to use at any time.

Capacity charges account for augmentation costs at the customer connection level and all associated upstream augmentation costs already incurred to provide sufficient network capacity to accommodate peak demand.

This is a monthly charge calculated as a $/kilovolt ampere (kVA) rate for the network capacity provided for a connection point. These charges are applied to the maximum half hourly kVA power reading that occurred at a connection point in the 12 months prior to the bill being calculated. Similar to demand charges, capacity charges are currently only incorporated in the network tariffs of large business customers.

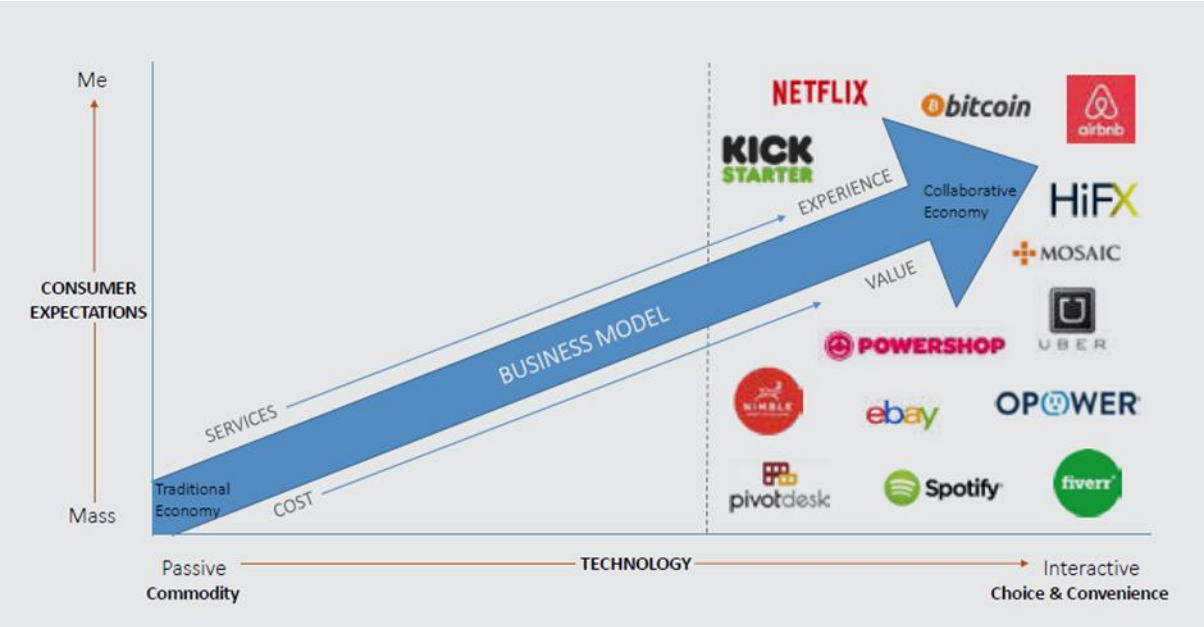
3 Mandate for tariff reform

Traditionally, Energex managed a network where the energy flowed in only one direction from large generators to the transmission and distribution networks and finally to customers.

Today, the way customers use electricity and connect with Energex's network is changing with the emergence of new technologies such as smart appliances, solar PV, battery storage systems and electric vehicles (EVs). This technological revolution has enabled network users to become active market participants.

As shown in Figure 3-1, customers are already experiencing this transformation process as part of their daily lives, influencing their consumption behaviour, expectations and participation.

Figure 3-1 - Disruption technology trend



Source: Energy Networks Association, 2016

Furthermore, with 75 per cent of households in South East Queensland having an air-conditioner and 1 in 4 detached homes having rooftop solar PV, Energex is experiencing a significant reduction in electricity volumes being consumed without a corresponding reduction in demand levels.

Changing consumption patterns and customer expectations need to be addressed through more dynamic tariff structures (including targeted load control mechanisms) that effectively signal the costs to customers of using the network. In a residential electricity tariff review commissioned by the Energy Supply Association of Australia, Deloitte noted that tariffs need

to be suitably designed for both the current and the foreseeable changes to the electricity system and customer behaviours.[5]

Flat volumetric network tariffs (flat tariffs) do not address usage during network peaks – a critical driver of investments in the network to provide sufficient capacity to meet peak demand. Indeed, flat tariffs do not provide a strong signal on how customer behaviour impacts the network and do not encourage consumption outside those peak times. If consumption continues to decline and demand remains high, it will be difficult for Energex to ensure prices remain stable.

While large customers are already on cost reflective demand tariffs, smaller customers, who make up 99 per cent of Energex's customer base and about 46 per cent of total electricity consumed, are currently on flat tariffs that do not signal the cost of future investment and have in recent times supported wealth transfer amongst electricity customers.

In this context, the Australian Energy Market Commission (AEMC) issued a change to the Rules in November 2014 requiring DNSPs to develop more cost-reflective tariffs with a view to enable customers to make more informed decisions about their use of the network and unlock the benefits derived from new technologies.

The remainder of this Chapter discusses the main drivers for tariff reform.

3.1 Impact of distributed energy resources (DER) / solar PV

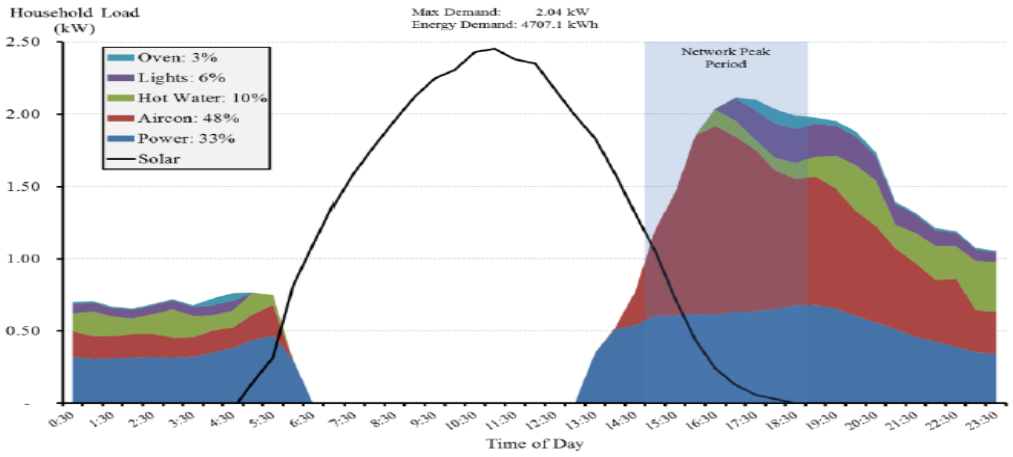
The challenge associated with the increasing uptake of solar PV is that, while it reduces overall electricity consumption level from the grid, it has a limited impact on reducing network peak demand, resulting in declining load factors.[6]

Figure 3-2 and Figure 3-3 below illustrate the impact of solar PV to an average household load in summer and winter. While reducing a household's usage during the day, solar PV has no effect toward the customer's peak demand during the network peak occurring in mid to late afternoon.

[5] Deloitte Access Economics, Residential electricity tariff review – Report commissioned by the Energy Supply Association of Australia, Final Report, 22 January 2014.

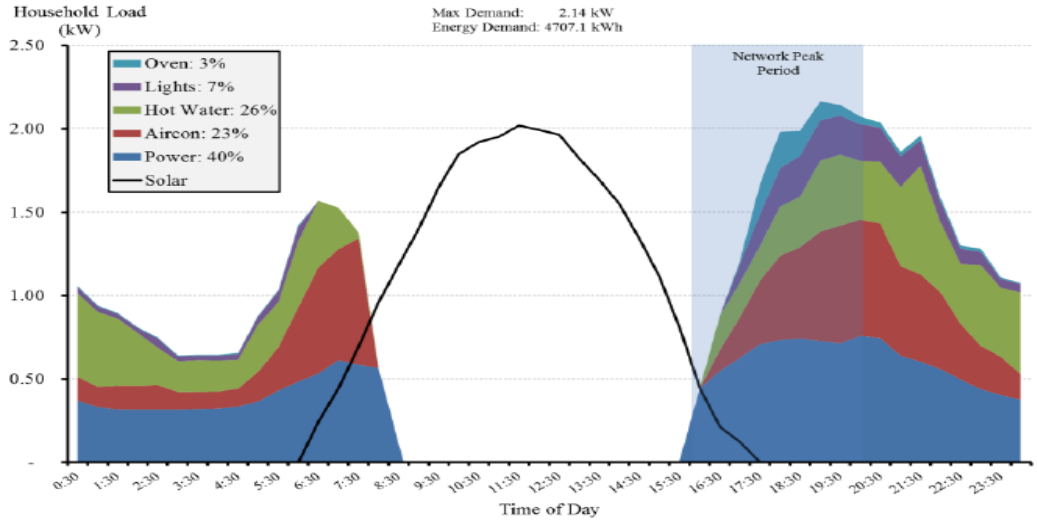
[6] Load factor is a measure of efficient use of the network. It is the ratio between a customer's annual average energy and the average maximum demand. A low load factor is indicative of poor network utilisation.

Figure 3-2 - Solar PV household 'net load' – critical event summer days



Source: P. Simshauser in AGL Working Paper No. 45 – Demand Tariffs, October 2014, page 10.

Figure 3-3 - Solar PV household 'net load' – critical event winter days



Source: P. Simshauser in AGL Working Paper No. 45 – Demand Tariffs, October 2014, page 10.

With more than twenty six per cent of Energex's residential customers and 4 per cent of business customers having taken-up solar PV, the impact on the way Energex operates its network is significant.[7] The rapid uptake of embedded generation has resulted in a divergence in the relationship between total electricity use and peak electricity use. Solar PV penetration in conjunction with challenging economic conditions and changes in customer usage behaviour has reduced overall network utilisation and led to higher network unit prices.

It should also be noted that, in some cases, embedded generation can increase operating and maintenance expenditure. Traditionally, distribution networks were designed to accommodate the flow of power in one direction from the substations through to the customer. However, with the rise in embedded generation on the LV network, power flows can now occur in both directions causing power quality issues. Reverse power flows

[7] Energex, 2016/17 Demand Management Plan.

between the LV and 11kV networks lead to both voltage rise and voltage drops along the feeding network which must be managed to ensure voltage at customer terminals stays within statutory voltage limits. Over the 2015-20 regulatory period, Energex expects to incur increasing levels of capital and operating expenditure resulting from solar PV including voltage investigations and re-balancing LV transformer circuits.

Technologies such as batteries in conjunction with the appropriate pricing mechanism will enable customers to shift demand and consumption.

3.2 Battery storage

Increasing number of small-scale customer-sited battery storage system products are emerging onto the Australian market. Uptake of these battery energy storage systems is predicted to grow as they become more affordable. With battery energy storage, excess solar PV generated electricity can be stored and used to offset electricity during peak periods. The extent to which these benefits can be realised depends largely on customer acceptance and prevailing tariff structures.

Usage and daily supply tariff structures do not provide customers with signals as to how best to use such technologies to shape their demand curve, rather than simply reducing their energy consumption. Demand tariffs are anticipated to help incentivise customers to use DER and storage technologies to reduce demand and improve network utilisation and, as noted in Section 3.1, emerging issues with power quality.

3.3 Electric vehicle (EV) uptake

Modelling of EV uptake in Australia, based on customer demand and supply side factors for vehicle manufacture, indicates that EV model availability will not be significant until 2022. The base case forecast for EV uptake in South East Queensland is estimated to be around 2,600 in 2021.

Once the proliferation of EVs grows, the grid will be potentially impacted through changing consumption patterns but also by potential localised peak demand growth through EV charging. The electrification of commercial vehicle fleets could increase peak demand. Significant uncontrolled EV charging could create a requirement for future growth driven augmentation. EV charging when well managed could help reduce growth in peak demand and improve network utilisation and load factor. Well managed EV charging requires a range of enabling technologies and platforms and appropriate tariff structures to signal desired customer charging behaviours.

3.4 Advanced metering infrastructure

A key requirement for the successful introduction of demand tariffs is that customers can access their data and as such advanced metering infrastructure is required to facilitate a move to demand or time based tariff structures. However, most meters currently installed at the premises of small customers in South East Queensland are accumulation meters i.e. type 5 or 6 meters. Accumulation meters can only be used to measure the total amount of electricity a consumer uses over a period of time and must be read manually.

Advanced metering such as type 1-4 meters can measure both how much electricity is used and when it is used. Such meters provide consumers with real-time electricity consumption data that enables them to make choices about how much electricity they are using and can also enable more innovative pricing. Advanced meters also enable a range of other electricity products and services which can offer a wide range of benefits to all parties across the electricity supply chain including consumers, retailers, distribution network businesses and energy services companies.

The AEMC has published the final rule change to facilitate a market-led deployment of advanced meters with the implementation date expected to commence 1 December 2017. The implication of this metering rule change is a greater take-up of advanced metering by residential and small business customers.

In developing the proposed cost reflective tariffs and the implementation of tariff reform, Energex has assumed that the appropriate metering will be available to support demand tariffs and that the market-led roll out of advanced meters will encourage the uptake of cost reflective tariffs.

3.5 Issues with current tariff structures

In light of the challenges noted above, Energex's current flat tariff structures for residential and small business customers are not adequately addressing the drivers of the network investment for the following reasons:

- They are not cost reflective: They do not signal how customer electricity usage contributes to network costs.
- They create inequity: Customers who invest in DER pay less than other customers despite not changing the way in which they impact network costs. Usage price signals lead to inefficient investment in solar PV and other technologies as customers make long term investment decisions based on consumption driven tariffs. Research has indicated that network charges for households without air-conditioners or solar PV are facing significantly higher electricity bills than they should be as a result of cross-subsidisation.[8]
- They drive price instability: As customers respond to current price signals by investing in solar PV and/or reducing electricity usage, these actions do not impact on demand which is the key driver to network investment. This, in conjunction with network augmentation undertaken during the 2004-10 period driven by changes to reliability standards, resulted in increasing network prices. In turn, these price increases have driven customers to respond by consuming less electricity resulting in further increases in prices. In the five years to 2013, the average Australian household electricity bill increased by 70 per cent.[9]

[8] Paul Simshauser, Network tariffs: resolving rate instability and hidden subsidies, A paper for the SAP Advisory Customer Council – Utilities, 16 October 2014.
[9] Grattan Institute, Fair pricing for power, July 2014.

4 Energex's tariff strategy

Energex's commercial sustainability is dependent on successfully navigating the challenges posed by emerging technologies, falling electricity consumption and fundamental changes in the way customers use the distribution network. Network tariffs are a critical component of Energex's response to these challenges.

Energex recognises the pivotal role tariff reform plays within the wider business. For this reason, Energex's tariff strategy has been carefully developed with a view to align with its corporate strategy, customer strategy and demand management (DM) strategy in order to achieve more efficient outcomes and meet customer expectations. Such a coordinated approach will ensure Energex will deliver our commitment to deliver services our customers need.

This chapter provides an overview of Energex' tariff reform and how it forms part of an integrated framework that places customers and commercial sustainability at its centre. It also considers the pace of implementation towards cost reflectivity after taking into consideration stakeholder feedback, market conditions and customer impact.

4.1 Energex's corporate strategy

Energex has developed a strategic framework that lays the foundation for Energex to be a more active, resilient and responsive participant in the ever changing energy market environment.

Energex's proposed tariff strategy supports its vision to "be the preferred supplier of connected electricity services" by enabling it to achieve long-term sustainability, be a consistent long-term value proposition to customers and provide contemporary network capability and service levels that reflect customer values and technology choices. Figure 4-1 below summarises Energex's over-arching strategic framework.

Figure 4-1 - Energex's corporate strategy

Vision (The desired state)	Be the preferred supplier of connected electricity services	
Purpose (What we do and why)	Deliver choice and affordability to meet our customers' evolving energy needs	
Objective (Our strategic intent)	Achieve balanced commercial outcomes for a sustainable future	
Aspirational goals	**Safety & People**	We strive to be the safest electricity distributor in the world, with an adaptive, engaged and diverse workforce
	Connected to our Customers & Community	Energex is a trusted community partner and customers' preferred supplier for selected energy services. We will continue to deliver network price rises below CPI that are fair and reasonable, and facilitate choice and control through new tariffs and services to keep our customers connected
	Business Sustainability	We will be commercially resilient, focused on delivering appropriate and sustainable financial returns, whilst pursuing business growth
	Operational Efficiency	We will be recognised as an intelligent connected network leveraging technology and data, and supporting sustainable energy to provide reliable and valued services for the future

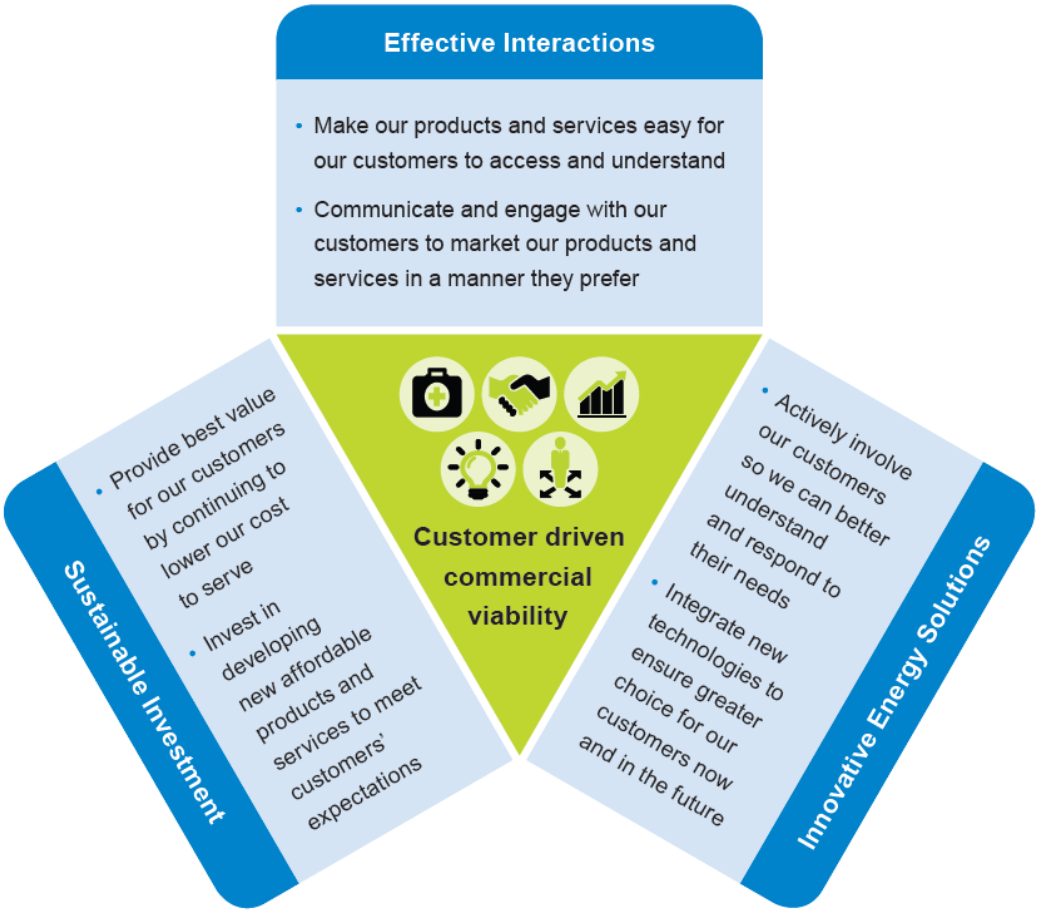
Source: Energex's 2016 Strategic Direction

Energex's vision of being a preferred supplier of connected services is underpinned by a clear and strong commitment to our customers. This means stable, fair, flexible and predictable energy pricing in delivering a continuous, reliable and safe power supply, as well as efficient costs, choice and control for customers, low carbon energy options and efficient integration of new technologies.

4.2 Interaction between tariff strategy and customer strategy

As a customer orientated initiative, tariff reform sits in the broader context of Energex's Customer Strategy in preserving Energex's commercially viability. Energex's commercial foundations are based on effective customer interactions, sustainable investment and innovative energy solutions. These three pillars of Energex's customer driven commercial viability are summarised in Figure 4-2.

Figure 4-2 - Customer driven commercial viability



Source: Energex's Customer Strategy 2015-20, Our customer driven future.

Energex's relationship with its customers must be built on the customer principles of safety, trust, efficiency, simplicity and choice. The manner in which these principles are acted upon and integrated within the implementation of tariff reform is outlined in Table 4.1 below.

Table 4.1 – Implementation of customer principles in tariff strategy

Principles	Action
Safety	• Ensure the connections processes for technology that supports tariff reform is safe, simple and efficient
Trust	• Ensure customers are consulted and their feedback taken into account when developing tariff reform • Form strong relationships with customers, customer representatives and stakeholders
Efficiency	• Ensure network tariffs promote efficient use of the network that will deliver sustainable outcomes for customers
Simplicity	• Develop tariffs that are easily understood and can be responded to • Develop communication tools that are relevant to customers and easily understood
Choice	• Provide choice through innovative products and services.

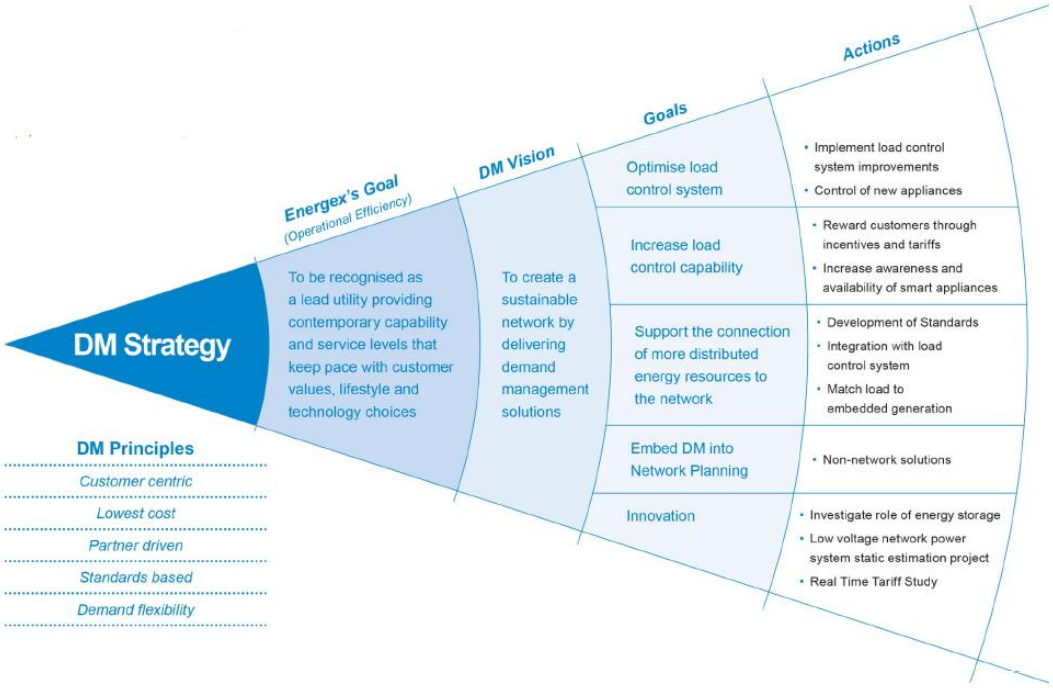
4.3 Interaction between tariff strategy, demand management (DM) and network planning

Energex has the largest DM program in Australia with more than 59 per cent of its customer base participating in DM initiatives.[10] While demand growth is expected to remain constant over the next five years, peak demand is forecast to be localised and seasonal with around 11.7 per cent of substations having a higher than forecast yearly growth rate of between 1 and 3 per cent.[11] This demand growth will require careful management.

Energex's DM and tariff strategies have been developed to complement each other and share the common objective to "create a sustainable network" by incentivising more efficient use of the network and delivering lower cost non-network solutions.

An overview of Energex's DM strategy is presented in Figure 4-3 below which shows that tariff reform is one of the mechanisms used to increase load control capability.

Figure 4-3 - Energex's DM strategy for 2016-21



Source: Energex's 2016/17 Demand Management Plan.

Energex's DM Plan is underpinned by five guiding principles. These are outlined in

Table **4.2** below.

[10] Energex, 2016/17 Demand Management Plan.
[11] Energex, Five Year Future Plan, 2015-20 Regulatory Proposal Overview, 2014.

Table 4.2 – DM's guiding principles

Guiding principles	Description
Customer centric	Create awareness and understanding to empower customers to make informed decisions; and work with customers to meet their needs and expectations.
Lower costs	Deliver the lowest cost to serve and reduce customer electricity bills.
Partner driven	Partner with industry channels to promote increase customer participation.
Standard bases	Collaborate with stakeholders to influence regulatory bodies in development of standards for smart appliances.
Demand flexibility	Evolve and expand capability to enable greater integration of distributed energy resources into the network.

Source: Energex's 2016/17 Demand Management

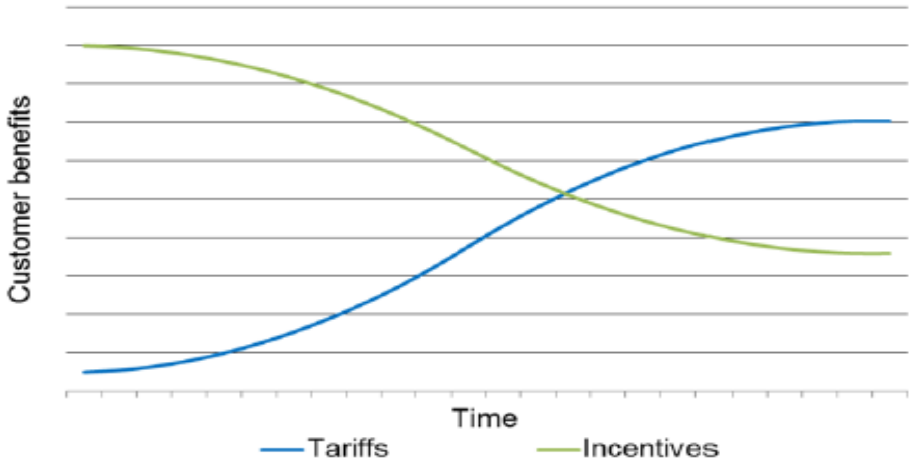
The principles underpinning Energex's DM strategy strongly align with the principles upon which Energex's tariff strategy was developed.

The integration between Energex's DM program and tariff strategy is key to providing the right combination of appropriate price signals and incentives to enable greater customer participation in DM initiatives. Energex anticipates that the positive payback provided directly to customers to enable greater adoption of load control services will continue to play an important role in future. This will enable customers to transition to cost reflective tariffs.

However, with increased customer uptake of cost reflective prices and market penetration of DM solutions, it is expected that the customer benefits will be gradually transitioning from upfront financial incentives to benefits gained from lower electricity bills for reducing their demand at peak times. Energex expects that the transitioning to demand tariffs will be supported by greater availability of automated load control of demand response ready appliances such as air-conditioning, hot water and pool pumps which will provide customers with a "set and forget" solutions, reducing customer concerns about being exposed to unexpected high bills.

Figure 4-3 below shows the inverse relationship between direct subsidies and customers' ability to unlock the value from cost reflective network tariffs.

Figure 4-4 - Transition from direct incentives to cost reflective pricing



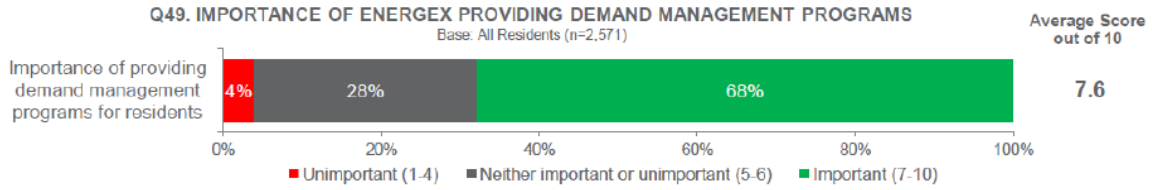
Source: Energex's 2016/17 Demand Management

Load control

Energex is of the view that the concurrent use of primary and secondary tariffs provides incentives to customers to improve their network utilisation through targeted lower electricity prices.

Primary tariffs can manage demand in a broad brush approach, while load control mechanisms support a more targeted approach to reducing localised peaks. For a number of years Energex has been offering load control tariffs which have proved to be an effective DM response valued by customers. This is demonstrated in Figure 4-5 below.

Figure 4-5 - Customer engagement research



Source: Colmar Brunton Customer Engagement Research, February 2014

As of 1 July 2016, Energex is offering a new residential primary cost reflective tariff (NTC7000 – Residential Demand) complimented by a new secondary load control tariff (NTC7300 – Smart Control) available to residential customers. The new demand tariff is designed to incentivise customers to use the network more efficiently by changing their individual peak demands so that they do not coincide with network peaks between 4-8pm weekdays. The load control tariff NTC7300 has been developed with a view to be attractive to those residential customers on a demand tariff by offering a lower usage rate, and focus on emerging technologies. With this new load control tariff, water heating, pool pumps, air conditioners, electric vehicles and small batteries with an Energex load control device, including demand response enabled device (DRED), will be permitted access in real time to

address local peaks as they develop. The terms and conditions for NTC7300 are outlined in Energex's annual pricing proposal, available on the Energex website.[12]

From 1 July 2017, Energex is proposing to offer a new cost reflective demand tariff available to small business customers who consume less than 100 MWh per annum (NTC7100 – Business Demand). It is anticipated that, as part of its long term tariff strategy, Energex will consider whether to expand the eligibility of load control tariffs to small businesses.

DMIA initiatives

To better inform the development of the demand tariff for residential customers, Energex required the development of residential customer load profile data to circumvent the limitations caused by the limited availability of advanced meters in South East Queensland. Energex engaged an external service provider, the Commonwealth Scientific and Industrial Research Organisation (CSIRO), to provide customer load profiling energy consumption at a low, medium and high scenario collated into identified customer segments based on demographics.

Following on from the success of the abovementioned project, Energex engaged external consultants[13] to develop load profile data for small business customers with consumption less than 100 MWh per annum. The absence of half hourly demand data for this customer group was an impediment to accurately inform, and actively engage with, customers about the impact of demand tariffs.

The Real Time Tariff Study (RTTS), as discussed in Section 7.7, is an outcome of Energex's engagement with stakeholders. It involves the study of a representative sample of residential customers who have taken up a voluntary demand tariff from 1 July 2016.

Finally Energex is investigating the impact of future network management issues and the interrelationship with cost reflective tariffs through the battery energy storage systems (BESS) trials. These trials include:

1) A targeted Market Based Battery Trial in cooperation with BESS manufacturers who are selling BESS to customers in SEQ. This trial runs in two stages: firstly with staff up to 15 sites, and secondly with customers in selected areas of the network.

2) A mobile, educational exhibit incorporating PV, residential BESS, a Home Energy Management System and a number of typical home appliances (eg dishwasher, TV, clothes washer/dryer).

These projects recognise the linkages between tariff reform and the DM program in promoting a more efficient use of the network, ensuring deferment of future network investment.

[12] https://www.energex.com.au/home/our-services/pricing-And-tariffs/residential-customers/pricing-publications
[13] Deloite Touche Tomatsu

Other DM and pricing interaction initiatives

Move to kVA-based demand

From 1 July 2015, tariffs for LV customers with consumption greater than 100 MWh per annum had their demand charges denominated in kVA rather than in kW to better reflect the physical capacity and associated costs on the network caused by this customer group. This pricing initiative was developed in conjunction with DM with a view to providing stronger incentives on customers to manage their load factor and improve their energy efficiency. This plan included a DM funding program to provide assistance to customers to prepare for the tariff change and install power factor correction (PFC) on site where low PFC would adversely affect customers' demand charge.[14]

Supporting embedded generation

Energex considers that the introduction of demand tariffs and new secondary load control tariffs from 2016-17 will incentivise investment in embedded generation that can be used to reduce network peak demand.

Embedded generators assigned to demand based tariffs will be rewarded through lower network charges if they are able to reduce demand on the network during peak times, leading to more efficient outcomes for all customers. The use of solar PVs in conjunction with battery storage has the potential to unlock the real benefits of the proposed cost-reflective tariffs as electricity will be generated and stored for use during peak demand periods. This will become particularly true when granular, time and location cost reflective tariffs are offered.

'Solar sponge'

Energex believes that there is significant potential for shifting 'troughs' in demand. This would provide improvements in network utilisation and reduction in power quality issues with minimal customer impact.

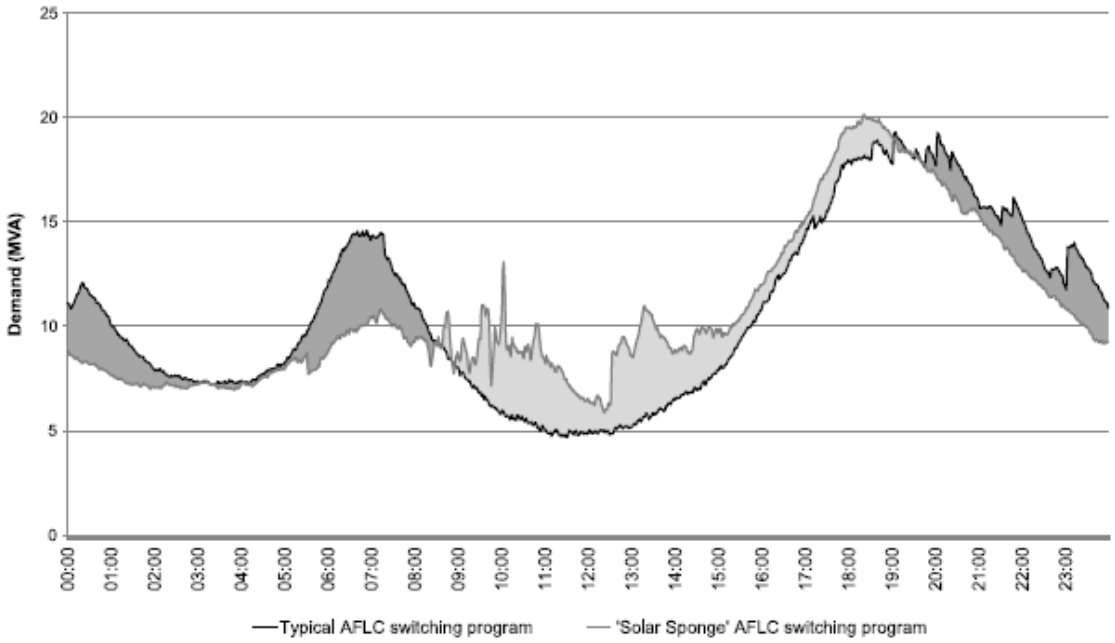
Traditionally the audio frequency load control (AFLC) program has been used to reduce system peak demand. Energex is now trialling an alternative switching program whereby electric storage for hot water systems on control load tariffs are used as a 'solar sponge' to integrate renewables into the network.[15]

Figure 4-6 shows the benefit of using controlled load electric hot water systems to reduce the morning peak and fill the trough during the middle of the day, thereby improving network utilisation and reducing power quality issues.

[14] Energex, 2016/17 Demand Management Plan, page 15.

[15] V Swinson, J Hamer & S Humphries, Taking demand management into the future: Managing flexible loads on the electricity network on using smart appliances and controlled loads, Economic Analysis and Policy 48 (2015), 193-203.

Figure 4-6 Comparison of traditional AFLC switching program versus 'solar sponge' switching program



Source: V. Swinson et al., Economic Analysis and Policy 48 (2015)

Network planning

Growth in peak demand is a key driver of network augmentation as Energex must ensure there is sufficient network capacity to meet demand at peak times. Furthermore, for reliable and secure electricity supply, Energex must ensure that appropriate levels of network investment are made in advance of projected demand.

Timing and scope of Energex's capital expenditure is based on a ten year demand forecast which is reflective of the impact of embedded generation, emerging technologies and anticipated demand reductions resulting from DM including the introduction of cost reflective tariffs.

The key drivers underpinning Energex's forecasts are summarised in Table 4.3.

Table 4.3 - Outline of key drivers

Factor	Forecast	Description
Customer behaviour drivers		
Price	Energy demand	Price is included as a specific variable in the multi-regression equation used to explain the system summer demand.
Solar PV	Energy demand	Residential solar PV has a significant impact on energy delivered, but is expected to grow at a slower rate than in the past two years due to reduced subsidies. An estimate of the avoided sales from solar PV is included in total energy forecasts. Solar PV is included in the forecasting model as a direct coefficient to capture the impact on system peak demand.
Electric vehicles	Energy demand	Minimal impact is expected over the short term, due to high initial costs (lack of government incentives) and vehicle performance concerns.
Battery	Energy demand	Battery storage is gaining some interest in association with solar PV. It is anticipated that battery storage will become economically viable by the end of a 10-year forecast horizon. The impact on energy and demand will depend on tariff structures, customer drivers and whether it is linked to solar PV or used to reduce demand during the peak.
Temperature drivers		
Temperature sensitivity	Energy demand	Summer ambient temperatures and behavioural responses to turning on and operating cooling equipment, such as air-conditioning, influence the forecasts. Temperature sensitivity of daily peak demand can be expressed in MW per degree C and is based on the daily peak demand and the daily average Amberley temperature.
Air- conditioning load	Energy demand	Air-conditioning load continues to increase, but at a slower rate due to milder summers, supressed economic conditions and Energex's peak-smart program to manage air-conditioning load. Load is based on the latest forecast from Energy Consult provided in April 2014[1].
Economic drivers		
Economic growth	Energy demand	Forecast gross state product (GSP) figures are used to model economic growth. Energex has used the base case GSP growth prepared by NIEIR in July 2014[1] in preparing the forecasts.
Population growth and distribution	Energy demand customers	Residential customer growth is driven directly by population growth. Commercial/industrial growth is driven by population growth and economic activity.
Other drivers		
Government policy	Energy demand	Government programs or policies which influence consumers to change their energy usage or their impact on peak demand will have an impact on Energex's forecasts. The Queensland Government Climate Smart program and the solar PV FiT policy are two such examples.
Demand management	Energy demand	Energex's demand management strategy to deliver a reduction in future peak demand. Targeted demand management is now being applied at Zone and Bulk Supply substations that are approaching limitations with the intent to defer capex.
Risks		
Promotion of new technology	Energy demand	Promotions which may encourage a higher take-up of new technologies such as battery storage and electric vehicles.
Closure of large industry	Energy demand	Unexpected closure of large industrial customers will affect energy and demand forecasts.

Note:
1. Additional details are provided in Appendix 16 of Energex's 2015-20 Regulator Proposal.

Source: Energex's Regulatory Proposal June 2015 to June 2020, November 2014

As more granular demand data becomes available over time, Energex anticipates greater levels of accuracy in its forecasting methodology, particularly at the LV level.

4.4 Key elements of Energex's tariff strategy

Energex's tariff strategy for large business customers reflects the maturity of this customer group. As large customers have been exposed to cost reflective tariffs for some time now, Energex does not intend to make significant changes to the large customer tariffs during the 2017-20 period. Instead, Energex's attention will be on transitioning residential and small business customers toward more cost reflective tariffs, expecting wider adoption in the 2020-25 regulatory control period.

Demand based tariffs are expected to reward customers who use the network efficiently and will provide the financial incentives to other customers to modify their consumption behaviour.

Energex acknowledges that customers and other stakeholders expressed concerns about applying demand based tariffs to residential customers, suggesting instead that time of use energy tariffs might be more appropriate for these customers. Nevertheless Energex notes that the use of demand based tariffs is well supported across the industry. The analysis conducted by the Energy Networks Association, Grattan Institute, Deloitte Access Economics, Energeia and the AEMC have all concluded that demand tariffs are most effective in terms of cost reflectivity, revenue stability and bill stability.

Energex also notes Professor Simshauser's findings that the optimal tariff structure is a three-part demand tariff comprising of fixed charge, a time-of-use variable rate and a demand charge covering sunk costs based on coincident maximum peak.[16]

Further, Energex is persuaded by the results of the Rewards Based Tariff trial it undertook from 2011 to 2013 that demonstrated that residential customers can understand and respond to demand tariffs.

The current environment of reduced demand growth also provides an opportunity to establish demand tariffs and incentivise changes in customer usage behaviours while mitigating the impact on customers. In addition, Energex proposes to:

- retain the existing residential and small business time of use tariffs
- offer load control tariffs as one of the tools to manage their demand.

4.5 Pace of tariff reform

In considering the implementation of its tariff strategy, Energex has taken into account the market conditions, the impact of tariff reform on customers and feedback provided by

[16] Paul Simhauser, Network tariffs: resolving rate instability and hidden subsidies, A paper for the SAP Advisory Customer Council – Utilities, 16 October 2014, page 19.

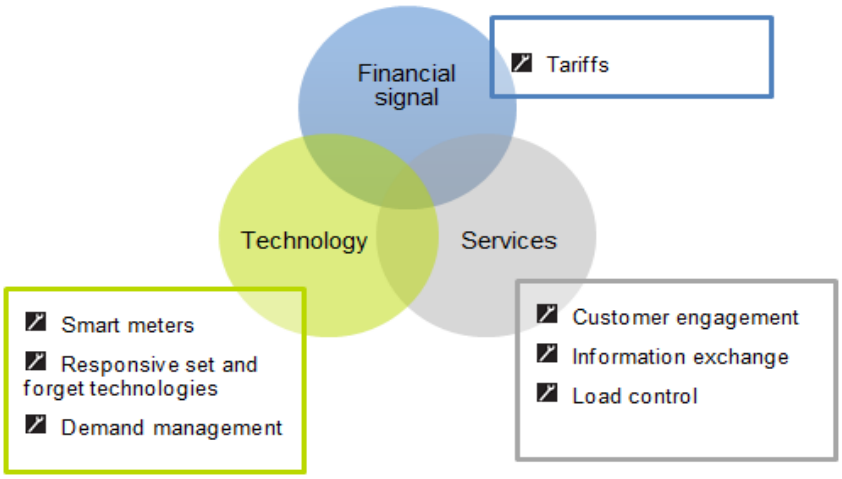
stakeholders as part of our engagement process.[17] For these reasons, Energex considers a voluntary introduction of cost reflective tariffs is the most suitable approach in the short term.

4.5.1 Market conditions

The success of the market reform lies at the point where the network price signals are matched with the provision of services to customers and the availability of a range of enabling technologies. The introduction of cost reflective demand based tariffs will enable customers to benefit from new technological developments, product innovation and behavioural changes.

Figure 4-7 below illustrates the new market environment in which tariff reform is only one element of the value chain.

Figure 4-7 - Market environment



Energex recognises that the implementation and success of tariff reform will only happen through a coordinated market approach and the active engagement of a wide range of stakeholders, including electricity retailers, customers, customer advocacy groups and government agencies. It is also reliant on the uptake of new technology such as advanced metering.

Energex acknowledges that the design of the tariff requires careful consideration to avoid signalling demand too sharply leading to bill shock.

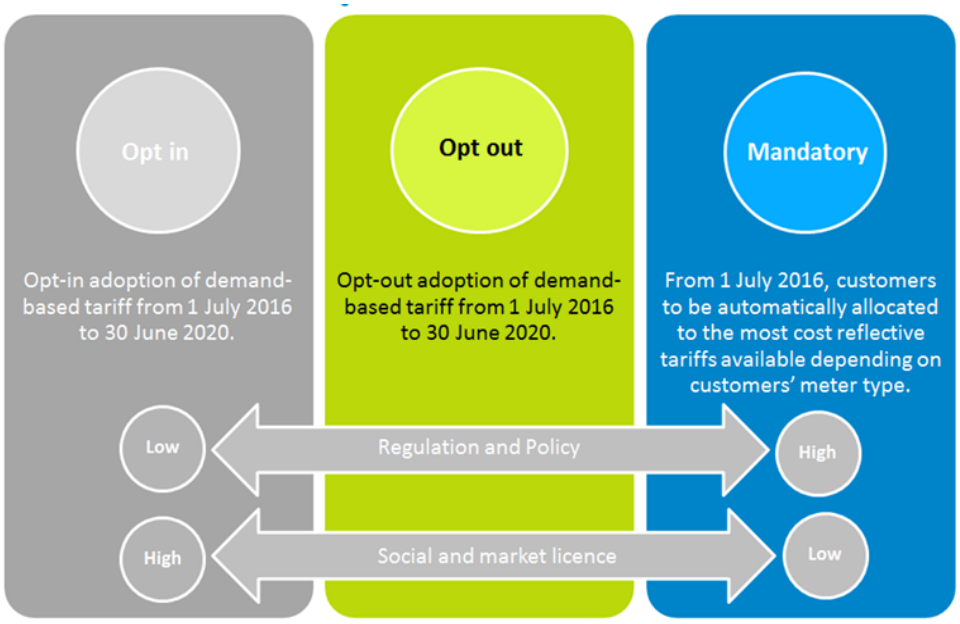
4.5.2 Implementation options

A key element of Energex's tariff reform strategy is the pace at which the move towards cost reflective/demand tariffs should take. Figure 4-8 illustrates the options ranging from an opt-in/market driven approach to mandatory/regulatory driven. The options include:

[17] Refer to Appendix 2 of these Explanatory Notes, Table A,2

- Opt in: This voluntary opt-in option provides customers with choice and allows time to develop social and market licence prior to mandating the tariff reform.
- Opt out: An opt-out option is where all customers who build a new home and require metering (new meters), or upgrade their metering will default to the demand tariffs with the choice to opt-out. This option provides customers with choice but may be perceived as being similar to the mandatory option.
- Mandatory: All customers will be assigned to demand tariffs upon installation of appropriate metering. This will enable a faster implementation of tariff reform despite not having customers' buy-in or the right market conditions.

Figure 4-8 - Pace of tariff reform



The tariff reform implementation options need to consider the following:

- availability of appropriate metering and other enabling devices
- availability of data
- customer understanding and social licence
- transitional arrangements to mitigate price shocks
- protection mechanisms for vulnerable customers
- retailer buy-in.

Energex notes Deloitte's comment about the merits and risks associated with the pace of adoption of tariff reform:[18]

"Approaches that rely on customers voluntarily adopting tariffs may have limited effectiveness on changing overall consumption patterns if only those customers who benefit from the tariff design adopt it. On the other hand, approaches that mandate the adoption of certain tariffs may lead to bill shocks and customer resistance – especially if customers are not fully educated on the tariff's operation".

Based on the above considerations, Energex is proposing to adopt an opt-in and market driven approach for 2017-20 period. Energex's long term strategy for the 2020-25 regulatory control period will focus on further pursuing the adoption of cost reflective tariffs.

4.6 Long term strategy

Having regard to the impact of tariff reform on residential and small business customers and limited availability of response enabling technologies and services, Energex is proposing a progressive reform package that will span across regulatory control periods.

Energex acknowledges that ongoing engagement with customers and stakeholders is necessary and has initiated a RTTS conducted in partnership with retailers and other relevant stakeholders. This study will ensure:

- demand based tariffs are easily understood
- relevant information and tools are developed to assist customers to adapt and respond to the tariff signals
- inform the development of its short and long term tariff strategies.

Table 4.4 provides an overview of Energex's short and long term tariff reform.

Table 4.4 - Short and long-term pricing strategy and implementation approach

	2017-20 TSS	2020-25 TSS
Context	• Limited growth in energy sales, and localised peak demand. • Lower revenue allowance from AER in the 2015-20 regulatory control period compared to the previous allowance.	• Increasing energy sales and peak demand. • Greater uptake of smart meters. • Greater availability of customer data. • Development of enabling technologies.

[18] Deloitte Access Economics, Residential electricity tariff review – Report commissioned by the Energy Supply Association of Australia, Final Report, 22 January 2014, page 6.

Focus	• Build social licence for progressing tariff reform. • Focus on minimising cross-subsidisation between customers, and on greater equity for customers.	• Review of tariff reform in light of the evidence gathered from the RTTS. • Investigate optional critical peak demand response tariffs to curb growth in expected peak demand. • Consider alignment of network tariffs with market shift to simplicity (eg telecommunication tariff model)
Delivery	• Start transitioning customers to cost reflective prices. • Engagement with customers, and partnership with retailers and relevant stakeholders through the RTTS.	• Increase the adoption of cost reflective tariffs depending on the evidence available to date and uptake of smart meters and other technologies. • Pursue the removal of non-cost reflective tariffs.

Energex acknowledges the significant work undertaken by the Energy Networks Association (ENA) and CSIRO with the Electricity Network Transformation Roadmap.[19] This work will inform the short and long-term tariff strategy of electricity network businesses. The ENA's report sets out the pathway for DNSPs toward cost reflective tariffs in the short-term, referred to as the First Wave of tariff reform, and the long-term, referred to the Second Wave of tariff reform. The First Wave scenario refers to the initial program of tariff reform starting in 2016 or 2017 during which DNSPs' tariff structures and tariff assignment mechanisms as proposed in their initial TSS, will initiate transitioning to demand based network tariffs for residential and small business customers. During this period, migration of customers to cost reflective tariffs will take place mainly on a voluntary basis. The Second Wave of tariff reform refers to the period between 2020 to 2025 which is characterised by mandatory demand based tariffs and voluntary tariffs offering more granular time and locational pricing signals such localised pricing options (eg demand management storage tariff, critical peak pricing, and peak time rebates) and voluntary incentive (payment) options (eg ancillary services payments).

[19] Electricity Network Association, Electricity Network Transformation Roadmap 2015-25 – Interim Program Report, 2016.

5 Rationale for the SCS tariff classes and tariff structures

This chapter explains the reasons for the proposed tariff classes and tariff structures for SCS over the 2017-18 to 2019-20 period.

5.1 Energex's tariff classes

Under chapter 10 of the Rules, tariff classes are defined as 'a class of customers for one or more direct control services who are subject to a particular tariff or particular tariffs'. All customers who take supply from Energex for direct control services are a member of at least one tariff class.

Energex's tariff classes group retail customers on the basis of their usage, voltage level and nature of connection in accordance with clause 6.18.4 of the Rules. Further, in accordance with clause 6.18.3(d) of the Rules, Energex's tariff classes group retail customers together on an economically efficient basis as to avoid unnecessary transaction costs.

In the 2015-20 Regulatory Proposal, Energex proposed to align tariff classes with voltage levels. This is because Energex is only able to calculate LRMC on a voltage basis, and the cost to serve customers remains proportional to consumed demand within each voltage level. This enables Energex to group similar customers together and minimise the administrative burden of customers transitioning between tariff classes.

The AER approved the three tariff classes developed by Energex, namely:[20]

- Standard Asset Customers (SAC) for customers connected at the low voltage (LV) network
- Connection Asset Customers (CAC) for a customers with a network coupling point at 11kV
- Individually Calculated Customers (ICC) for customers coupled to the network at 110kV or 33kV.

More details on tariff classes can be found in Chapter 3 of the revised TSS.

5.2 Energex's tariffs

Each tariff class consists of a number of individual tariffs that are established on the same basis as the tariff classes. This ensures there are not an excessive number of tariffs and the available tariffs are clear and easily understood. Ultimately, this minimises transaction

[20] Australian Energy Regulator, Final Decision Energex Determination 2015-16 to 2019-20, attachment 14 – Control Mechanisms, October 2015.

costs that may be incurred by customers due to switching between tariffs and for Energex in managing the provision of an excessive number of tariffs.

Proposed tariff for the ICC tariff class

Energex's proposed ICC tariff for the 2017-20 period is included in Table 5.1 below.

Table 5.1 - ICC tariff for 2017-20

Tariff class	Tariffs	Tariff description
ICC	NTC1000 - ICC	Customers in the ICC tariff class are assigned to this tariff

Proposed tariffs for the CAC tariff class

Energex's proposed CAC tariffs for the 2017-20 period are included in Table 5.2 below.

Table 5.2 - CAC tariffs for 2017-20

Tariff class	Tariffs	Tariff description
CAC	NTC3000 - EG 11kV[1]	Previously, this tariff was allocated to customers who were predominantly generation customers with a generation capacity greater than 30 kVA. New customers with these characteristics will be allocated to either NTC4000 – 11kV Bus or NTC7400 – Demand ToU 11kV depending on the customer's particular connection characteristics (refer to Section 5.3 for further details).
	NTC4000 – 11kV Bus	Customers with a network coupling point at an 11kV zone substation bus via a dedicated 11kV feeder that is not shared with any customer.
	NTC4500 – 11kV Line	Customers with a network coupling point at an 11kV feeder shared with other customers.
	NTC8000 – HV Demand[1]	Previously, this tariff was allocated to 11kV customers with energy less than 4 GWh per year and demand less than 1MVA. New customers with these characteristics will be allocated to either NTC4000 – 11kV Bus or NTC4500 – 11kV Line depending on the customer's particular connection characteristics (refer to Section 5.3 for further details).
	NTC7400 – Demand ToU 11kV[2]	Default cost reflective tariff for customers with a network coupling point at 11kV feeder shared with other customers. The demand charging window is outlined in Table 5.6

Note:
1. Grandfathered since 1 July 2015.
2. New tariff from 1 July 2017

Proposed tariffs for the SAC tariff class

Energex's proposed SAC tariffs for the 2017-20 period are included in Table 5.3 below.

Table 5.3 – SAC tariffs for 2017-20

Tariff class	Tariffs	Tariff description
SAC	NTC8100 – Demand Large	This tariff is available to large low voltage customers with consumption greater than 100 MWh per year. Small customers may voluntarily access this tariff. Customers must have appropriate Type 1-4 metering to access this tariff.
	NTC8300 – Demand Small	This tariff is the default tariff for low voltage customers with consumption greater than 100 MWh per year. Small customers with consumption less than 100 MWh may voluntarily access this tariff. Customers must have appropriate Type 1-4 metering to access this tariff.
	NTC7200 – LV Demand ToU[1]	This tariff is available to large customers with consumption greater than 100 MWh per year. Small customers may voluntarily access this tariff. Customers must have appropriate Type 1-4 metering to access this tariff.
	NTC8500 – Business Flat	This tariff is the default tariff for low voltage business customers with consumption less than 100 MWh per year.
	NTC8800 – Business ToU	This tariff is available to business customers with consumption less than 100 MWh per year. This ToU tariff accounts for when, as well as how much, electricity is used by each customer. With ToU, electricity is priced differently depending on the time of day electricity is consumed during off-peak hours, peak hours and shoulder times. Customers must have ToU-capable metering installed to access this tariff. ToU charging timeframes are outlined in Table 5.5.
	NTC7100 – Business Demand	This tariff is available to business customers classified as small (with a consumption less than 100 MWh per year) and cannot be used in conjunction with Business flat (NTC8500). Customers must have appropriate Type 1-4 metering to access this tariff. The demand charging window is outlined in Table 5.6.
	NTC8400 – Residential Flat	This tariff is the default tariff for residential customers regardless of their size and cannot be used in conjunction with Residential ToU (NTC8900 – Residential ToU).
	NTC8900 – Residential ToU	This tariff is available to residential customers regardless of their size and cannot be used in conjunction with Residential flat (NTC8400 –

Tariff class	Tariffs	Tariff description
		Residential Flat). Customers must have a ToU-capable meter to access this tariff. ToU charging timeframes are outlined in Table 5.5.
	NTC7000 – Residential Demand[2,3]	This new cost reflective demand tariff is available to residential customers regardless of their size and cannot be used in conjunction with tariff NTC8400 – Residential Flat or NTC8900 – Residential ToU. Customers must have a Type 1-4 meter to access this tariff. The demand charging window is outlined in Table 5.6.
	NTC9600 - Unmetered	This tariff is applicable to unmetered supplies. This includes facilities such as street lighting, public telephones, traffic signals, public barbecues and watchman lights. Energex only provides connection to the network for these services. The unmetered supply tariff therefore seeks to only recover a contribution towards the shared network (use of system charge). For the provision of street lighting services, additional levies may be incurred and recovered as an ACS.
	NTC9900 – Solar FiT[4]	This tariff is part of the SBS, and is available to eligible customers participating in the Scheme. The Queensland Government sets the FiT rate (cents per kWh – c/kWh) to be paid for the excess energy generated and fed back into the electricity grid: A 44 c/kWh FiT rate will be paid to customers who became part of the scheme before 9 July 2012 up until 2028 where they continue to meet eligibility requirements.

Note:
1. New tariff available from 1 July 2018.
2. New tariff available from 1 July 2016.
3. Financial Risk Reduction Mechanism (FRRM) applies to this tariff as per the terms and conditions set out in Appendix 2 of the revised TSS.
4. Additional information on eligibility under the scheme can be accessed from the Department of Energy and Water Supply (http://www.dews.qld.gov.au/energy-water-home/electricity/solar-bonus-scheme).

Secondary tariffs

Energex's proposed secondary tariffs for the 2017-20 period are included in Table 5.4 below.

Table 5.4 – Secondary tariffs for 2017-20

Tariff class	Tariffs	Tariff description
SAC	NTC9000 – Super Economy	Details provided in secondary tariffs' terms and conditions in Energex's Annual Pricing Proposal from 1 July 2016.
	NTC9100 - Economy	Details provided in secondary tariffs' terms and conditions in Energex's Annual Pricing Proposal from 1 July 2016.
	NTC7300 – Smart Control[1]	Details provided in secondary tariffs' terms and conditions in Energex's Annual Pricing Proposal from 1 July 2016.

Note:
1. New tariff available from 1 July 2016.

Time of Use charging timeframes

Time of Use (ToU) tariffs offer lower charges during off-peak and shoulder periods and higher charges during peak periods. The charging timeframes for ToU usage tariffs are included in Table 5.5.

Table 5.5 – ToU usage charging timeframes

Tariff	Network Tariff Code	Charging timeframes	Weekdays[1]	Weekends
Residential ToU	NTC8900	Off-Peak	10pm – 7am	10pm – 7am
		Shoulder	7am – 4pm, 8pm – 10pm	7am – 10pm
		Peak	4pm – 8pm	No peak
Business ToU	NTC8800	Off-Peak	9pm – 7am	Anytime
		Peak	7am – 9pm	No peak
ICC, CAC	NTC1000 NTC4000 NTC4500 NTC8000 NTC3000	Off-Peak	11pm – 7am	Anytime
		Peak	7am – 11pm	No peak

Note:
1. Include government specified public holidays

The charging timeframes for ToU demand tariffs are included in Table 5.6.

Table 5.6 – ToU demand charging windows.

Tariff	Network Tariff Code	Charging timeframes	Workdays[1]	Weekends
Residential ToU	NTC7000	Off-Peak	8pm – 4pmm	Anytime
		Peak	4pm – 8pm	No peak
Business ToU	NTC7100 NTC7200 NTC7400	Off-Peak	9pm – 9am	Anytime
		Peak	9am – 9pm	No peak

Note:
1. Workdays are weekdays but exclude government specified public holidays

5.3 Implementation of Energex's tariffs

As discussed in Section 4.5.2, Energex's implementation strategy over the 2017-20 period is to offer new cost reflective tariffs for the CAC and SAC tariff classes on an opt-in basis. Contrary to its initial TSS, Energex does not propose to remove any legacy tariffs during the initial phase of the tariff reform. During this transitional period, existing customers on legacy tariffs will be minimally impacted and may elect to be assigned to a cost reflective tariff.

Energex will consult with customers as part of the 2020-25 TSS development to inform its decisions about the removal of the legacy tariffs and how best to transition the affected customers to cost reflective tariffs.

Energex's tariff implementation strategy for the 2017-25 period is summarised in Table 5.7 below.

Table 5.7 - Proposed tariff strategy for legacy and cost reflective tariffs

Tariffs		2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
ICC tariff class											
NTC1000	ICC	No change									
CAC tariff class											
NTC4000	11kV Bus	Default for 11kV Bus customers					Strategy to be decided as part of the 2020-25 TSS				
NTC4500	11kV Line			Grandfathered			Removal date to be decided as part of the 2020-25 TSS				
NTC3000	EG-11kV	Grandfathered					Removal date to be decided as part of the 2020-25 TSS				
NTC8000	HV Demand	Grandfathered					Removal date to be decided as part of the 2020-25 TSS				
NTC7400	Demand ToU 11kV			Offered (Default for new 11kV line customers and optional for all existing 11kv line customers)			Date to become the default tariff for all tariffs (except 11kV Bus) to be decided as part of the 2020-25 TSS				
SAC tariff class											
NTC8100	Large demand	Optional tariff					Strategy to be decided as part of the 2020-25 TSS				
NTC8300	Small demand	Default tariff					Strategy to be decided as part of the 2020-25 TSS				
NTC7200	LV demand				Offered		Strategy to be decided as part of the 2020-25 TSS				

Tariffs		2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
	ToU				(optional)						
NTC8400	Residential flat	Default tariff					Strategy to be decided as part of the 2020-25 TSS				
NTC8900	Residential ToU	Optional tariff					Strategy to be decided as part of the 2020-25 TSS				
NTC7000	Residential demand		Offered (optional)				Date to become the default tariff to be decided as part of the 2020-25 TSS				
NTC8500	Business flat	Default tariff					Strategy to be decided as part of the 2020-25 TSS				
NTC8800	Business ToU	Optional tariff					Strategy to be decided as part of the 2020-25 TSS				
NTC7100	Business demand		Offered (optional)				Date to become the default tariff to be decided as part of the 2020-25 TSS				
Secondary tariffs											
NTC9000	Super Economy	Optional tariff					Strategy to be decided as part of the 2020-25 TSS				
NTC9100	Economy	Optional tariff					Strategy to be decided as part of the 2020-25 TSS				
NTC7300	Smart Control		Offered (optional)				Strategy to be decided as part of the 2020-25 TSS				

ICC tariff implementation strategy

The tariff in the ICC tariff class is already cost reflective and does not require any further changes.

CAC tariff implementation strategy

As foreshadowed in Energex's response to the AER's Issues Paper on the Queensland TSS proposals, Energex's initial tariff strategy for CAC customers will no longer proceed with the removal of the legacy tariffs due to insufficient social licence.[21] This proposition was subsequently supported by the AER.[22]

Energex is proposing to introduce a new voluntary cost-reflective tariff (NTC7400 – Demand ToU 11kV) only available to 11 kV line customers that share a feeder from 1 July 2017.[23] This new tariff is not suitable for customers with a coupling point at an 11kV substation with a dedicated feeder as these customers' particular connection characteristics impact the way costs are allocated to them.

Existing 11kV line customers on NTC4500 - 11kV Line (grandfathered from 1 July 2017), NTC3000 - EG 11kV or NTC8000 - HV Demand (grandfathered since 1 July 2015), will remain on their legacy tariffs during the initial stage of Energex's tariff reform, except if they choose to be assigned to the new cost reflective tariff NTC7400.

It is proposed that the NTC4000 - 11kV Bus becomes the default tariff from 1 July 2017 for customers with an 11kV bus configuration. New 11kV customers with a bus configuration will therefore be assigned automatically to NTC4000 and will not be allocated a share of the feeders used by 11kV customers with a line configuration.

From 1 July 2017, new embedded generators connected at the 11kV network will either be assigned to NTC4000 – 11kV Bus or the new cost reflective tariff NTC7400 – Demand ToU 11kV.

Energex intends to consult further with affected CAC customers as part of the 2020-25 TSS development (second stage of Energex's tariff reform), to determine:

- The best time to remove the legacy tariffs.
- The best time when the cost reflective tariff NTC7400 will become the default tariff for the 11kV customers with a line configuration.
- Whether NTC4000 – 11kV should remain the default tariff for 11 kV customers with a bus configuration.

[21] Energex, Response to the AER's Issues Paper: Tariff Structure Statement Proposals – Queensland electricity distribution network service providers, Attachment 1, April 2016.
[22] Australian Energy Regulator, Draft Decision Tariff Structure Statement Proposal Energex & Ergon Energy, August 2016, page 70.
[23] Customers with a line configuration are coupled at an 11kV feeder shared with other customers.

SAC tariff implementation strategy

During the 2017-20 period, Energex does not propose any change to the legacy tariffs NTC8300-Small Demand which will remain the default tariff, and NTC8100-Large Demand which will be offered on a voluntary basis. This "soft approach" to tariff reform recognises that SAC Large customers have already been impacted by the kVA-based charges and Energex considers that they need to continue to familiarise themselves with this form of pricing. However, a new ToU demand tariff, NTC7200-LV Demand, will introduced from 1 July 2018 on a voluntary basis.

A new voluntary cost reflective tariff for residential customers (NTC7000-Residential Demand) was offered from 1 July 2016. This tariff introduces the new concept of demand to residential customers. Legacy tariffs for residential customers, NTC8400-Residential Flat and NTC8900-Residential ToU, will remain unchanged during the 2017-20 period. This tariff strategy is predicated on the limited availability of smart meters, insufficient data for residential customers, and the need for this customer group to get more familiar with the concept of demand.

Energex's strategy is to make the cost reflective tariff voluntary until 2020. Energex will consult as part of the 2020-25 TSS to determine whether the cost reflective demand tariff NTC7000-Residential Demand should be made mandatory after 2020, and whether the legacy tariffs should be grandfathered and subsequently removed.

Similarly to the residential tariffs, Energex's strategy for small LV business customers with an annual consumption less than 100 MWh is to offer a new cost reflective demand tariff, NTC7100-Business Demand, on a voluntary basis from 1 July 2017. Energex also proposes not to make changes to legacy tariffs NTC8500-Business Flat and NTC8800-Business ToU until 30 June 2020. Energex will consult further to determine the pace of the tariff reform for small business customers over the 2020-25 period.

Finally, Energex has introduced a new secondary tariff NTC7300- Smart Control available to residential customers with Type 4 meters assigned to NTC7000-Residential Demand, NTC7100-Business Demand, NTC7200-LV Demand or NTC8100-Large Demand and NTC8300-Small Demand. This availability of this secondary tariff may be extended to small LV business customers after 2020. Secondary tariffs NTC9000-Super Economy and NTC9100-Economy remain unchanged until 30 June 2020.

5.4 Rationale for the tariff structures

The term 'tariff structure' is the combination of the charging parameters within a specific tariff. The charging parameters that may be used when constructing network tariffs include a combination of the following:

- Daily supply charge (also known as fixed charge)
- Flat charge (also known as energy or volumetric charge)
- ToU usage charge

- Demand charge
- Capacity charge.

Charging parameters are structured to provide signals to customers about the efficient use of the network and their impact on future network capacity and costs. Charging parameters are discussed in Section2.2.

The section below details Energex's approach in setting the charging parameters for the new cost reflective tariffs.

5.4.1 Residential SAC tariffs

The tariff structure of NTC7000 is as follows:

- Fixed charge ($/day)
- Usage charge (c/kWh)
- Demand charge ($/kW/month)

The demand charging parameter for NTC7000 is calculated using a single maximum half-hourly demand in each monthly billing period, measured between 4 pm and 8 pm only on workdays. Energex has not introduced seasonality to its demand charging parameter.

An important component of Energex's tariff reform for residential customers is the introduction of a financial risk reduction mechanism (FRRM) that will allow residential customers to experience demand tariffs with limited exposure to bill shock. Further details on the proposed mechanism are provided in Section 6.3.1.3.

Selecting the Peak Period

Energex's preference for setting the peak period for NTC7000 between 4 pm and 8 pm on workdays is based on the following reasons. The first reason relates to the ability of residential customers to respond to price signals. Energex is of the view that if the peak period is set too wide, residential customers may find it difficult to shift their discretionary load (such as washing machines, dryers and dishwashers) to the off-peak period. Energex believes that setting the peak period to 4-8 pm workdays will demonstrate that behavioural change is achievable resulting in a wider acceptance of the tariff reform. Finally, Energex's analysis of the overall residential demand, as shown in Figure 5-1 supports the fact that the peak period for residential customers occurs between 4 pm and 8 pm.

Figure 5-1 - Residential half-hourly demand profile (weekdays, maximum MW)

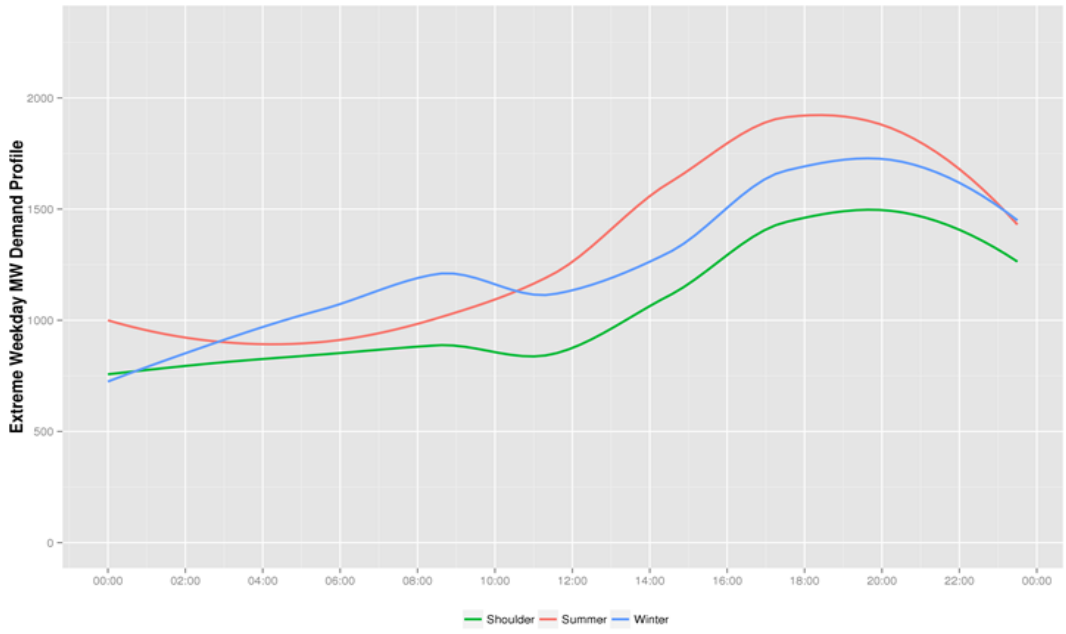


Figure 5-2 - Energex's network demand chart

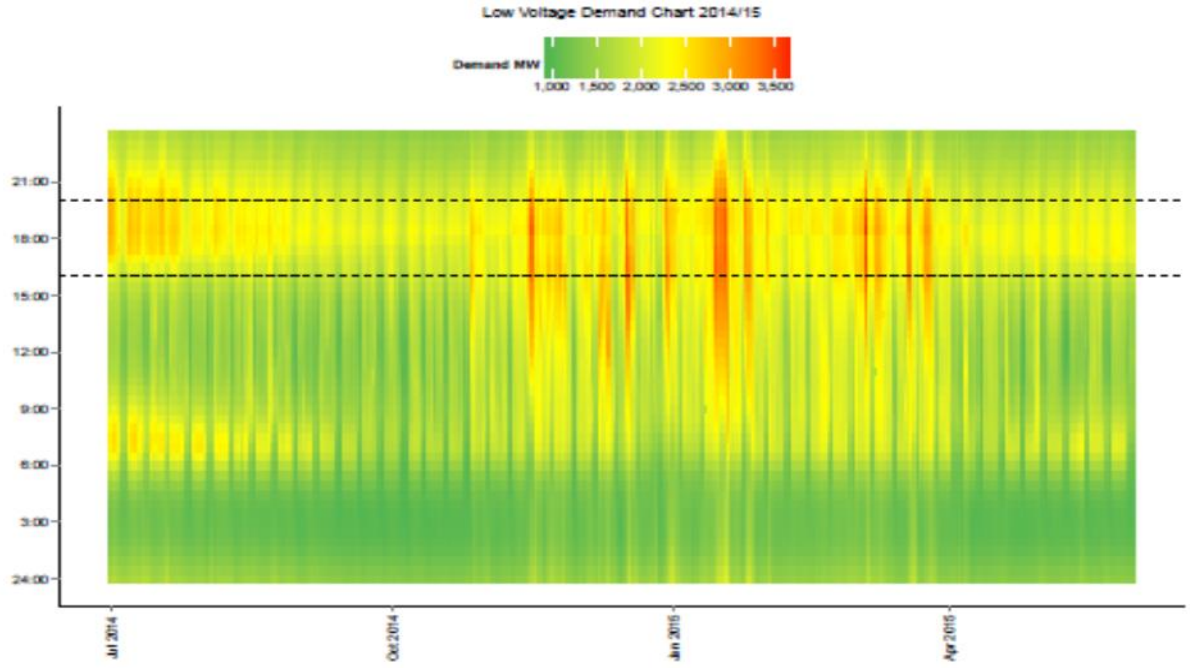


Figure 5-2 illustrates the pattern of demand over the course of the year, and in particular illustrates the time of year and time of day that the highest demands are recorded. These are shown in red, and typically occur during summer, and to a lesser extent during winter, in the late afternoon and early-mid evening. Periods of low demand, shown in green, are typically observed during the early mornings and on weekends. It should be noted that peak demands that occur after 8 pm are well managed by Energex's load control program.

As Energex is proposing a new load control tariff that is suitable for air conditioners, pool pumps and hot water systems, the main contributors to summer peak demand, it is anticipated that any peaks occurring outside of the 4 – 8 pm window can be managed through this expected additional control. Further, the 4 – 8 pm window is of a duration that customers find manageable, and familiar because of Energex's previous 'Can it wait 'til after 8?' campaign. This analysis underpins Energex's decision to measure peak demand for residential customers between 4 pm and 8 pm workdays only, without regard to seasons. Energex is of the view that weekend peaks can be managed through load control tariffs.

Single peak or average of four peaks

Resulting from the engagement undertaken to date, retailers have indicated their preference for a single peak demand measurement, whereas stakeholders have given mixed feedback about whether or not the average of the top four peaks should be used to measure demand.

For those customers preferring the average of the top four demand measurements, such an approach was perceived to be less punitive and would result in greater stability in charges.

While acknowledging mixed feedback from customers on this issue, Energex is concerned that the complexity in deriving an average demand may result in confusion among residential customers and impact their ability to understand their electricity bill. Furthermore, retailers conveyed their lack of support for an averaging of the peaks as this approach is not operationally viable. Therefore, Energex's preference in the short term is to set the demand measurement on a single maximum demand in a billing period.

Seasonal and locational charges

In recent years, Energex has shifted from a winter peak to a summer peak, driven by the rapid emergence of large thermally sensitive loads, such as air conditioners. However, while Energex's network peaks in summer at a network level, peaks change and vary with seasons at a more granular, localised level. A substantial number of Energex substations do peak in winter and shoulder seasons. A summer specific demand charge would not address seasonal variations at a more localised network level. As network investment is driven by localised peaks a seasonal demand charge may not address some of Energex's localised peak constraints.

Energex has developed a demand tariff that is not seasonal but rather based on all year round demand. It is expected that this will make it easier for customers to understand and is simpler in terms of stability and bill predictability. It should also be noted that Energex's large customers are not currently charged a seasonal demand.

In relation to locational charges, Energex will not expose small customers, connected at LV to any locational signal. This is consistent with customer preferences expressed during the engagement phase of tariff design.

5.4.2 Standard Asset Customer (SAC) – Small (business)

Energex is proposing to introduce a new demand tariff for small business customers, NTC7100 – Business Demand, from 1 July 2017 on a voluntary basis.

Unlike residential customers, Energex does not propose to introduce a mechanism that will allow small business customers to experience demand tariffs with limited exposure to bill shock. This issue is further discussed in Section 6.3.2.

The tariff structure of NTC7100 is as follows:

- Fixed charge ($/day)
- Usage charge (c/kWh)
- Demand charge ($/kW/month)

The demand charging parameter for NTC7100 is calculated using a single maximum half-hourly demand in each monthly billing period, measured between 9am and 9pm only on workdays. Energex has not introduced seasonality to its demand charging parameter.

The rationale for setting the elements forming part of the charging parameters for the small business demand tariff (NTC7100) is provided in below.

Selecting the Peak charging window

Energex's rationale for setting the charging window between 9am and 9pm is provided in section 5.4.5 below.

Single peak or average of four peaks

The reasons for choosing single peak over the average of four peaks are the same as for residential tariffs as discussed in Section 5.4.1 below.

Seasonal and locational charges

The reasons for not adopting seasonal or locational charges are the same as for residential tariffs as set out in Section 5.4.1.

5.4.3 Standard Asset Customer (SAC) – Large

Energex is proposing to introduce a new cost-reflective tariff (NTC7200 – Demand ToU LV) from 1 July 2018.

The tariff structure of NTC7200 is as follows:

- Fixed charge ($/day)
- Usage charge (c/kWh)

- Demand charge ($/kVA/month)
- Excess demand charge ($/kVA/month)

As a result of the change to kVA-based demand charging introduced from 1 July 2015 for SAC large customers and considering the feedback received to date from customers, Energex is not proposing tariff structure changes during the 2017-20 period. However, Energex will continue to adjust the demand $/kVA/month charges to bring them into alignment with LRMC.

Given Energex's longer term strategy to move towards cost reflective ToU demand tariff structures, some customers and stakeholders have expressed interest in a voluntary (opt-in) ToU demand tariff.

Selecting the Peak charging window

The charging window for the new cost reflective tariff NTC7200 is between 9am and 9pm. The rationale for selecting this window is detailed in section 5.4.5 below.

Excess demand charge

In addition to having ToU demand charging parameter, Energex proposes to include an excess demand rate. This excess demand rate will be cheaper than the peak demand rate, reflecting the fact that off-peak network usage is less likely to contribute to network augmentation requirements. This change would encourage customers with discretionary load to move their network usage into off-peak hours. Energex anticipates that it will result in improved network utilisation and address the longer term drivers of network augmentation. Currently customers are charged the same price for demand regardless of when their maximum demand is placed on the network.

The excess charge is based on the maximum of:

- Zero,
- Maximum kVA demand measured as a single peak over a 30 minute period between 9 pm and 9 am on workdays or anytime on non-workdays, minus the peak demand quantity.

Energex also proposes to lower the DPPC daily supply charge of this voluntary tariff. This enables the development of a strong LRMC demand signal.

Seasonal and locational charges

The reasons for not adopting seasonal or locational charges are the same as for residential tariffs as set out in Section 5.4.1.

5.4.4 Connection Asset Customers (CAC)

As discussed in Section 5.2, Energex is proposing to introduce a new voluntary cost-reflective tariff (NTC74000 – Demand ToU 11kV) available from 1 July 2017 to customers with a coupling point at an 11kV feeder shared with other customers.

The tariff structure of NTC7400 is as follows:

- Supply charge ($/day/$M-CAV and $/day/$M-NCCAV)
- Usage charge (c/kWh)
- Demand charge ($/kVA/month)
- Excess demand charge ($/kVA/month)

The rationale for setting the elements forming part of the charging parameters for the new CAC tariff is provided below.

Daily supply charge for the new proposed demand tariff (NTC7400)

Energex has received feedback from customers that the ability to budget for future electricity costs is critical to business operations. The existing structure of the DUoS daily supply charge is individually calculated for each customer each year which makes it difficult for customers to forecast their charges. In response, Energex proposes to charge a capital charge ($/NCCAV/day), and an operation and maintenance charge ($/CAV/day). Energex will work with customers to inform them of their non-contributed connection asset valuation (NCCAV) and connection asset valuation (CAV).

As a result of customers having a common capital charge and operation and maintenance charge, Energex would require far fewer network tariffs (ultimately reducing from about 400 tariffs to 1 tariff). This should improve customers' ability to estimate electricity costs over a longer period of time.

In order to provide customers with the ability to budget electricity charges in advance, it is also necessary to reform the pass through of transmission fixed charges. Consequently Energex proposes to not individually price DPPC fixed charges. The DPPC demand charge will be brought into alignment with transmission LRMC and will signal the incremental cost of augmenting the transmission network, and will match the structure of the DUoS demand charge. Energex will work with customers to discuss transitionary price paths up to 2020 for impacted customers.

ToU demand charge for the new proposed demand tariff

Energex's proposed ToU demand tariff structure for CAC customers includes a peak demand charge during a peak period between 9 am and 9 pm weekdays. The rationale for this charging window is detailed in section 5.4.5 below.

Excess demand charge

The new NTC7400 introduces the concept of excess demand charge to the CAC tariff class. This excess demand rate will be cheaper than the peak demand rate, reflecting the fact that off-peak network usage is less likely to contribute to network augmentation requirements. This change would encourage customers with discretionary load to move their network usage into off-peak hours. Energex anticipates that it will result in improved network utilisation and address the longer term drivers of network augmentation. Currently customers are charged the same price for demand regardless of when their maximum demand is placed on the network.

The excess charge is based on the maximum of:

- Zero,
- Maximum kVA demand measured as a single peak over a 30 minute period between 9 pm and 9 am on workdays or anytime on non-workdays, minus the peak demand quantity.

5.4.5 Energex's rationale for selecting the charging window for business customers

Energex notes that, in the Draft Decision, the AER indicated a requirement for further justification for its charging window for business customers.[24] Energex has outlined below its more detailed analysis supporting the proposal for a 9 am to 9 pm demand peak period for all business customers.

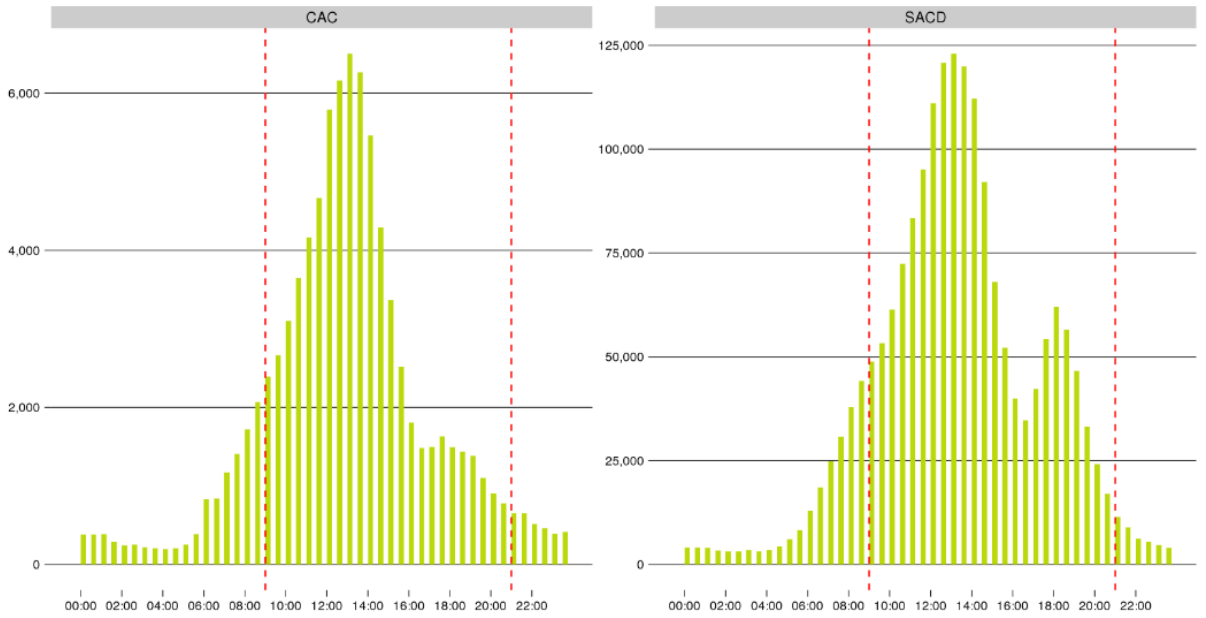
The objectives guiding the proposed charging window are to avoid creating new peaks across the system and provide business customers with the incentive to focus on managing their discretionary load within the period rather than trying to shift it outside.

Analysis of the top 1 per cent of business customer monthly demands for each month from September 2015 to August 2016 supports Energex's proposal to set the morning boundary at 9 am for business customers. By 9 am a large number of medium sized businesses (on a SAC Demand tariff) and large business customers (on a CAC tariff) are starting to experience peak demands at their sites (refer Figure 5-3).

When considering business customers in isolation, the alignment of the proposed evening boundary of 9 pm with the load profile of business customers is less apparent. The number of CAC customers reaching peak demands drops from about 6 pm onward with more significant declines after 8 pm. SACD customer demand profile shows a brief spike in customers reaching peak demands between about 6 pm and 8 pm. This evening spike may be caused by customers using cooling or heating to suit their business needs. It can be noted that a small number of business customers are still reaching some peak demands between 9 pm and 9 am.

[24] Australian Energy Regulator, Draft Decision Tariff Structure Statement Proposal Energex & Ergon Energy, August 2016, page 47.

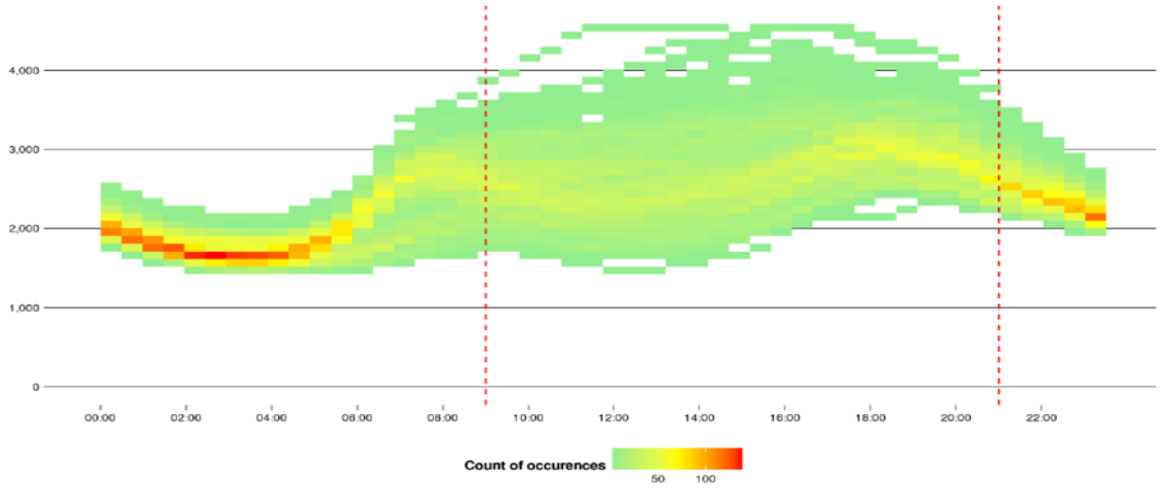
Figure 5-3 - Distribution of top 1 per cent of monthly demand for CAC and SAC Demand customers



Pressure on zone substations after 8 pm becomes more apparent when considering the combined impact of residential and business customers. It should be noted that zone substations in the Energex network serve predominantly a mix of residential and business customers. It is therefore not practical to focus on a particular group of customers in isolation when considering constraints.

Figure 5-4 below shows the system level demand (residential and business customers combined) based on aggregating 30 minute interval data from zone substations and the variation in network usage between typical days and extreme days.[25] The upper green area represents the infrequent occurrences of peak demand at zone substations which may cause the need for network investment.

Figure 5-4 - Aggregate MVA demand for zone substations July 2015 to June 2016

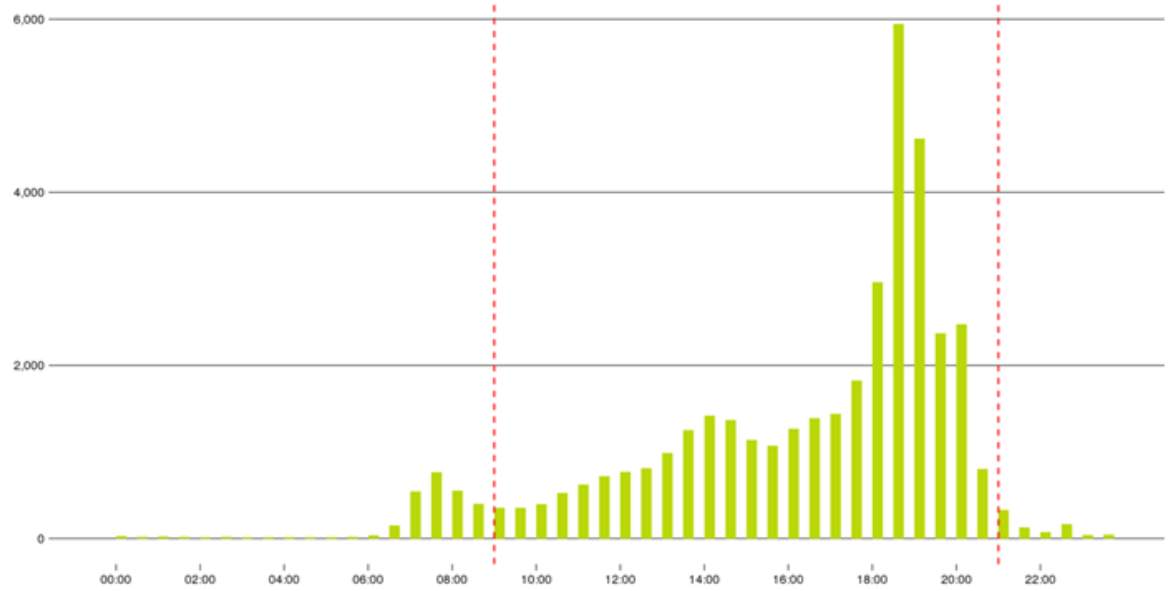


[25] The entirety of the data set has not been validated or verified and is used as received from the data sources; some data, such as zone sub data, has only been partially validated at source.

Evening peaks at a system level tend to decrease from about 6 pm. After 9 pm the system level demands are around the same level seen before 8 am.

Figure 5-5 shows that zone substations across the Energex network start to reach peaks in small numbers from around 7 am with most peaks occurring between 5 pm and 8 pm. It is not until after 9 pm that the occurrence of peaks is significantly reduced.

Figure 5-5 - Distribution of top 1 per cent of monthly demand for zone substations July 2015 to June 2016

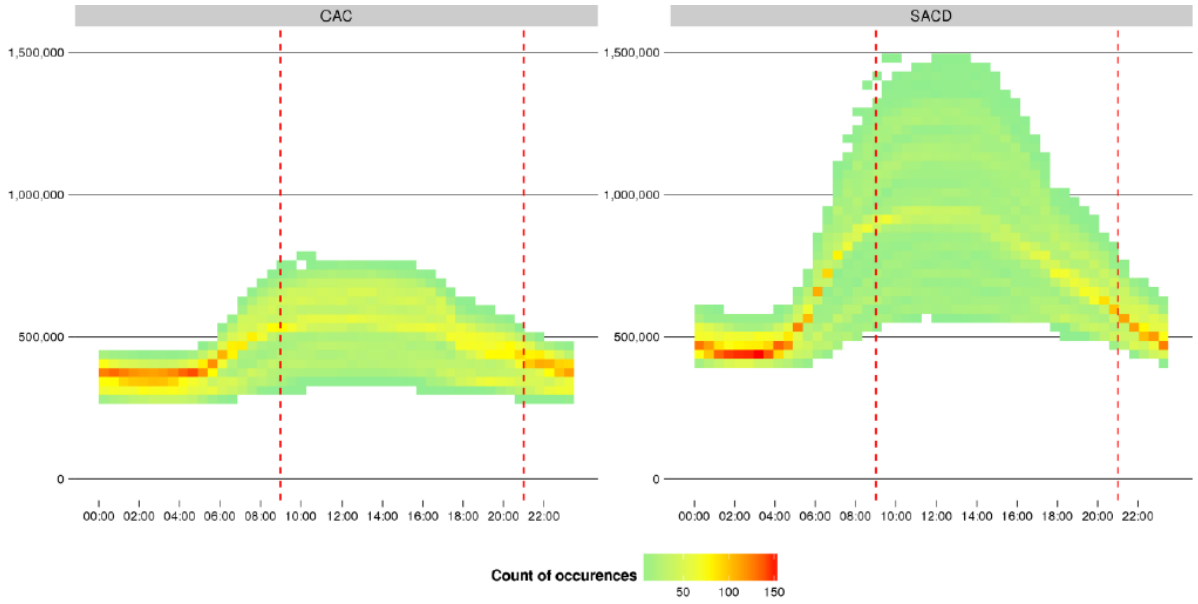


Narrowing the charging window by bringing forward the evening boundary from 9 pm to 8 pm is not practical as it would coincide with the end of the residential charging window. This could result in business and residential customers potentially shifting their discretionary demand just outside the charging peak period boundary to create new peaks. Energex is therefore of the view that staggering the evening boundaries for residential and business customers would reduce the risk of having a new peak forming after 8 pm. This is consistent with the approach adopted by Ergon Energy in its 2017-20 TSS. Further, given the considerable demand levels required by large industrial customers on the network, changes in their consumption patterns could have a significant impact on the overall network and therefore should be considered carefully to ensure that they do not undermine the benefits sought by offering cost reflective tariffs to residential customers.

Energex considers that the proposed charging window incentivises business customers to reduce the magnitude of their peaks within the demand period by improving their load factor and asset utilisation, rather than shift their load outside the period. The effect of business customers re-arranging their consumption profiles within the proposed charging window boundaries would benefit both customers by reducing their maximum demand, and the network by relieving constraints.

Figure 5-6 illustrates that the volatility in customer demand on peak days, particularly for the medium size businesses, could be more efficiently managed through better asset utilisation.

Figure 5-6 - Aggregate kVA demand (CAC and SAC Demand customers) – Sept 2015 to Aug 2016



Improving asset utilisation could be achieved, for example, by investing in load factor correction equipment or in solar PV to reduce potential peaks during the day, or more efficient use of their air conditioning systems.

Given that network constraints generally occur to individual substations or feeders at particular times and with a variety of causes, Energex believes that truly cost reflective network tariffs will only be achieved when locational and dynamic tariffs are made available. Such tariffs will enable distributors to target particular parts of the network experiencing constraints. However in these early stages of the tariff reform, it is recognised that using network wide demand signals will require a degree of subjectivity, balancing the need to manage peaks at various peaking zone substations and network assets against the impact on customers. Energex is therefore of the view that the 9 am to 9 pm demand charging window for business customers achieves the right balance.[26]

Finally, Energex considers that its approach to tariff reform is progressive and, in developing the 2020-25 TSS, Energex proposes to further engage with customers and review the data associated with the introduction of cost reflective tariffs to inform its proposed tariff strategy, including the demand charging windows.

[26] It should be noted that the 9 am-9 pm charging window 83.7% of large customer peaks will be captured, and 86.2% of medium sized business customers.

5.4.6 Individually Calculated Customers (ICC)

Energex does not propose to initiate any further changes to the current structure of NTC1000 during the 2017-20 period.

The tariff structure of NTC1000 is as follows:

- Supply charge ($/day)
- ToU usage charge (c/kWh)
- Capacity charge ($/kVA/month)
- Demand charge ($/kVA/month)

5.5 Load control tariffs

From 1 July 2016, Energex has introduced a new secondary load control tariff NTC7300 – Smart Control. NTC7300 will only be available to residential customers with primary tariffs NTC7000 – Residential Demand, NTC7100 – Business Demand, NTC7200 – LV Demand ToU, NTC8100 – Large Demand and NTC8300 – Small Demand. The terms and conditions for secondary load control tariffs are provided in the Energex Annual Pricing Proposal.

The benefit received by customers in return for load control is relative to the primary tariff the customer accesses. Price modelling has shown that the usage charging parameter of NTC7000 – Residential Demand is substantially less than the cheapest existing secondary load control tariff, discouraging customers from continuing with existing load control tariffs at the adoption of demand tariffs. Consequently, it is inappropriate to pair the existing secondary load control tariffs with the new residential demand tariff.

Furthermore, the increased focus on emerging technologies such as batteries and electric vehicles makes it essential to develop a load control tariff that encourages customers in investing in technologies that will benefit the network.

Energex is intending to retain over the 2017-20 period the current load control tariffs NTC9000 – Super Economy, and NTC9100 – Economy. These tariffs can be used in conjunction with usage based tariffs but not in conjunction with NTC7000.

It is anticipated that water heating, pool pumps, air conditioners, electric vehicles and small batteries with an Energex load control device, including demand response enabled device (DRED), be permitted access to NTC7300. This tariff will have flexible operation times and may be used to soak up solar PV electricity exports during the day, increasing the benefit to Energex's network, and consequently reducing the price charged to customers,.

The other key advantages in offering NTC7300 include the following:

- The tariff enables Energex to unwind the cross subsidy caused by air conditioning without imposing price shock on customers.

- Energex uses this control to reduce network peaks while minimising the impact on customers' comfort.
- The potential impact of adopting a cost reflective tariff could be mitigated by allowing Energex to benefit from control of the specified appliances.
- The price path of NTC7300 is designed such that the retail offering is attractive to customers relative to substitute products such as gas and solar.

The technology and service offerings for small business customers is currently the least developed of all customer cohorts. They do not have access to a controlled load tariff, and are not large enough to make formal energy consultancy viable. Given the lack of load control tariffs for these customers, Energex has limited ability to address peak demand through its services and technology, and will continue to investigate the appropriateness of critical peak price or critical peak rebate tariffs for this group of customers.

5.6 Other small customer tariffs

NTC9600 – Tariff applicable to unmetered supplies which recovers the contribution towards the shared network. It is allocated on a cent per kWh basis. No change is proposed.

5.7 Assignment of customers to tariff classes and tariffs

Energex considers the usage profile of customers in the assignment to tariff classes. In accordance with clause 6.18.4(a)(3) of the Rules, Energex does not treat customers with micro-generation facilities less favourably than customers without such facilities but with a similar load profile in assigning customers to tariff classes. Energex's tariff class and tariff assignment procedures are detailed in Chapter 5 and Appendix 3 in the revised TSS.

5.8 Indicative pricing schedule for SCS

In accordance with the Rules requirements , Energex has developed an indicative pricing schedule for SCS for each year of the revised TSS (2017-20). The indicative pricing schedule is included in Appendix 1 of the revised TSS.

It is important to note that these indicative prices are not the actual prices that a customer will pay each year but rather are intended to provide a robust guide to the likely prices. Actual tariffs may vary from the indicative tariffs in the TSS due to a variety of reasons such as under or over revenue collection in any individual year, future regulatory decisions for transmission revenue or successful cost pass through applications.

Actual prices experienced by our customers will depend on a number of factors outside of Energex's control, including the consumption profile of each customer and the manner in which retailers pass through network charges to the customers in retail tariffs.

In addition, under the maximum revenue cap applied to Energex's revenues earned from providing SCS, annual actual prices will differ from the indicative prices in the revised TSS to

the extent that the electricity consumption and demand assumptions upon which the latter prices are based differ from the actual electricity consumed by customers.

For these reasons, Energex emphasises that the network prices presented are indicative only, not binding and are for the purposes of providing a high level overview of the expected price impact for customers for the 2017-18 to 2019-20 period. Existing tariff charges should not be extrapolated by the indicative annual price increases without considering the impact of retailer strategies, customer adoption of alternative tariffs, changes to electricity usage or incentives provided to customers beyond Energex's control in relation to how they consume electricity.

Indicative prices in the revised TSS have changed significantly to the initial TSS for the following reasons:

- Anticipated decrease in DPPC as proposed by Powerlink for the 2017-22 regulatory period[27]
- Updated CPI
- Updated cost of debt
- Updated jurisdictional scheme amounts
- Updated under/over-recovery amounts.

[27] AER's Draft Decision on Powerlink's 2017-22 Determination is due in September 2016, and the Final Decision is expected to be published in April 2017.

6 Compliance with Pricing Principles

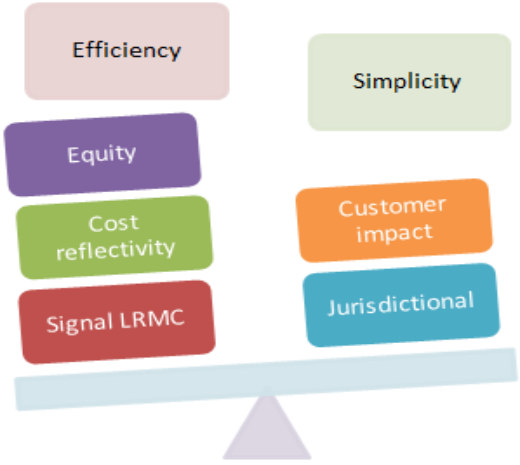
The purpose of this chapter is to discuss the key requirements of the pricing principles as set out in the Rules and to demonstrate how the TSS complies with the pricing principles. In complying with the pricing principles, Energex must meet the Network Pricing Objective, which is that the tariffs a Distribution Network Service Provider (DNSP) charges in respect of its provision of direct control services to a customer should reflect the DNSP's efficient costs of providing those services.

Clause 6.18.1A(b) of the Rules requires that a TSS must comply with the pricing principles which are provided for in clause 6.18.5 of the Rules. The pricing principles require that:

- The revenue to be recovered must lie between an upper bound (stand alone cost) and a lower bound (avoidable cost).
- Tariffs must be based on LRMC of providing the service.
- Tariffs must be designed to recover Energex's efficient costs of providing network services in a way that minimises distortions to the price signals.
- Energex must consider the impact on customers of changes in tariffs from the previous year and may vary from the pricing principles after reasonable period of transition to the extent necessary to mitigate the impact of changes.
- The structure of each tariff must be reasonably capable of being understood by customers having regard to the customer types, feedback resulting from the engagement with customers and compliance with all the other pricing principles.

In some cases, the pricing principles may conflict or compete with each other. As noted by Deloitte, "each tariff design has its own strengths and weaknesses and it is unlikely that any particular tariff design will perform well against every factor or every circumstances".[28]

Figure 6-1 - Pricing principles



[28] Deloitte Access Economics, Residential electricity tariff review – Report commissioned by the Energy Supply Association of Australia, Final Report, 22 January 2014.

The Rules allow departure from the pricing principles to the minimum extent necessary to meet the consumer impact pricing principle or jurisdictional obligations.[29]

Compliance with the pricing principles is further discussed in the sections below.

6.1 Stand alone and avoidable cost

Clause 6.18.5(e) of the Rules requires that the revenue expected to be recovered from a tariff class must lie on or between:

- An upper bound representing the stand alone cost of serving the retail customers who belong to that class, and
- A lower bound representing the avoidable costs of not serving those retail customers.

Energex's approach to meet the stand alone and avoidable cost principle is outlined in Chapter 2 of the revised TSS.

6.2 Long run marginal cost

Rule 6.18.5(f) requires Energex to base network tariffs on LRMC. The Rules define LRMC in Chapter 10 as "the cost of an incremental change in demand for direct control services provided by a Distribution Network Service Provider over a period of time in which all factors of production required to provide those direct control services can be varied."

The concept of marginal cost refers to the change in total costs from producing one additional unit of good and service. In electricity networks, this could be the incremental capital and operating costs incurred from one additional customer connecting to the network or an additional megawatt of demand.

Pricing on the basis of LRMC assumes that prices should be based on the cost of meeting an increase in demand over an extended period of time. As demand on the electricity network increases, network capacity needs to be expanded to accommodate the additional demand. By basing prices on LRMC, Energex can better signal to customers how their behaviour impacts the forward augmentation costs of the network and this, in turn, will be better reflected in the prices that our customers pay for electricity. LRMC for each tariff is based on the demand charge expressed in $/kW or $/kVA.

The Rules do not prescribe any particular approach to be used by DNSPs in calculating LRMC. However, the Rules stipulate that the method of calculating LRMC and the manner it is applied must have regard to:

- The costs and benefits associated with calculating, implementing and applying that method as proposed.

[29] National Electricity Rules, clause 6.18.5(c).

- The additional costs likely to be associated with meeting demand from retail customers that are assigned to that tariff at times of greatest utilisation of the relevant part of the distribution network.

- The location of retail customers that are assigned to that tariff and the extent to which costs vary between different locations in the distribution network.

- Energex does not yet collect the data required to calculate LRMC on a geographic basis. Energex intends to examine its data requirements further in the upcoming regulatory control period and will consider the balance between cost reflective locational price signals, tariff simplicity and the ability for customers to respond to that signal.

However, large customers connected at 11 kV have locational signals built into the location specific nature of their fixed charges. Large customers connected at 33 kV and 110 kV have locational attributes taken into consideration through the site specific calculation of demand and capacity charges.

Energex's approach

Energex has estimated LRMC values at the voltage level using the Average Incremental Cost (AIC) method. This is consistent with the approach used by other DNSPs.

The AIC approach captures the average change in expenditure arising from increases in peak demand. Energex believes that the adoption of the AIC approach aligns with other electricity distributors.

Equation 6-1 - LRMC: average incremental cost method

$$\text{LRMC (AIC)} = \frac{\text{PV(Capex)} + \text{PV(Opex)}}{\text{PV(Incremental Demand)}}$$

where:

'PV (Capex)' and *'PV (Opex)'* represent the Present Value (PV) costs associated with meeting future additional demand .

The augmentation capex values include the costs associated with the future growth and compliance requirements relating to:

- Sub-transmission assets (HV)

- 11kV distribution assets (11kV)

- Uprated pole top transformers (LV)

- Uprated pad mount transformers (LV)

Energex uses its forecast augmentation program including the program approved by the AER in its Interim Decision for the 2015-20 regulatory control period.[30] It should be noted that the augmentation costs beyond the 2015-20 regulatory control period are based on the final year of the regulatory control period, held constant.

The AER's assessment of Energex's initial TSS proposal found that the approach used by Energex to estimating LRMC was consistent with achievement of compliance with the distribution pricing principles. However it was noted that Energex had not incorporated any forward looking replacement expenditure in its LRMC estimate. While the Rules did not prescribe which costs should and should not be included in LRMC estimates, the AER suggested that Energex consider incorporating replacement capex (and associated opex) to LRMC estimates in future TSSs.[31]

Recognising not all customers contribute to network peaks at the same time, Energex applies diversity factors to the LRMC values. This adjustment to the LRMC values ensures customers are not overly compensated or penalised for their contribution to the network peaks. Energex's estimated diversity factors for the 2017-20 period are included in Table 6.1 below.

Table 6.1 - LRMC diversity factors

Diversity	Tariff	Tariff description	Diversity factor
CAC	NTC3000	EG-11kV	0.8000
	NTC4000	CAC-11kV Bus	0.8000
	NTC4500	CAC-11kV Line	0.8000
	NTC7400	Demand ToU 11kV	0.8000
	NTC8000	HV Demand	0.8000
SAC	NTC8100	Large Demand	0.7750
	NTC8300	Small Demand	0.7500
	NTC7200	LV Demand ToU	0.7750
	NTC8500	Business Flat	0.7000
	NTC8800	Business ToU	0.7000
	NTC7100	Business Demand	0.7000
	NTC8400	Residential Flat	0.6500
	NTC8900	Residential ToU	0.6500
	NTC7000	Residential Demand	0.6500

[30] It should be noted that these values were further adjusted to reflect the AER's Final Decision on augmentation values.
[31] Australian Energy Regulator, Draft Decision Tariff Structure Statement proposal – Energex & Ergon Energy, August 2016, pages 56-7.

Diversity	Tariff	Tariff description	Diversity factor
	NTC9000	Super Economy	1.0000
	NTC9100	Economy	1.0000
	NTC7300	Smart Control	1.0000
	NTC9600	Unmetered	1.0000

The LRMC values are based on the Net Present Value of the augmentation capex and associated opex (inclusive of capitalised overheads and on-costs) between 2015 to 2023.

6.3 Managing customer impact

Clause 6.18.5(h) of the Rules requires that Energex must consider the impact on customers of changes in tariffs and may vary tariffs to the extent it considers reasonably necessary, having regard to:

- The desirability for tariffs to comply with the pricing principles after a reasonable period of transition.
- The extent to which customers can choose the tariff to which they are assigned.
- The extent to which customers are able to mitigate the impact of changes in tariffs.

Energex understands that a move to new tariff structures and cost reflective prices will impact customers differently.

Energex published a Customer Impact Statement (CIS) in September 2015.[32] This CIS included indicative prices and estimated customer billing impacts. The indicative prices and customer impacts contained in the CIS were based on the AER's April 2015 preliminary decision on Energex's forecast distribution revenue for the 2015-20 regulatory control period. The impacts were calculated on the assumption of complete uptake without any underlying change to usage profiles. Stakeholders provided feedback on the CIS, which was integrated into the revised TSS.

This chapter provides a customer impact assessment of the proposed tariff reform using the most up to date prices and details how customers who do choose to adopt demand tariffs can respond through usage behavioural change and technology adoption.

[32] The CIS is available on Energex's website: https://www.energex.com.au/about-us/corporate-responsibility/connecting-with-you/Influencing-future-network-tariffs/your-network-your-choices.

6.3.1 Impact of tariff reform on residential customers

6.3.1.1 Customer load profile

As noted in the CIS, Energex has limited load profile data on residential customers, a prerequisite to determine the impact of demand tariffs. To address these data limitations, Energex commissioned the CSIRO to undertake a load profile collection study for residential customers.[33]

As part of this study, customer load profile and demographic data was collected to provide understanding of customer impacts. The study concluded in June 2015, and the results were used to quantify the financial impact of tariff reform for inclusion in the CIS.

Specific outputs from the CSIRO modelling include:

- Estimates of aggregate load behaviour for the complete Energex residential customer base for multiple years and presented in half-hourly resolution.
- A concise set of profiles that describe distinct residential load behaviours at half-hourly resolution and for a full year.
- A small set of distinct residential market segments that describe the demographics of the Energex residential customer base, providing insight into dwelling type, household makeup, solar uptake and tariff selection.
- Distinct load profiles for each market segment for a full contiguous year and at half-hourly resolution, with outputs underlining the diversity of behaviours present within each demographic class.
- High-resolution illustrative load curves for price-exposed and vulnerable consumers.
- A review of how demographic skew influences aggregate neighbourhood load behaviour.
- Physics-based load modelling, reviewing the impact.

Energex considers it inappropriate to summarise consumption profiles of each customer cohort in a succinct manner. This is because any form of summarising (averaging over each customer in a cohort, averaging over each month of the year, presenting medians, etc.) masks the underlying behaviour that occurs at the more granular level, but presenting data without accompanying summary statistics makes it difficult to identify differences between customer cohorts, seasons or periods of the day. For example, plotting an average monthly consumption profile averaged over each cohort will mask the variability of individual customer consumption behaviour over each 30 minute interval.

In addition, and for similar reasons, it is inappropriate to depict in a single figure the relationship between customer monthly peak demand and network peak demand. This is

[33] The CSIRO final report is available on Energex's website at www.energex.com.au/influencingtariffs.

because meaningful analysis must be done on a locational basis, and varies depending on whether or not short or long term drivers of augmentation are considered. In setting the new pricing principles, the AEMC determined that network prices must signal forward avoidable network costs on the basis of LRMC. LRMC calculations consider capital to be variable and consequently link customer maximum demand to long term network capital augmentation requirements.

Therefore, care must be taken when analysing and comparing customer cohorts and customer impacts.

6.3.1.2 Bill impact

Using the CSIRO load profiles, Energex analysed the difference in annual charges between flat tariff NTC8400 and the proposed new demand tariff NTC7000. It is important to note that the customer impact assessment in this section is a point in time snapshot when customers switch from their current energy based tariff to a demand based tariff. It does not account for behavioural changes resulting from price signals over time.

Energex's analysis reveals that, based on the customer profiles developed by CSIRO, the majority of customers (58 per cent) would be better off on a demand tariff assuming no change in customer behaviour.

For the purposes of this assessment a Financial Risk Reduction Mechanism (FRRM) was applied to customer bills used in the above analysis. The details of Energex's FRRM approach are discussed below.

Comparing the overall financial impact to the customer cohorts, it is estimated that four customer cohorts could be worse off as a result of switching from a flat residential tariff to a demand based tariff, assuming that there is not corresponding change in consumption behaviour.

The negatively impacted customer cohorts include:

- Low income couples typically without children, living in a three to four bedroom detached house and with solar system installed (Customer Cohort 2). This customer cohort is likely to experience a 3 per cent increase under a demand tariff.
- Low income couples typically without children, living in a three bedroom detached house, and unlikely to have solar system installed (Customer Cohort 3). This customer cohort is likely to experience a 1 per cent increase under a demand tariff.
- Couples living in semi-detached homes or units, with a low to lower middle income, and unlikely to have children (Customer Cohort 8). This customer cohort is likely to experience an 8 per cent increase under a demand tariff. This might be related to their low load factor, indicating high demand peaks relative to their average consumption.
- Customers (half of them couples) without children, living in large detached houses, and earning lower to middle incomes (Customer Cohort 10). This customer cohort is

not significantly impacted with a 0.4 per cent increase in their annual charges under a demand tariff.

It is estimated that residential customers with an average efficiency in network usage (load factor = 0.25) and typical annual energy consumption of 4,053kWh, who are considering switching from NTC8400 – Residential Flat to NTC7000 – Residential Demand, could be better off by $97 in 2017-18. Under NTC8400, this particular customer will be charged $587 while on NTC7000 they will be charged $489. Assuming the same energy levels and efficient use of the network (load factor of 0.25), the same customer will be expected to save $99 in 2019-20 by moving to a demand tariff.

6.3.1.3 Financial Risk Reduction Mechanism for residential customers

To enable time for customers and stakeholders to understand and adapt to the tariff reform journey, Energex is proposing to introduce a financial risk reduction mechanism (FRRM). The proposed FRRM allows residential customers to experience demand tariffs while limiting exposure to bill shock. It is a temporary mechanism designed to provide sufficient time for residential customers to understand their demand and gradually alter their consumption behaviour. The FRRM is not intended to completely remove the pricing signal Energex intends to send to customers with the introduction of a demand tariff.

The idea of a FRRM resulted from engagement with customers and retailers, where stakeholders discussed the risk of introducing demand tariffs that will not be adopted by customers due to the potential impact of bill shock.

The FRRM would apply:

- A cap to the chargeable quantity of 5kW of demand. If a customer's metered monthly maximum demand is less than the cap, their network bill is calculated without any adjustments, otherwise the cap is substituted for their metered monthly maximum demand before their network demand is calculated.
- To those residential customers with an annual consumption of up to 10 MWh.
- To residential customers in their first year of adopting the voluntary demand tariff whilst they improve their understanding of the tariff and how best to respond to the price signals.

In setting these conditions, Energex conducted its analysis based on an estimate of the distribution of residential customers' average monthly maximum demand (AMMD) between 4 and 8 pm on weekdays using the data from the Customer Load Profile Segmentation project run for Energex by the CSIRO (refer to Section 4.2) combined with the data collected through the Rewards Based Tariffs trial. This analysis revealed that the AMMD for all residential customers is 3.65 kW, and this average rises to 4.27 kW during summer months.

Energex considers that a cap of 5 kW for residential customers is reasonable as this will result in capping for approximately 25 per cent of customers during summer months, and 15 per cent of customers in all other months. This provides the appropriate balance

between mitigating the risk of bill shock, limiting impacts on non-adopting NTC8400 – Residential Flat customers, and sending cost reflective pricing signals.

Figure 6-2 - Customer without the application of FFRM

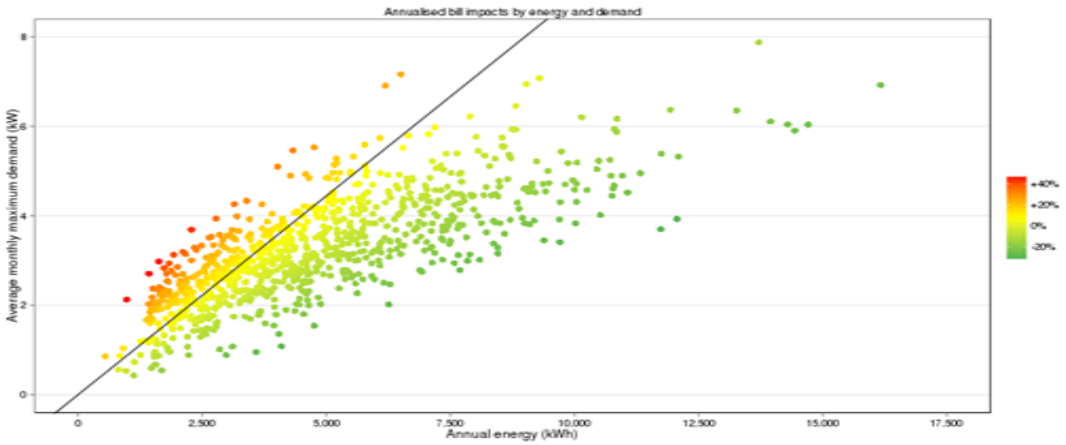
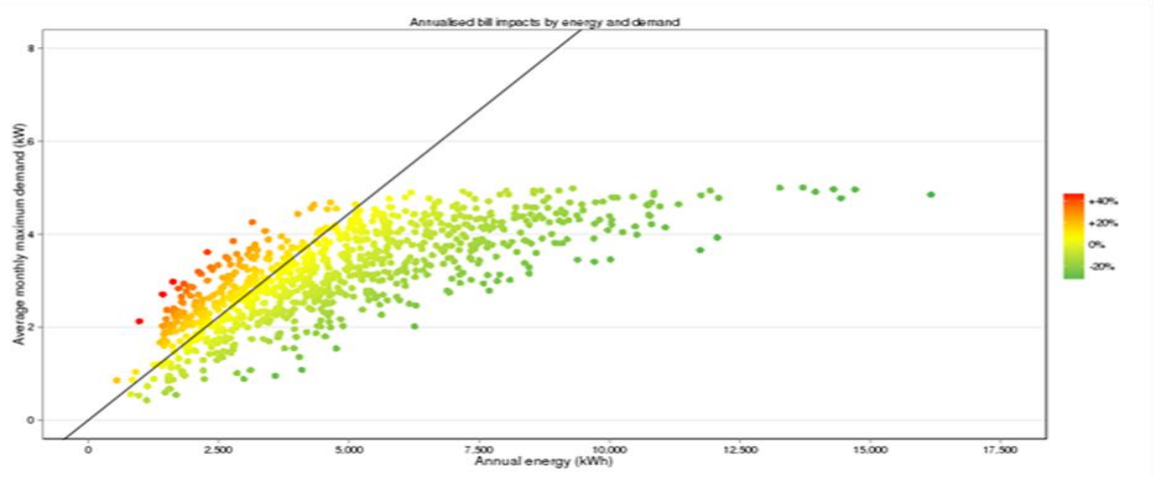


Figure 6-3 - Customer with the application of FFRM



Energex acknowledges customer feedback from its consultation, with some stakeholders being of the view that the cap level should be lowered and the FRRM should be made permanent in some circumstances or extended beyond 12 months.

When deciding on the cap, Energex needs to balance alleviating bill shock for customers accessing the new demand tariff without causing substantial increases to other network tariffs. Under a revenue cap, Energex is entitled to recover the revenue that has been allowed by the AER. The 5kW cap for residential customers provides a balance between allowing a potential financial benefit to eligible LV customers accessing the demand tariff without substantially increasing prices for customers.

Energex considers that a 12 month period is sufficient for customers to familiarise themselves with the concept of demand, while at the same time providing incentives to change their behaviour. Importantly, the proposed FRRM is not a hardship tariff and is intended to provide partial protection to customers. The figures below illustrate residential customers' financial impact with and without the application of the FRRM.

6.3.1.4 Load control

As part of its tariff reform package, Energex is proposing to introduce a new secondary load control tariff: NTC7300 – Smart Control. Refer to Section 5.5 for more details.

Under this new load control tariff, electrical equipment such as water heating, pool pumps, air conditioning units, electric vehicles and smart batteries will be accessed by Energex's load control devices. To increase benefits to the low voltage network, the proposed tariff will offer flexible and targeted operation times, and may make use of domestic solar energy exports during the day.

The indicative prices for NTC7300 from 2017-18 to 2019-20 are provided in Appendix 1 of the revised TSS.

Energex is intending to retain over the 2016-17 to 2019-20 period the current load control tariffs NTC9000 – Super Economy, and NTC9100 – Economy that are to be used in conjunction with NTC8400 – Residential Flat.

It is estimated that the average residential customers on the current primary and secondary tariffs (NTC8400+NTC9100) can potentially save $141 in 2017-18 and $191 in 2019-20 if they adopt the proposed demand based tariff in conjunction with the new Smart Control secondary tariff (NTC7000+NTC73000). This scenario is based on customers with:

- Typical annual energy consumption of 4,053 kWh.
- Typical network efficiency usage.

6.3.2 Impact of tariff reform on small business customers

When submitting the initial TSS proposal in October 2015, Energex did not include a cap for the FRRM for low voltage small business customer base as it did not have sufficient load profile data for this customer group.

Since then Energex has engaged external consultants[34] to develop half-hourly load profile data for small business customers segmented by industry classifications. This information will help to assess the impact of tariff reform on this customer group and will inform the optimisation of demand tariff structures.

For small business customers, Energex is not proposing to apply the FRRM. The reasons for not proposing a demand cap for this group of customers are:

- The outcome of the load profile work shows that the wide diversity of the small business customer base makes it very difficult to develop a mechanism that would be effective and relevant.

[34] Deloitte Touche Tomatsu

- Feedback from retailers does not appear to support the introduction of a demand cap for small business customers as they believe it would be ineffective and would not align with their preference for a consistent national framework.

Feedback from small business representative Chamber of Commerce and Industry Queensland (CCIQ) indicates that it would be more beneficial for Energex to focus on identifying the products and services that support tariff adoption and on-going demand response, than to apply a demand cap. A summary of stakeholder feedback received on this issue is provided in the Engagement Report accompanying this revised TSS proposal.

7 Stakeholder engagement

The AEMC's Rule change introduced a new obligation that requires Energex to consider the impact on customers prior to setting prices, tariff structures or making future changes. In developing its tariff reform strategy, Energex has engaged extensively (and continues to do so on an on-going basis) with customers and stakeholders. Energex's Engagement Report, which can be found on our website, outlines how Energex engaged with its stakeholders in developing the TSS and sought to address any relevant concerns identified as a result of that engagement.[35] In addition, the accompanying Engagement Report outlines how we engaged with stakeholders on changes to the TSS following the AER's Draft Decision.

This Chapter outlines the customer and stakeholder engagement that Energex has undertaken in developing this TSS and Energex's analysis in determining the impact of the tariff reform on customers and its approach in mitigating the negative impact on vulnerable customers.

7.1 Engagement overview

Energex's tariff reform program commenced in late 2013 and is proposed to continue into the 2020-25 regulatory control period. Energex has released discussion and consultation papers, and conducted workshops and meetings with customers, electricity retailers and other stakeholders. The discussion and consultation papers, workshop materials and workshop reports are available on Energex's website.[36]

Energex's 2013 Customer Engagement Research program confirmed current tariff structures do not adequately address changing customer needs and the range of challenges facing our business. This research outlined that the existing tariff had a flat structure which resulted in cross subsidisation. Cross subsidisation was further increased by the widespread adoption of solar PV and penetration of air conditioners. Price increases during the last 6 years have accelerated the need to address these issues. Additional customer research conducted in 2014 has highlighted customers find cross subsidisation and price increases unacceptable. This research can be viewed on Energex's website.[37]

Despite Energex's significant customer and stakeholder engagement, it is also recognised that distributors are reliant on other market participants to pass through network price signals to customers and encourage customers to adopt new tariff offerings. Key to any successful pass through and adoption of new network tariffs is a considerable and sustained information campaign. Energex recognises that educating customers on the network component of tariffs would be of limited value depending on how this signal is packaged

[35] https://www.aer.gov.au/system/files/Energex%20-%20Tariff%20Structure%20Statement%20-%20Overview%20Paper%20Customer%20Engagement%20-%20November%202015.pdf
[36] https://www.energex.com.au/about-us/our-commitment/to-our-customers/connecting-with-you/influencing-future-network-tariffs/your-network-your-choices
[37] https://www.energex.com.au/about-us/our-commitment/to-our-customers/connecting-with-you/our-research-programs/customer-engagement-research-program

more broadly into retail market offerings. Energex has sought market input on how Energex can best engage to bridge this gap.

7.2 Residential and small business customer engagement

Energex's engagement with small customers commenced in 2014 with the release of the 'Your network, your choices' Discussion Paper. Energex then undertook a series of workshops with customers which highlighted that tariff reform should be a 'whole of market' initiative that must consider technology, information exchange, hardship and tariff design. Figure 7-1 below provides an overview to the first stage of Energex's engagement for small customers.

Figure 7-1 - Stage 1 residential and small business engagement

Based on the feedback from these workshops, independent research conducted with approximately 500 residential and small business customers, Energex produced a 'Customer Assumptions Report'[38] about what customers felt were the most important considerations for our pricing principles.

The second stage of Energex's engagement with residential and small business customers involved the release of the 'Residential and business customer consultation paper - Tariff reform' in July 2015.[39] This paper was developed using the insights and feedback obtained in the first phase of the customer engagement program.

In addition to this consultation paper, Energex released a Customer Impact Statement (CIS) on 4 September 2015. The CIS explored the financial impact that the demand tariff may have on different customer groups and can be accessed on Energex's website.

Comments from customers and relevant stakeholders on the consultation paper and the CIS were received on 2 October 2015. A summary of customer feedback and Energex's responses is provided in Energex's Engagement Report and Appendix 2 of these Explanatory Notes.

[38] https://www.energex.com.au/__data/assets/pdf_file/0010/256087/Customer-Assumptions-Report.pdf
[39] https://www.energex.com.au/__data/assets/pdf_file/0010/271873/Residential-and-business-customer-consultation-paper-Tariff-reform-1.pdf

Throughout the small customer engagement program Energex has worked closely with customer advocacy groups such as the Queensland Council of Social Services (QCOSS), National Seniors Australia, Multiple Sclerosis Society of Queensland, COTA Queensland, and Queensland Consumers Association to better meet the expectations of community groups. The input of these organisations has been invaluable in the development of the tariffs and the tariff reform program.

7.3 Business customer engagement

Engagement with large customers in relation to tariff reform has occurred through Energex's dedicated Major Customer Relationship Manager. Following extensive consultation with customers, changes to the SCS tariff classes were implemented on 1 July 2015.

To progress tariff reform for business customers, a Large Customer Tariff Reform consultation paper was released in August 2015.[40] This consultation paper was released as part of Energex's ongoing engagement with large customers on Energex's tariff reform program.

For our business customers, Energex has adopted a coordinated targeted engagement through industry partners. Energex partnered with the Queensland Chamber of Commerce and Industry to host a business customer webinar on 4 August 2015.[41] The webinar provided business customers valuable insights around the proposed new charges and the opportunity to provide feedback. Engagement has also occurred with business representatives such as the Queensland Farmers Federation to support SAC Large customers.

It should be noted that, in its response to the AER's Issues Paper on the Queensland TSS proposals, Energex acknowledged that it had received limited responses on its proposed tariff strategy for the CAC tariff class. As a result, Energex reached the view that it did not have the license to proceed with its initial decision to remove the grandfathered legacy CAC tariffs and transition the existing customers to the new cost reflective tariff (NTC7400) during the 2017-20 period. Subsequently Energex further engaged with its large customers and retailers. In particular, Energex sought comments on the following matters:

- The decision not to remove legacy tariffs during the 2017-20 period.
- The timeframe for making the new tariff mandatory.
- The best approach to transition existing customers to NTC7400.
- The adequacy of the charging window for NTC7400.

Energex also sought feedback from retailers on the proposed approach with NTC7400, to calculate capital charges based on the value of non-contributed connection assets ($/NCCAV/day) and operation and maintenance charges based on the value of connection

[40] https://www.energex.com.au/__data/assets/pdf_file/0006/276594/Large-customer-tariff-reform-Consultation-paper.pdf
[41] https://www.youtube.com/watch?v=gdXUu30Yszg&feature=youtu.be

assets ($/CAV/day) with the relevant asset data information provided to customers outside of the Pricing Proposal.

7.4 Retailer engagement

Engagement with retailers has been identified as a high priority to support ongoing tariff reform and customer representatives have an expectation that Energex partners with retailers to support and communicate changes. Energex regularly engages with retailers through the dedicated Retailer Relationship Manager and through tailored meetings between the Energex Pricing and Engagement Teams and retailer counterparts.

Energex published a tariff options discussion paper for retailer engagement in December 2014 in relation to residential and small business customers. Feedback was sought by 16 February 2015. The purpose of the discussion paper was to consider customer information exchange, hardship management and market capability to support the pace of tariff reform. Energex specifically sought market feedback to manage all of these issues while also seeking input in effective tariff design.

Further to Energex's engagement, the Energy Networks Association and Energy Retailers Association of Australia are committed to working together to facilitate the smooth and effective implementation of network tariff reform. An initial workshop was held in December 2014 and then a subsequent workshop on 28 May 2015. Seed Advisory was engaged to assist the associations with the preparation and facilitation of the workshop in May 2015.

The workshop in December 2014 discussed a number of key background issues that arise from network tariff reform that retailers and networks are seeking to address to ensure a successful outcome for all consumers. This workshop recognised the benefits of achieving wherever possible:

- A reduction in the number and complexity of tariffs and tariff development methodologies to simplify processes, save costs and enable a smoother implementation.
- Greater clarity of desired long term outcomes of network tariff reform to assist in consumer communication and improved benefits.
- Longer notice periods and further information supporting network price changes.

On 19 May 2015, Energex facilitated a retailer forum in Melbourne. This workshop focussed on progressing the following areas:

- The continued development of an industry level stakeholder engagement plan that provides for consistent messaging.
- Ensuring consistency in approaches to new tariff structures as well as in the operational interactions between networks and retailers.
- Working towards consistency in approach and reporting of the consumer impact analysis of network tariff reform at the retail level.

- Developing an industry based approach to implementation of network tariff reform with key tasks, timelines and a governance / project structure.

On 3 August 2015, Energex released for retailer feedback a 'Tariff Reform Implementation Partnership Scoping Paper'. The paper outlined the high level initiatives Energex has identified to support successful tariff reform implementation. A key initiative of the Tariff Reform Implementation Partnership is the proposed RTTS, which is further discussed in Section 7.7.

Energex also attended face to face meetings with a number of retailers in Melbourne in August 2015 as part of business as usual engagement and ongoing relationship maintenance. The general feedback from these meetings included:

- All retailers except one supported tariff reform and understood the need for tariff reform.
- All retailers supported Energex's proposed timeline and approach for implementation and felt any push for faster tariff reform underestimated the customer and market issues.
- All retailers supported Energex's partnering approach.

7.5 Customer and retailer feedback

As part of stakeholder engagement process Energex produced a customer and retailer engagement report[42], which summarised the feedback received up to March 2015 following the numerous customer workshops and discussion papers. Further feedback was then received in October 2015 following the release of Energex's consultation papers and Customer Impact Statement.

In summary, the feedback included:

- Customers (with the exception of solar customer representatives) and retailers broadly support (conditional on the tariffs structure and implementation) Energex's decision to move to cost reflective pricing in the form of a demand network tariff and broadly support the initial voluntary introduction of that tariff.
- Many customer representatives expressed concern that late-adopters may be disadvantaged as costs start to be borne more by non-demand customers. Concerns were also raised as to the accessibility by tenants to demand tariffs due to metering costs.
- Retailers and customer groups expressed a preference for an average of the top four peak demand readings for the month and supported measuring demand in peak periods only.

[42] https://www.energex.com.au/__data/assets/pdf_file/0008/259946/Customer-and-Retailer-Engagement-Report.pdf

- There was no support for pursing a seasonal demand charge or inferring demand in the absence of advanced metering technology.
- Many retailers expressed the challenge of complexity in network tariffs across different jurisdictions and training call centre staff to assist with enquiries.
- Retailers expressed support for retaining a daily supply charge on network tariffs whereas customers expressed a lack of support for daily supply charges

7.6 Further engagement with small and large business customers for the revised TSS

In March 2016, Energex hosted an additional forum with retailers in Melbourne. The forum featured an update on the TSS, general information about tariffs and the RTTS. Following the forum a number of individual meetings where held with retailers.

In July 2016, Energex contacted retailers via e-newsletter and phone to seek feedback on the removal of the demand cap for small business customers. A meeting was also held with the Chamber of Commerce & Industry Queensland (CCIQ) to discuss any implications of the removal on their members.

A summary of this engagement and the feedback provided can be found in the accompanying Engagement Report: Tariff Reform for Small Business Customers and CAC.

7.7 Tariff Reform Implementation Partnership

Energex has developed a Tariff Reform Implementation Partnership (TRIP) program to implement tariff reform in conjunction with customers, government, retailers, and other stakeholders and market partners. The objective for TRIP is to proactively involve stakeholders and partners in implementing future tariffs in South East Queensland.

The implementation of RTTS is one of the initiatives under TRIP. RTTS is an outcome of Energex's engagement with stakeholders. It involves the study of a representative sample of residential customers who have taken up a voluntary demand tariff during 2016. A similar study involving a sample of small business customers is expected to start in July 2017.

The RTTS is conducted in partnership with retailers and consumer advocacy stakeholders. It uses interval meter data and real tariffs experienced by customers to analyse and understand network, customer and industry responses to the initial demand tariff offering.

The RTTS involves information being sent to customers about how they can respond to tariff signals and surveying customers about how well they understand the tariff.

The aim of the RTTS is to achieve several outcomes, including:

- bringing together the financial signal, enabling technologies and services
- monitoring customer behaviour

- testing customer education materials
- addressing retailer concerns
- collecting indicative representative data
- proving an opportunity for stakeholders to share learnings
- assessing ability of hardship programs to manage transition
- building social licence for faster and ultimately mandatory tariff reform
- informing stakeholders of estimated customer impact.

Energex sees the RTTS as a means to engage with customers on an-going basis.

The RTTS will enable modification of the demand tariff, if required, prior to any proposal for faster introduction of demand tariffs.

8 Alternative control services

Services provided under the ACS framework are customer specific and/or customer requested services. These services may also have potential for provision on a competitive basis rather than by a single DNSP. ACS are akin to a 'user-pays' system. The whole cost of the service is paid by those customers who benefit from the service, rather than recovered from all customers.

ACS are either subject to a price cap (fee based services), whereby the price is set in accordance with specified service assumptions due to the standardised nature of the service, or a price on application (quoted services) where the service is of a nature and scope which cannot be known in advance.

8.1 ACS Classification of Services

For the 2015–20 regulatory control period, the AER has classified the following as ACS and these have formed the basis of tariff classes for ACS which are described in Table 8.1.

Table 8.1 - 2016-17 ACS tariff classes

Tariff Class	Activity
Connection services	**Pre-connection services** Pre-connection services are those services that relate to assessing a connection application, making a connection offer and negotiating offer acceptance and additional support services provided by the DNSP (on request) during connection enquiry and connection application other than general connection enquiry services and connection application services. Generally relates to services which require a customised or site-specific response and/or are available contestably. Unless otherwise specified, services or activities undertaken under this service group relate to both small and large customers and real estate development connections.
	Connection services Connection services include the design, construction, commissioning and energisation of connection assets for large customers and for real estate developments. Also includes the augmentation of the network to remove a constraint faced by an EG. This does not include customers with micro-generation facilities that connect under a SAC tariff class. Energex considers that generators larger than 30 kVA but smaller than 1 MW should be treated as EGs for the purpose of removing network constraints. Include temporary connections for short term supply (e.g. blood bank vans, school fetes).
	Post-connection services Post-connection services are those services initiated by a customer which are specific to an existing connection point.

Tariff Class	Activity
	Accreditation services Accreditation of alternative service providers and approval of their designs, works and materials.
Ancillary network services	Ancillary network services include services provided in relation to a Retailer of Last Resort (ROLR) event and works initiated by a customer, which are not covered by another service and are not required for the efficient management of the network, or to satisfy DNSP purposes or obligations.
Metering services	**Type 6 Metering** Metering services encompass the metering installation, provision, maintenance, reading and data services of Type 6 metering. **Auxiliary Metering Services** Includes work initiated by a customer which is specific to a metering point.
Public lighting	Public lighting services relate to the provision, construction and maintenance of public lighting assets owned by Energex (conveyance of electricity to street lights remains an SCS). Includes energy efficient retrofits and new public lighting technologies, including trials.

8.2 Price capped connection services

The list of services which fall under the price capped connection services classification are listed in Table 8.2 below.

Table 8.2 - 2016-17 prices for connection price capped services

Category	Service Description	Permutations
Pre – connection services (connection application services)		
Protection and power quality assessment prior to connection - simple	Solar PV 30-150 kW	
Negotiation services involved in negotiating a connection agreement – simple	Standard jobs for small customer connections and real estate developments (sub-divisions). Please note that if service is non-standard, a quoted price may apply.	
Application assessment, design review and audit real estate (sub-division) connection services - resubmission	Design assessment and preparation of offer - Resubmission	
Pre - connection services (consultation services)		
Site inspection in order to determine nature of connection	Small or large customer connection	
Provision of site-specific connection information and advice for small or large customer connections.	Protection devices and settings, fault level, network information	
Connection services		
Temporary Connection: Customer request a temporary connection for short term supply (includes metered and unmetered) – simple	Customer requested temporary Connection (Short Term) and recovery of the temporary builders supply. Applies to connections <12 months for SAC's (including temporary builders supply), typically up to 10 kVA where minimum technical standards are required.	No CT – Business Hours
		No CT – After Hours / Anytime
		No CT – Traffic Control - Business Hours
		No CT – Traffic Control - After Hours / Anytime
		CT – Business Hours
		CT – After Hours / Anytime

Category	Service Description	Permutations
		CT – Traffic Control - Business Hours
		CT – Traffic Control - After Hours / Anytime
	Temporary connection of unmetered equipment to an existing LV supply[2].	
Post Connection Services		
Supply Abolishment (simple)	Request to de-energise an unmetered supply point.	
	Retailer requests the service provider to abolish supply at a specific connection point (simple). To be used for single dwellings and the community / unit one of multi-unit residential complexes[3].	Business Hours
		After Hours / Anytime
		Traffic Control – Business Hours
		Traffic Control – After Hours / Anytime
	Retailer requests the service provider to abolish supply at a specific connection point (simple). To be used for multi-unit residential complexes for all units after the community / unit one.	Business Hours
		After Hours / Anytime
Rearrange connection assets at customers at customers request (simple)	Recovery of the overhead service and connection of the consumer mains to the pre-existing pillar for a customer requested conversion of existing overhead service to underground service	Business Hours
		After Hours / Anytime
Customer requested Overhead Service Line Replacement (no material change to load)	Customer requests their existing overhead service to be replaced or relocated, e.g.as a result of point of attachment relocation. No material change to load.	Single Phase – Business Hours
		Single Phase – After Hours / Anytime
		Single Phase – Traffic Control – Business Hours[3]
		Single Phase – Traffic Control – After Hours / Anytime

Category	Service Description	Permutations
		Multi-Phase – Business Hours
		Multi-Phase – After Hours / Anytime
		Multi-Phase – Traffic Control – Business Hours[3]
		Multi-Phase – Traffic Control – After Hours / Anytime
Auditing services – auditing/ re-inspection of connection assets after energisation to network (simple)	Auditing / re-inspection of connection assets after energisation - real estate development (sub-division). Number of new, modified or recovered sites (i.e. stations numbers excluding street light pits and conduits)	0-6 sites
		7-30 sites
		31-60 sites
		60 + sites
Temporary disconnections and reconnections (which may involve a line drop) - low voltage	Temporary LV service Disconnection/reconnection – Primary Fuse (no dismantling)	Business Hours
		After Hours / Anytime
	Temporary LV service Drop and re-erect (dismantling)	Business Hours
		After Hours / Anytime
Customer Initiated Supply Enhancement (Load Service Upgrade)	Overhead Service Upgrade to Single Phase	Business Hours
		After Hours
		Traffic Control – Business Hours
		Traffic Control – After Hours[3]
	Overhead Service Upgrade to Multi-phase	Business Hours
		After Hours

Category	Service Description	Permutations
		Traffic Control – Business Hours
		Traffic Control – After Hours[3]
	Underground Service Upgrade to Single Phase[4]	Business Hours
		After Hours
	Underground Service Upgrade to Multi Phase[4]	Business Hours
		After Hours
		CT – Business Hours
		CT – After Hours
Customer consultation or appointment	A visit to the customers premise to advise on electrical supply matters, could be for various reasons	Complex
		Simple (e.g. advice on location of POA)
De-energisations[2]	Retailer requests de-energisation of the customer's premises where the de-energisation can be performed at the premises by a method other than main switch seal (i.e. at pillar box, pit or pole top)	Reason Other than Non Payment - No CT
		Reason Other than Non Payment - CT
		Non Payment – No CT
		Non Payment – CT
	Retailer Requested de-energisation (Main Switch Seal – MSS)	Non Payment
		Reason Other than Non Payment
Re-energisations[2]	Retailer requests re-energisation of the customer's premises where the customer has not paid their electricity account. No visual required	No CT - Business Hours
		No CT - After Hours / Anytime

Category	Service Description	Permutations
		CT – Business Hours
		CT – After Hours / Anytime
	Retailer requests re-energisation for the customer's premises following a main switch seal (no visual required)	Reason Other than Non Payment - Business Hours
		Reason Other than Non Payment - After Hours
		Reason Other than Non Payment - Anytime
		Non Payment – Business Hours
		Non Payment – After Hours
		Non Payment – Anytime
	Retailer requests a visual examination upon re-energisation of the customer's premises	No CT – Business Hours
		No CT – After Hours
		No CT – Anytime
		CT – Business Hours
		CT – After Hours
		CT - Anytime
	Retailer requests a visual examination upon re-energisation of the customer's premises where the customer has not paid their electricity account. NMI de-energised > 30 days	No CT – Business Hours
		No CT – After Hours
		No CT – Anytime
		CT – Business Hours

Category	Service Description	Permutations
		CT – After Hours
		CT - Anytime
Readings provided for an active site	Readings provided for an active site	Retailer Requested Fieldwork to obtain new reading
		Retrospective move in read required
Attending loss of supply (customer at fault)	Energex attending LV customers trouble call and found fault in LV customers installation (includes tripped safety switch, internal fault, customers overload)	Business Hours
		After Hours / Anytime
Accreditation / certification		
Accreditation of Design Consultants Applicant requests to obtain Energex accreditation to provide design services for real estate development (sub-division), Rate 2 public lighting, LCC & distribution works that are reticulated with Energex network (Design Accreditation)	Desktop management system evaluation New applicant has ISO9001 accreditation with no other Energex accreditations in place.	New applicant has ISO9001 accreditation with no other Energex accreditations in place.
		New applicant is not ISO9001 accredited with no other Energex accreditations in place.
		Applicant currently holds accreditation to undertake design services for rate 2 public lighting (design accreditation). Applicant requesting additional Energex accreditations with or without ISO9001 accreditation (priced per additional accreditation).
	Onsite management system evaluation (irrespective of prior accreditations).	
	Capability evaluation (irrespective of prior accreditations).	

Category	Service Description	Permutations
Accreditation of Alternative Service Providers Applicant requests to obtain Energex Accreditation to provide construction services for real estate development (sub-division) works that are reticulated with Energex network (Construction Accreditation)	Desktop management system evaluation New applicant has ISO9001 accreditation with no other Energex accreditations in place.	New applicant has ISO9001/AS4801/ISO14001 accreditation with no other Energex accreditations in place.
		New applicant is not ISO9001/AS4801/ISO14001 accredited with no other Energex accreditations in place.
		Applicant requesting additional Energex accreditations with or without ISO9001/AS4801/ISO14001 accreditation (price per additional accreditation).
	Onsite management system evaluation (irrespective of prior accreditations).	
	Capability evaluation (irrespective of prior accreditations).	
Management System Re-Evaluation	QA process: This is conducted on request from existing service providers and design consultants with the intent to improve their management system score.	
Shared assets authority	High Level quality assessment (QA) and capability process: This is conducted to ensure the applicant has adequate safety and QA documentation to meet legislative and Energex WCS requirements. Also involves a capability assessment of the applicant's ability to conduct the work.	

8.3 Large customer connections

Energex defines large customer connections (LCC) as those connections that fall within the tariff classes of ICC or CAC including embedded generators with installed capacity greater than or equal to 30kVA.[43]

Customers may choose either Energex or an accredited service provider to undertake the design and construction of the connection assets (to Energex's technical standards). The operation and maintenance of all connection assets, including large connections, is an SCS.

The design and construction of LCC will be classified as one of the following:

- ACS – All new connections or upgrades to existing connections, which are paid for by the customer and gifted to Energex. This may include an upfront payment for the design and construction of the connection assets. These assets will form part of the Contributed Asset Base (CAB). Items in the CAB will have no return on capital or regulatory depreciation cost allocated to them. However, there will be an allocation for O&M costs recovered through DUoS as per the tariff revenue allocation process detailed in the Energex annual pricing proposal.
- SCS – LCC assets, existing prior to 1 July 2010, which are owned and maintained by Energex, or were built as part of an Energex driven asset replacement. These services will continue to form part of the Regulatory Asset Base (RAB). These connection assets have costs allocated to them for return on capital, regulatory depreciation and O&M as per the tariff revenue allocation process detailed in the Energex annual pricing proposal.
- Unregulated services – Connection assets that are funded, owned and operated by the customer. These services will attract no specific connection asset charges.

[43] It should be noted that LCC, for the 2015-20 regulatory control period, have been redefined to lower the threshold for EGs from 1 MVA to 30 kVA.

Table 8.3 - LCC pricing framework

Initial connection date	Description	Ownership[1]	Asset classification	Service classification	Asset base	Upfront customer payment (quoted price, relating to design and construction costs)	Tariff charging parameter (site-specific fixed charge)	
							Recovery of depreciation and return on capital (through DUoS)	Recovery of operating expenditure (through DUoS)
Before 1 July 2010 (or part of transitional arrangement) Asset constructed under previous framework	Existing connection	Energex	Non-contributed	SCS	RAB	N/A	✓	✓
	Upgrade to existing asset - Energex driven[2]	Energex	Non-contributed	SCS	RAB	N/A	✓	✓
	Upgrade to existing asset - customer request	Energex (gifted)	Contributed	ACS	CAB	✓	N/A	✓
After 1 July 2010 Asset constructed under new framework	New connection	Energex (gifted)	Contributed	ACS	CAB	✓	N/A	✓
	Upgrade to existing asset - customer request	Energex (gifted)	Contributed	ACS	CAB	✓	N/A	✓
	Upgrade to existing asset - Energex driven[2]	Energex	Non-contributed	SCS	RAB	N/A	✓	✓
Asset constructed under either framework	Replacement - during warranty period for gifted assets	Energex (gifted)	Contributed	N/A	N/A	N/A (covered under warranty)	N/A	✓
	Replacement - outside manufacturer's warranty period	Energex (gifted)	Contributed	ACS	CAB	✓	N/A	✓
		Energex	Non-contributed	SCS	RAB	N/A	✓	✓
	Any service	Customer	N/A	Unregulated	N/A	No specific connection asset charges		

Notes:
1. If the customer chooses to retain ownership of the asset, the service is unregulated and there are no specific connection asset charges.
2. An Energex driven upgrade to a customer's connection assets could occur, when for network reasons, the connection arrangement needs to be altered.

8.4 Ancillary network services

Energex's classification of ancillary network services is provided in Table 8-4. Consistent with the approach adopted for other ACS, services have been determined to be price cap or quoted depending on whether the scope of work is pre-defined or subject to variability.

Table 8-4 – Classification of ancillary network services

Service Group	Price Cap/ Quoted Service
Services provided in relation to the retailer of last resort	Quoted
Other recoverable works:	
Customer requests provision of electricity network data requiring customised investigation, analysis or technical input	Quoted
Bundling (conversion) of cables carried out at the request of another party	Quoted
Provision of services to extend /augment the network, to make supply available for the connection of approved unmetered equipment	Quoted
Customer requested appointments	Price cap
Rearrangement of network assets (other than connection assets)	Quoted
Customer requested disconnection and reconnection of supply, coverage of LV mains and/or switching to allow customers/contractors to work close	Quoted
Assessment of parallel generator applications	Quoted
Attendance at customer's premises to perform a statutory right where access is prevented	Price cap
Overhead service connection – non-standard installation	Quoted

8.5 Type 6 metering services

For the 2015-20 regulatory control period, Type 6 metering installations and auxiliary metering services have been classified as ACS.[44] Type 6 metering installations incorporate the provision, installation, ongoing maintenance, meter reading and meter data services for Type 6 metering.

Auxiliary metering services are customer requested metering services provided to individual customers on a non-routine basis. The scope of auxiliary metering services currently involves a number of services including meter alterations, Type 6 non-standard metering services, off-cycle meter reads, meter tests (customer initiated), meter inspections and meter reconfigurations.

Table 8-5 summarises the classification of metering services for the 2015-20 regulatory control period. This section addresses metering services that are classified as ACS only.

[44] Type 5 meters are not permitted in Queensland.

Table 8-5 – Classification of Energex metering services

Metering Type	Description	Classification
Metering Types 1-4	Provision, installation, maintenance, meter reading and meter data services for Type 1-4 meters	Unregulated
Metering Type 6	Provision, installation, maintenance, meter reading and meter data services for Type 6 meters.	Alternative Control Service
Metering Type 7	Unmetered connections where usage is estimated (includes public lighting and traffic lights).	Standard Control Service
Auxiliary Metering Services	Range of customer requested metering services which are provided to individual customers on a non-routine basis.	Alternative Control Service
Note: Type 5 meters are not permitted in Queensland.		

The list of price capped auxiliary metering services are listed in Table 8-6.

Table 8-6 – Price capped auxiliary metering services

Category	Service Description	Permutations
Meter installations		
Upfront Capital Charge	New Permanent Connection (Temp to Perm, connecting to the Energex Network for the first time)	Single Phase Single Element Overhead Fox – Business Hours
		Single Phase Single Element Overhead – Business Hours
		Single Phase Single Element Underground– Business Hours
		Single Phase Single Element Overhead Fox – After Hours[2]
		Single Phase Single Element Overhead – After Hours[2]
		Single Phase Single Element Underground – After Hours[2]
		Single Phase Dual Element – Business Hours
		Single Phase Dual Element – After Hours[2]
		Multi-Phase Overhead Fox – Business Hours
		Multi-Phase Overhead – Business Hours
		Multi-Phase Underground– Business Hours
		Multi-Phase Overhead Fox – After Hours[2]
		Multi-Phase Overhead – After Hours[2]
		Multi-Phase Underground– After Hours[2]
		Multi-Phase Overhead CT – Business Hours
		Multi-Phase Overhead CT – After Hours[2]
		Multi-Phase Underground CT – Business Hours

Category	Service Description	Permutations
		Multi-Phase Underground CT– After Hours[2]
	Install Control Load / Hot Water	Single Phase Single Element - Business Hours
		Single Phase Dual Element – Business Hours
		Multi-phase DC – Business Hours
		Multi-phase CT – Business Hours
	Installation of a new meter (not controlled load / hot water) existing premises – Additions and Alternations	Single Phase Single Element (incl. solar pv) – Business Hours
		Single Phase Dual Element – Business Hours
		Single Phase Single Element – After Hours / Anytime[2]
		Single Phase Single Element (solar pv) –After Hours[2]
		Single Phase Dual Element – After Hours[2]
		Multi-phase DC (incl. solar pv) – Business Hours
		Multi-phase DC – After Hours[2]
		Multi-phase DC (solar pv) – After Hours[2]
		Multi-phase CT (incl. solar pv) – Business Hours
		Multi-phase CT – After Hours / Anytime[2]
		Multi-phase CT (solar pv) – After Hours[2]
	Customer requested meter exchange (eg alternative metering configuration / consolidation of multiple meters for one meter	Single Phase Single Element – Business Hours
		Single Phase Dual Element – Business Hours
		Single Phase Single Element – After Hours / Anytime[2]

Category	Service Description	Permutations
		Single Phase Dual Element – After Hours[2]
		Multi-phase DC – Business Hours
		Multi-phase DC – After Hours
		Multi-phase CT – Business Hours
		Multi-phase CT – After Hours / Anytime[2]
Meter maintenance		
After hours removal of meter/s from customer's premises	After hours removal of meter/s from customer's premises	No CT – After Hours
		CT Metering – After Hours
Customer requested meter test (physically test meter	Testing for type 5 & 6 meters – customer requested meter accuracy testing	No CT
		CT Metering
Customer requested meter inspection & investigation (no physical testing of meter)	Inspection required to check reported or suspected fault and no fault in meter is found. (no physical meter test)	No CT – Business Hours
		No CT – After Hours / Anytime
		CT Metering – Business Hours
		CT Metering – After Hours / Anytime
Customer requested reconfiguration of meters[3]	Controlled Load	No CT – Business Hours
		CT Metering – Business Hours
	A request to make a change from one tariff to another	No CT – Business Hours
		No CT – After Hours / Anytime
		CT Metering – Business Hours

Category	Service Description	Permutations
		CT Metering – After Hours / Anytime
	A request to make a change involving a residential TOU tariff	To TOU - No CT
		To TOU - CT Metering
		TOU reversion
Change Time-switch	Change Time-switch	No CT – Business Hours
		CT Metering – Business Hours
Meter Alteration – meter integrity verification (e.g. after move meter)	Meter alteration – meter is being relocated or meter wiring altered and requires DNSP to visit site to verify the integrity of the metering equipment	No CT – Business Hours
		No CT – After Hours / Anytime
		CT Metering – Business Hours
		CT Metering – After Hours / Anytime
Meter Reading	**Check Read** - Customer requests a check read on the meter due to reported error in the meter reading. This is only used to check the accuracy of the meter reading.	
	Final Read - Retailer requires a reading for preparing a final bill for customer.	
	Transfer Read - Customer requests a transfer read, as a result of transferring to a different retailer during a billing period.	
	Estimated Read	
Type 5-7 Non Standard Metering Services	A request to conduct a site review of the state of the customer's metering installation(s) (no physical meter test), i.e. multiple premises. Includes provision of meter data above the minimum requirements and meter inspection to check a reported or suspected fault. Does not include provision of any hardware	First Unit – Business Hours
		Additional Unit – Business Hours
		First Unit – After Hours / Anytime
		Additional Unit – After Hours / Anytime

Category	Service Description	Permutations
CT Metering	Provision, installation, testing and maintenance of instrument transformers for metering purposes	
	Testing and maintenance of instrument transformers for metering purposes	

8.6 Public lighting

The provision, construction and maintenance of public lighting assets, as well as emerging public lighting technology and other public lighting services, are classified as a direct control service and further as an ACS under a price cap form of control. The conveyance of electricity to public lights will continue to be classified as a SCS. The list of public lighting services and control mechanisms are listed in Table 8-7.

Table 8-7 – Energex's control mechanisms for public lighting services

Public lighting service	Description	Basis of control	Charging arrangements
Provision, construction and maintenance of public lighting	Non-contributed (EOO): • Major (high watt) • Minor (low watt) Contributed (GOO): • Major (high watt) • Minor (low watt)	Building Block	Street light daily fixed fee
Other public lighting	Construction of new street light services (contributed)	Cost build up approach	Quoted
	Provision of glare shield, vandal guards, luminaire replacement with aero screens	Cost build up approach	Price cap / Quoted
	Application assessment, design review and audit	Cost build up approach	Price cap / Quoted
	Alteration, repair, relocation, rearrangement or removal of existing street light assets	Cost build up approach	Quoted
	Residual asset fee	Cost build up approach	Quoted
Emerging public lighting	New public lighting technologies including trials	Cost build up approach	Quoted
	Energy efficient retrofit	Cost build up approach	Quoted

APPENDICES

Appendix 1 – List of new or updated matters

Table A. 1 below lists the new or updated matters which the AER accepted in its Draft Decision to be introduced in Energex's revised TSS.

Table A. 1 - New matters introduced in the revised TSS

Issue	Reference in AER's decision	Detail	Reference in this document
CAC tariff strategy	p.14	Energex's TSS proposal indicated it would close a range of legacy tariffs. Energex subsequently submitted it would retain these tariffs over the 2017-20 period	Section 5.3 of these Explanatory Notes.
Network pricing and demand management	pp 23-4	Energex did not explicitly address how its network tariffs fit into its broader network planning strategy. Energex is encouraged to incorporate such statements in its revised TSS proposal.	Section 4.3 of these Explanatory Notes.
Charging window for CAC customers	p.53	Energex did not directly address the length of its large customer demand charging window in its TSS proposal. Energex is urged to provide explanations about its decision to set the CAC demand charging window to 9am-9pm.	Section 5.4.4 of these Explanatory Notes.
Cap demand charge for small bus customers	p.70	Confirm the cap level (if any) for small business customers.	Section 6.3.2 of these Explanatory Notes.
Secondary tariff terms and conditions (T&Cs)	p.70	AER accepted Energex's proposal to remove the T&Cs for secondary tariffs from the TSS proposal as they are included in the Pricing Proposal.	T&Cs for secondary tariffs are now in the Pricing Proposal.
Indicative prices	p.70	Energex's revised TSS should include updated indicative prices.	Appendix 1 of the revised TSS.
Assignment/re-assignment	p.70	AER accepted Energex's proposal to update the assignment/re-assignment procedures in line with the 2016-17 Pricing Proposal.	Chapter 5 and Appendix 3 of the revised TSS.
Jurisdictional schemes	p.70	AER accepted Energex's proposal to update the jurisdictional schemes to include the AEMC levy.	Chapter 1 of the revised TSS.

Appendix 2 – Customer feedback and Energex's response

The table below provides a summary of stakeholders' feedback and Energex's responses

Table A. 2 - Summary of stakeholder feedback and Energex responses

Energex's initial position (strawman)	Initial feedback from workshops (Nov 2014 – Jan 2015) and discussion paper (Feb 2015)	Energex's response	Energex's revised position in consultation papers (July-August 2015)	Feedback (2 October 2015)	Energex's response	Compliance with principles
1. Pricing principles	Some electricity retailers valued consistency and simplicity in network tariff structures.	In developing its proposed tariff strategy, Energex has balanced simplicity against other pricing principles such as cost-reflectivity and customer impact.	n/a	n/a	n/a	Energex applies pricing principles as described in the Rules.
2. Case for demand tariffs	With some exception, residential customers, customer representatives and retailers support the introduction of demand tariff for residential and small business customers. Demand tariffs are considered to be more cost reflective. However, some customer representatives questioned Energex's support for a demand tariff as the only alternative on which it is	There is wide recognition supported by evidence demonstrating that demand tariffs are cost reflective and provide accurate price signals during peak periods. Other dynamic tariff options have been considered by Energex but were not found suitable. Time of Use (ToU) tariffs (NTC8800 and NTC8900) have had thus far very limited uptake. Critical Peak	Energex is proposing to offer demand tariffs for residential customers in July 2016 and for small business customers in July 2017. Recognising the absence of information specific to South East Queensland, Energex intends to use the data collected from the Real Time Tariff Study (RTTS) to inform its	Further comments were made questioning Energex's rationale for opting for demand without considering other options.	Customers' view acknowledged. Energex will endeavour to provide further details in this TSS in support for its position. Energex's decision in this regard appears to be supported by the NEM-wide push for demand based network tariffs, as evidenced by the Victorian distributors Tariff Structure Statements. Energex will continue to	**Cost reflectivity**: • Evidence shows that demand tariffs meet this principle. **Simplicity**: • Demand tariffs, while presenting challenges for small customers in particular, are found to be the most suitable option amongst cost reflective tariff options.

Energex's initial position (strawman)	Initial feedback from workshops (Nov 2014 – Jan 2015) and discussion paper (Feb 2015)	Energex's response	Energex's revised position in consultation papers (July-August 2015)	Feedback (2 October 2015)	Energex's response	Compliance with principles
	consulting. They also questioned customers' ability to understand and interact with demand network pricing. Furthermore, there was some doubt as to whether demand tariffs would address the consumer impact principle.	Pricing (CPP), which considered effective in reducing network congestion, is too complex and requires technology that is not currently widely available in Queensland. Energex also noted the comment from a customer representative that capacity (telco bands) pricing was suitable to a more mature market.	future pricing strategy. Finally, in preparing its tariff strategy as part of the 2017-20 TSS and beyond, Energex has considered the impact of its proposed tariff reform on customers. This is evidenced by the release of a CIS in early September 2015.		work with stakeholders throughout the regulatory control period to assist their understanding of the impact of tariff reform on the customers that they represent.	• Energex has simplified this tariff as much as possible by removing minimum charges, charging only during peak periods that customers are already familiar with through the 'can it wait till after 8?' campaign and alignment with the existing time of use tariff. In addition, not averaging demand over multiple measures keeps the tariff as simple as possible. • The Rewards Based Tariff trial demonstrated that customers can understand and respond to demand tariffs. **Customer impact:** • Demand tariffs will be offered on an opt-in basis initially.

Energex's initial position (strawman)	Initial feedback from workshops (Nov 2014 – Jan 2015) and discussion paper (Feb 2015)	Energex's response	Energex's revised position in consultation papers (July-August 2015)	Feedback (2 October 2015)	Energex's response	Compliance with principles
						• Energex will conduct an RTTS to better understand the impact of reform on customers.
3. Use actual / inferred demand data	Residential customers, customer representatives and retailers did not support the use of inferred demand data. The view was that this approach would not reflect the diversity of customer use and would not prepare customers to responding to actual price signals, thereby creating a higher risk of confusion.	Energex agrees with the submissions.	Given the strong customer feedback against inferred demand data, Energex is proposing to use actual data when implementing tariff reform.	No further comments	Energex's position unchanged	**Customer impact:** • Actual data will enable customers to better respond to price signals. **Simplicity**: • Actual data will be easier to connect behaviour with cost, and respond accordingly.
4. Tariff structure	Residential customers and customer representatives did not support the retention of a daily supply charge as part of the proposed demand tariffs, particularly its proportion relative to the overall bill. It was thought that too high a daily supply	Energex believe that retaining the daily supply charge will offer a greater level of stability in customer bills, reducing some of the volatility created by demand. Furthermore, Energex intends to retain the usage charging parameter in demand	Energex will retain daily supply and usage charges which are familiar to small customers.	Some stakeholders have questioned how fixed charges will be used to recover residual charges, or whether or not fixed charges may increase in order to account for under	Energex will increase supply charges by CPI for each year in the regulatory control period, corresponding to a neutral change in real terms.	Energex acknowledges that cost reflective network prices must reflect a significant amount of sunk costs incurred by the network. Consequently, a cost reflective price for residential customers would ordinarily include a high supply charge.

Energex's initial position (strawman)	Initial feedback from workshops (Nov 2014 – Jan 2015) and discussion paper (Feb 2015)	Energex's response	Energex's revised position in consultation papers (July-August 2015)	Feedback (2 October 2015)	Energex's response	Compliance with principles
	charge would unfairly impact low volume consumption customers and would reduce the incentives for energy volume and demand efficiency initiatives. Stakeholders supported the idea of retaining the usage charging parameter in the demand tariffs as there was concern that such a change could have undesirable outcomes for customers at this early stage of the tariff reform. Residential customers and customer representatives strongly rejected the idea of introducing a 1.5 kW minimum demand as part of the demand charging parameter of the network tariff. It was perceived as yet another daily supply charge and thought to add another layer of complexity.	tariffs as it will allow a better transition towards demand which has certain complexities for retailers and customers. While recognising the merits of having a minimum charge in providing greater stability to customer bills and being more equitable, Energex has considered the feedback and decided not to include a minimum charge for its proposed demand tariffs for small customers. In response to stakeholder feedback, more insight about Energex's proposed tariff structures, parameters and proportions has been provided to stakeholders in the option papers released in July and August, and the CIS published in September 2015.		recoveries.		Supply charges provide the benefit of stability and conversely reduce a customer's ability to manage their own bills. Energex balances the requirements for cost reflectivity and customer impacts by keeping supply charges neutral in real terms over the course of the regulatory control period.

Energex's initial position (strawman)	Initial feedback from workshops (Nov 2014 – Jan 2015) and discussion paper (Feb 2015)	Energex's response	Energex's revised position in consultation papers (July-August 2015)	Feedback (2 October 2015)	Energex's response	Compliance with principles
5. Peak period set between 3pm and 9pm for residential customers	Residential customers, customer representatives and retailers generally supported the option of measuring demand peaks within set periods. They were also in favour of the peak periods being limited to week days over a four hour period between 4pm and 8pm. Retailers consider that defining a peak period (eg 4-8pm) is easier to communicate to customers.	Energex has conducted further analysis (included in Section5.4.1) which supports the peak period being set between 4pm and 8pm.	Energex is proposing to set the peak periods between 4pm and 8pm on weekdays only.	Customer representatives suggested that peak demand should not be measured on public holidays.	Energex will further propose to exclude public holidays from peak demand calculations.	**Cost reflectivity**: Exclusion of public holidays does not appear to significantly reduce the cost reflectivity of the proposed tariff, and consequently Energex will favour the customer impact principle over the cost reflectivity principle in this regard. Excluding public holidays will increase customer's ability to shift their load outside of peak demand charging periods.
6. Seasonality	Customers and retailers found that given the presence of summer and winter peaks in South East Queensland, seasonal demand charge could not be justified, and added unnecessary complexity.	This position is supported by Energex's analysis presented in Section 5.4.1.	Energex does not support the use of seasonality	No further feedback	Energex's position unchanged	**Simplicity:** Not having seasonality in the proposed tariffs is simpler for customers. Reflecting seasonality in tariffs would require Energex to propose a peak season that spans both summer and winter periods, differing from the seasonal tariffs offered in Victoria. It is further considered that this

Energex's initial position (strawman)	Initial feedback from workshops (Nov 2014 – Jan 2015) and discussion paper (Feb 2015)	Energex's response	Energex's revised position in consultation papers (July-August 2015)	Feedback (2 October 2015)	Energex's response	Compliance with principles
						complexity would add significant burden for retailers.
7. Load control	Residential customers and customer representatives strongly supported the retention of load control tariffs and demand management.	Existing load control tariffs will be retained.	Existing load control tariffs will be retained and transitioned towards cost reflective (LRMC-exempt) pricing. Further, Energex acknowledged that customers must be able to understand and respond to tariffs, and considers that load control is a simple and well understood way for customers to respond to demand tariffs. Consequently Energex proposed a complimentary load control tariff to match the proposed demand tariff.	Customers and retailers were generally supportive of the new load control tariff – NTC7300 Smart Control. Customers requested greater information about how the primary demand tariff and secondary load control tariff will work together.	Energex has included the terms and conditions of the proposed load control tariff, and its indicative pricing, into this document. In addition, Energex will expand the Real Time Tariff Study to ensure that customers and retailers have access to the materials required to make a meaningful and informed decision about this tariff.	**Cost reflectivity and customer impact:** In addition to improving cost reflectivity, this tariff achieves consideration of customer impacts and customer's ability to understand and respond to tariffs. This new tariff enables the unwinding of cross subsidies caused by air conditioning through the granting of network control rather than the increase in network tariffs, which is a much more preferable outcome for consumers.
8. Maximum or average of four highest demand	Retailers generally preferred peak demand measurement, whereas stakeholders gave mixed feedback about whether	Energex acknowledges feedback in support for using the average of four peaks in a billing period. However, retailers have	Energex did not reach a conclusion on whether or not to average multiple demand	Stakeholder feedback remained consistent. Many customer stakeholders would	Energex will propose to charge for demand based on the single maximum demand in the month. The shift to	**Simplicity:** Having a maximum demand measure as a single peak in the month

Energex's initial position (strawman)	Initial feedback from workshops (Nov 2014 – Jan 2015) and discussion paper (Feb 2015)	Energex's response	Energex's revised position in consultation papers (July-August 2015)	Feedback (2 October 2015)	Energex's response	Compliance with principles
readings for the month	or not the average of the top four peaks should be used to measure demand. Some customer representatives expressed concerns about monthly single peak demand could lead to price shocks and wide variation in monthly bills. Single peak measurement was also thought to be punishing customers for a one-off high demand day. Finally, there were concerns that a sharp price signal would impact vulnerable customers who are unable to change their usage behaviour.	communicated to Energex that their billing systems are unable to capture the four peaks in a month required to bill demand charges. Furthermore, Energex is concerned that residential and small business customers may find it a challenge to understand how their peak demand charge has been calculated if using averages. Mindful of the need to develop simple and well understood tariffs, Energex believes that the maximum single peak measurement should be more suitable at this stage.	measurements in its revised position.	prefer to average peak demand over the average of the top four demand measurements. In addition, SAC – Large stakeholders expressed that a single monthly maximum demand was too punitive.	monthly billing and the lack of seasonality already provide a softening mechanism. In addition, Energex proposed a demand cap mechanism to prevent against bill shocks potentially caused by single maximums. Energex will reassess the suitability of this decision through its Real Time Tariff Study. Prior to the submission of the 2020 TSS, Energex will engage on the suitability of single maximum demand measurements as the basis of the charge for SAC tariffs. This will include current SAC – Large tariffs.	provides greater simplicity in understanding how the demand charge will be derived. **Signal:** The strength of the LRMC signal will be less diluted. **Customer impact:** Energex has in place mechanisms that will mitigate the impact on customers.
9. Opt-in/voluntary tariff	Customer representatives expressed concern about the impact of cost reflective prices on customers, customer representatives	Energex agrees with the concerns about implementing a mandatory tariff reform, particularly for residential and small business customers. A voluntary	Energex maintained its preference for a voluntary opt in based tariff reform. However, Energex clarified that a	Stakeholder feedback was consistent in preference for an opt in reform until 2020. Customers were not	Energex maintains its preference for a voluntary opt-in based tariff reform. In addition, Energex will work towards building	Energex believes that customers must not be exposed to a mandatory tariff signal unless there is appropriate, affordable and accessible services and technologies to

Energex's initial position (strawman)	Initial feedback from workshops (Nov 2014 – Jan 2015) and discussion paper (Feb 2015)	Energex's response	Energex's revised position in consultation papers (July-August 2015)	Feedback (2 October 2015)	Energex's response	Compliance with principles
	supported an opt-in approach until 2020. Metering charges to recover the residual value of stranded cumulative meters were considered to be a disincentive for consumer participation in the contestable smart meter market. Retailers expressed diverging points of view about the roll-out of demand tariffs. However, a general view was that the metering market was not advanced enough to implement a mandatory roll out in 2016-17. Concerns were expressed about the ability of call centres to cope as a result of such a significant change.	roll-out until 2020 will allow sufficient time for: • the smart meter market to mature in Queensland • Energex, to better understand the impact of tariff reform on customers • Retailers, to develop and improve their systems to manage customers' reactions as a result of the implementation of new cost reflective prices • Government agencies, to develop mechanisms that will address concerns about the impact on vulnerable customers • Customers, to familiarise themselves with demand tariffs.	voluntary tariff would need to be matched with supportive services and technology. This provides the best environment for tariff reform to proceed without mandating customer adoption.	supportive of mandatory reform from 2020 without adequate evidence and even with evidence were concerned what mandatory reform required.	social and market licence for a market lead reform until 2020, with potential for proposing a mandatory reform from 2020 if supported by evidence from the Real Time Tariff Study.	enable response, **Customer impact:** Given these markets are immature, Energex prefers consideration for customer impacts over cost reflectivity in designing its tariff reform proposal. **Cost reflectivity:** Energex's tariff strategy towards cost reflective tariffs will be further progressed after 2020.
10. Managing vulnerable	A customer representative suggested	Energex is not supporting social tariffs	n/a	n/a	n/a	Energex does not have scope within its regulatory

Energex's initial position (strawman)	Initial feedback from workshops (Nov 2014 – Jan 2015) and discussion paper (Feb 2015)	Energex's response	Energex's revised position in consultation papers (July-August 2015)	Feedback (2 October 2015)	Energex's response	Compliance with principles
customers	the creation of a separate vanilla (social) tariff for vulnerable customers that is linked to Centrelink and healthcare card holders.	as it does not believe it is a matter that can be managed through its tariff strategy.				obligations to deviate from cost reflectivity to this extent. However, Energex will continue to consider the impact of reform on vulnerable customers when building tariff structures and in the pace of tariff reform. Energex will actively collaborate with market participants, customer stakeholders and the appropriate government representatives to address price affordability and improve market participation for all customers.
11. Customer impact modelling	Stakeholders have strongly requested an assessment of the impact of the proposed tariff reform on customers	Energex released a CIS in September 2015.		Some stakeholders would have preferred individualised customer impact analysis and require more tools to help understand the potential impact of demand tariffs on individuals. In	Energex will continue to maintain an up to date statement of expected price trends which captures as many of these elements as is practical into its pricing forecast.	**Customer impact:** Energex's proposed strategy has been developed having regard to the impact of the new tariffs on customers. Furthermore the CIS is part of Energex's commitment to actively engage with

Energex's initial position (strawman)	Initial feedback from workshops (Nov 2014 – Jan 2015) and discussion paper (Feb 2015)	Energex's response	Energex's revised position in consultation papers (July-August 2015)	Feedback (2 October 2015)	Energex's response	Compliance with principles
				addition, some stakeholders requested more information about how quickly reducing customer demand will result in lower revenue requirements, and in how Energex will seek to recover any under recoveries.		stakeholders.
12. Not addressed	n/a	n/a	Not addressed	Stakeholders expressed a preference that the financial risk reduction mechanism be extended indefinitely for medical heating and cooling customers.	Energex is proposing that NTC7000 – Residential Demand and NTC7300 – Smart Control are offered as optional tariffs. Medical heating and cooling customers may choose to stay on NTC8400 – Residential Demand if they feel that the newer tariffs are unfavourable due to their inability to shift load. However, air conditioners are permitted on NTC7300 – Smart Control at a discounted rate, and	Energex must balance a customer's ability to respond to a tariff with the principle of cost reflectivity. In this case, Energex has assessed that customer response is facilitated through the offering of a load control tariff that permits air conditioner connection, and therefore deviation away from cost reflectivity through the extension of the financial risk reduction mechanism is not required.

Energex's initial position (strawman)	Initial feedback from workshops (Nov 2014 – Jan 2015) and discussion paper (Feb 2015)	Energex's response	Energex's revised position in consultation papers (July-August 2015)	Feedback (2 October 2015)	Energex's response	Compliance with principles
					therefore medical heating and cooling customers may benefit from participating in the reform program. Through the Real Time Tariff Study, Energex will work with customer representatives to assess the expected benefits of tariff reform for these customers, and to address barriers to tariff adoption.	
13. Not addressed	n/a	n/a	Energex proposed to cap the chargeable quantities of demand at 5 kW for the first 12 months that a customer is on a demand tariff. This is designed to limit large bill increases, and give customers a period of time to adjust to the new tariff concepts.	Stakeholders welcomed the introduction of this financial risk reduction mechanism. Some stakeholders requested that the cap be lowered from 5 kW to 3.5 kW, that the duration be extended beyond 12 months, or that the mechanism be made available on a permanent basis.	Energex considers that the cap, currently set at 5 kW, is a variable quantity that can reasonably be changed within the regulatory control period after a period of consultation with retailers and other stakeholders. Consequently, concerns about the suitability of the 5 kW cap and whether or not it should be reduced will be addressed within the Real Time Tariff Study	Energex considers that while the mechanism deviates away from cost reflectivity, it enhances a customer's ability to understand and respond to the new tariffs, and ultimately better serves the objectives of tariff reform than would be achieved if it were not offered. In addition, the mechanism is considered equitable on the basis that it is intended to be offered to all customers.

Energex's initial position (strawman)	Initial feedback from workshops (Nov 2014 – Jan 2015) and discussion paper (Feb 2015)	Energex's response	Energex's revised position in consultation papers (July-August 2015)	Feedback (2 October 2015)	Energex's response	Compliance with principles
					and actioned within the 2017-2020 period. Energex does not consider that offering the cap on a permanent basis, or for a period of longer than 12 months, would meet the principle of cost reflectivity.	
14. Rewards based tariff trial demonstrated that customers can understand and respond to demand tariffs	Demand tariffs will be complicated to understand. Communication channels must be broad and reach customers who have limited internet access and low literacy.			Responses highlighted the need for broad as well as targeted education programs. Customers are concerned that if education is not adequately delivered then customers will not be able to understand or respond to demand tariffs.	Energex will contribute towards a comprehensive education program, and will work through community stakeholders to exchange information with electricity consumers. This communication will include • Linkage of demand to typical appliance use, • case studies, • examples of how to calculate a bill given a particular tariff, • information on expected network impacts,	Energex's consideration of customer communications and education within the Real Time Tariff Study, combined with learnings from the rewards based tariff trial, will help build customers understanding of demand charging and enable customers to make informed decisions about the nature of network usage.

Energex's initial position (strawman)	Initial feedback from workshops (Nov 2014 – Jan 2015) and discussion paper (Feb 2015)	Energex's response	Energex's revised position in consultation papers (July-August 2015)	Feedback (2 October 2015)	Energex's response	Compliance with principles
					• information on the drivers of tariff reform, • information on why demand was chosen as the primary network tariff structure, • information about how to respond to a demand tariff, • tools to help explore how behavioural change and technology adoption will assist in responding to tariff signals.	
15. Not addressed	Customer representatives expressed concern over the impact of tariff reform on customers who do not adopt new tariffs during the voluntary period of tariff reform.	Energex took on board the feedback and developed the Real Time Tariff Study to assess impacts and address barriers to tariff adoption.	Vulnerable customer cohorts, including tenants, to be included in the Real Time Tariff Study. In addition, Energex will offer a financial risk reduction mechanism to customers new to demand tariffs, for the first 12 months of adoption, to empower customers to move	There is ongoing concern about the suitability of existing hardship rebates.	Energex will continue to develop the Real Time Tariff Study, and offer the financial risk reduction mechanism. Energex will work with the government, retailers, customer representatives and other market stakeholders to improve market participation for tenants and vulnerable	Address customer impacts.

Energex's initial position (strawman)	Initial feedback from workshops (Nov 2014 – Jan 2015) and discussion paper (Feb 2015)	Energex's response	Energex's revised position in consultation papers (July-August 2015)	Feedback (2 October 2015)	Energex's response	Compliance with principles
			across to the new tariffs. Energex released price paths demonstrating less than CPI price increases for non-adopting customers on NTC8400 – Residential Flat.		customers. Energex will participate in relevant reviews into the reform of hardship rebates, including the Queensland Productivity Commission.	
16. Demand tariffs will require type 4 meters	Stakeholders expressed concern over the cost-benefit trade off of type 4 metering, and the ability of tenants and low income customers to participate in the reform given their lack of access.	Energex committed to the use of actual half hourly data to calculate tariffs, which requires smart meters. In setting the pace of transition to the new tariffs, Energex considered the maturity of the contestable metering market, and the metering contestability rule change dates.	Nil change.	Ongoing concern over the cost and availability of smart meters and the lack of access for tenants and low income customers.	Energex will include a sample of tenants and hardship customers in its Real Time Tariff Study. Energex will delay mandatory tariff reform until it can ascertain that tenants are empowered to access tariff reform and will actively work on improving tenants market participation.	Energex's approach ensures that customers can reasonably respond to the tariffs, and is considerate of customer impacts.
17. Small business demand tariffs to be offered on a voluntary basis from 1 July	Engagement activities were targeted at residential stakeholders rather than small business stakeholders. Insufficient data available on small business customers to adequately	Energex decided to offer separate engagement programs for small business customers.	Energex will delay the introduction of the voluntary demand tariff NTC7100 – Business Demand until 1 July 2017, and will seek to collect suitable interval data to better assess	Stakeholders agreed with the delay in tariff offering and with the additional customer impact modelling, but continued to have	Energex acknowledges that the services and technology available for small business customers to respond to demand tariffs is limited. Energex will continue to account for the maturity	Assessing customer impacts Offering tariffs that customers can reasonably understand and respond to.

Energex's initial position (strawman)	Initial feedback from workshops (Nov 2014 – Jan 2015) and discussion paper (Feb 2015)	Energex's response	Energex's revised position in consultation papers (July-August 2015)	Feedback (2 October 2015)	Energex's response	Compliance with principles
2016/17	assess the impact of demand tariffs on business customers.		the impact of demand tariffs on business customers by 30 June 2016.	concerns about business customers' ability to shift their consumption outside of peak periods.	of those enabling services and technologies in setting the pace of tariff reform for small business customers. Energex will run a Real Time Tariff Study for small business customers from 2017. This study will help Energex assess which combinations of tariffs, services and technologies are best suited to business customers.	

Appendix 3 – Glossaries

Table A. 3 - Acronyms and abbreviations

Abbreviation	Description
AMMD	Average Monthly Maximum Demand
A/C	Air-conditioning
ACS	Alternative Control Service
AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator
AH	After Hours
AIC	Average Incremental Cost
AR	Allowed Revenue
BH	Business Hours
CAC	Connection Asset Customers
Capex	Capital Expenditure
CIS	Customer Impact Statement
CPI	Consumer Price Index
CPP	Critical Peak Pricing
DER	Distributed Energy Resources
DCOS	Distribution Cost of Supply
DNSP	Distribution Network Service Provider
DPPC	Designated Pricing Proposal Charges (previously known as TUoS)
DRED	Demand Response Enabled Device
DUoS	Distribution Use of System
EG	Embedded Generators
ENA	Energy Network Australia
FFRM	Financial Risk Reduction Mechanism
FiT	Feed-in Tariff (Solar FiT) under the Queensland Solar Bonus Scheme
HV	High Voltage
ICC	Individually Calculated Customers
kVA	Kilovolt ampere
LCC	Large Customer Connection
LF	Load factor
LRMC	Long Run Marginal Cost
LV	Low Voltage

Abbreviation	Description
MSATS	Market Settlement and Transfer Solution
NEL	National Electricity Law
NEM	National Electricity Market
NEO	National Electricity Objective
NER	National Electricity Rules (or Rules)
NMI	National Meter Identifier
NTC	Network Tariff Code
NUoS	Network Use of System
O&M	Operating and Maintenance Allowance (Opex)
Opex	Operating and Maintenance Expenditure
PV	Photovoltaic (Solar PV)
PV	Present Value
QAO	Queensland Audit Office
QCA	Queensland Competition Authority
QECMM	Queensland Electricity Connection and Metering Manual
RAB	Regulatory Asset Base
RTTS	Real Time Tariff Study
Rules	National Electricity Rules (or NER)
SAC	Standard Asset Customers
SBS	Solar Bonus Scheme
SCS	Standard Control Service
SRMC	Short-Run Marginal Cost
STPIS	Service Target Performance Incentive Scheme
TNCP	Transmission Network Connection Point
TNSP	Transmission Network Service Provider
ToU	Time of Use
TR	Total Allowed Revenue
TRIP	Tariff Reform Implementation Partnership
TSS	Tariff Structure Statement
TUoS	Transmission Use of System
WACC	Weighted Average Cost of Capital

Table A. 4 - Units of measurement used throughout this document

Base Unit	Unit name	Multiples used in this document
h	hour	GWh, kWh, MWh
V	volt	kV, kVA, MVA
VA	volt ampere	kVA, MVA
var	var	kvar
W	watt	W, kW, kWh, MW

Table A. 5 - Multiples of prefixes (units) used throughout this document

Prefix symbol	Prefix name	Prefix multiples by unit	Prefixes used in this document
G	giga	10^9	GWh
M	mega	1 million or 10^6	MW, MWh, MVA
k	kilo	1 thousand or 10^3	kV, kVA, kvar, kW, kWh

Table A. 6 - Definitions of terminology used throughout this document

Term	Abbreviation / Acronym	Definition
After Hours	AH	Any time outside business hours.
Air-conditioning	A/C	An air-conditioning appliance; commonly used in the context of a unit, i.e. A/C unit.
Allowed Revenue	AR	Refer to AER, Final Framework and approach for Energex and Ergon Energy Regulatory control period commencing 1 July 2015, April 2014.
Alternative Control Service	ACS	Customer specific or customer requested services. These services may also have potential for provision on a competitive basis rather than by the local DNSP. This service class includes the provision, construction and maintenance of type 6 metering services, street lighting assets, and fee-based and quoted services.
AEMC Power of Choice Review		Conducted by the AEMC, the Power of choice review sets out a substantial reform package for the NEM to provide consumers with more opportunities to make informed choices about the way they use electricity and manage expenditure. The package of reforms proposed by the AEMC includes, among other things: • reform of distribution network pricing principles to improve consumer understanding of cost reflective prices and give customers more opportunity to be rewarded for changing their consumption patterns. • expand competition in metering services with a view to providing services that reflect consumer preferences at efficient prices.
Australian Energy Market Commission	AEMC	A national, independent body that exists to make and amend the detailed rules for the NEM to ensure efficient, reliable and secure energy market frameworks which serve the long term interests of consumers.
Australian Energy Regulator	AER	The economic regulator of the NEM established under section 44AE of the *Competition and Consumer Act 2010* (Commonwealth).
Average Monthly Maximum Demand	AMMD	Average of a customer's peak demands over a defined period.
Capacity charge		This part of the tariff seeks to reflect the costs associated with providing network capacity required by a customer on a long term basis. It is levied on the basis of either contracted demand or forecasted capacity using prior year information. The charge is applied as a dollar amount per kVA per month.

Term	Abbreviation / Acronym	Definition
Capital expenditure	Capex	Expenditure typically resulting in an asset (or the amount Energex has spent on assets).
Charging parameter		The charges comprising a tariff. Parameters include demand, capacity, supply and usage (flat or ToU) charges.
Common service		A service that ensures the integrity of a distribution system, benefits all distribution customers and cannot reasonably be allocated on a locational basis.
Connection Asset Customers	CAC	Typically, those customers connected at 11 kV who are not allocated to the ICC tariff class.
CAC 11 kV Line		CAC customer whose point of connection to the electricity distribution network is on the 11 kV line shared between other customers.
CAC 11 kV Bus		CAC customer whose point of connection to the electricity distribution network is directly to the 11 kV Bus. The customer is supplied by a dedicated connection that is not shared with any other customer directly from the substation.
Connection asset (Contributed or non-contributed)		Those components of a transmission or distribution system which are used to provide connection services. Connection assets are those assets required to connect an electrical installation to the shared network and are all the assets from the connection point back up to and including the network coupling point. Connection assets are generally for the sole use of a single connection and are typically not shared by multiple connections.
Connection point		The agreed point of supply established between a Network Service Provider and another Registered Participant, Non-Registered Customer or franchise customer. The meter is installed as close as possible to this location.
Customer		Refer to chapter 10 of the Rules.
Daily supply charge		For large customers, reflects the incremental costs that arise from the connection and management of the customer. For small customers, reflects the average capacity set aside on the shared network for a typical customer using the tariff. This charge is also known as standing or fixed charge.
Demand		The amount of electricity being consumed at a given time measured in either kilowatts (kW) or kilovolt amperes (kVA). The ratio between the two is the power factor.

Term	Abbreviation / Acronym	Definition
Demand charge		This part of the tariff accounts for the actual demand a customer places on the electricity network. The actual demand levied for billing purposes is the metered monthly maximum demand. The charge is applied as: • a dollar price per kW per month or kVA per month for DPPC charges, and • a dollar price per kVA per month for DUoS charges (ICC, CAC and SAC Large customers).
Demand tariff		The tariff has been structured to include a demand parameter so the customer's actual demand is reflected in the price they pay for their electricity.
Direct control services	DCS	Refer to the AER's Final Framework and approach for Energex and Ergon Energy – Regulatory control period commencing 1 July 2015, April 2014.
Distribution Cost of Supply Model	DCOS	The Energex model used to allocate costs approved by the AER to the various tariff classes.
Distribution Use of System	DUoS	This refers to the network charges for the use of the distribution network.
Designated Pricing Proposal Charge	DPPC	Refers to the charges incurred for use of the transmission network; previously referred to as Transmission Use of System (TUoS).
Distributed energy resources	DER	DER systems are small-scale power generation or storage technologies used to provide an alternative to or an enhancement of the traditional electric power system. DER systems tend to use renewable energy sources.
Embedded Generator	EG	In line with the ENA classification, EGs are generally those generators with an installed capacity as follows: Medium: 1-5 MVA (LV or HV) or < 1 MVA (HV) Large: > 5 MVA
Feed-in Tariff	FiT	The rate that is to be paid for the excess energy generated by customers and fed back into the electricity grid under the Queensland Solar Bonus Scheme. The FiT rate is determined by the Queensland Government and is paid by the purchaser of the excess energy.
Final Determination		A distribution Determination document published by the AER in its role as Energex's economic regulator that provides for distribution charges to increase during Energex's Regulatory Control Period. In this proposal, reference to the Final Determination refers to the 2015-2020 AER Final Determination.
High Voltage	HV	Refers to the network at 11 kV or above.

Term	Abbreviation / Acronym	Definition
Individually Calculated Customer	ICC	Typically those customers connected at 110 kV or 33 kV, or connected at 11 kV and with electricity consumption greater than 40 GWh per year at a single connection point or demand greater than or equal to 10 MVA, or where a customer's circumstances mean that the average shared network charge becomes meaningless or distorted.
Inferred demand		Process whereby customer demand is inferred based on the average Net System Load Profile (NSLP). Inferred demand may be used in the case of a large mandatory roll-out of demand tariffs, in the absence of advanced metering technology.
Large customer classification		As per tariff class assignment process for customers with consumption greater than 100 MWh per year.
Large customer connection		New or upgraded connections of greater than 1 MVA or 4 GWh per year, or where the uniqueness of the connection assets would result in distortion of the SAC pricing.
Load factor		Load factor is a measure of efficient use of the network and is calculated by dividing a customer's annual average energy by the average maximum demand (or AMMD).
Long Run Marginal Cost	LRMC	An estimate of the cost (long term variable investment) of augmenting the existing network to provide sufficient capacity for one additional customer to connect to the network or an additional MW of demand.
Low Voltage	LV	Refers to the sub-11 kV network
Maximum demand		The maximum demand recorded at a customer's individual meter or the maximum demand placed on the electrical distribution network system at any time or at a specific time or within a specific time period, such as a month. Maximum demand is an indication of the capacity required for a customer's connection or the electrical distribution network.
Micro Generator		AS4777-compliant generators with an installation size of less than 10 kW (single phase) or 30 kW (three phase) connected to the LV network.
Market Settlement and Transfer Solution	MSATS	The central repository for Standing Data for all NMIs in contestable markets.
National Electricity Law	NEL	The legislation that establishes the role of the AER as the economic regulator of the NEM and the regulatory framework under which the AER operates.
National Electricity Market	NEM	The interconnected electricity grid covering Queensland, New South Wales, Victoria, Tasmania, South Australia and the Australian Capital Territory.

Term	Abbreviation / Acronym	Definition
National Electricity Rules	NER (the Rules)	The legal provisions (enforced by the AER) that regulate the operation of the NEM and the national electricity systems, the activities of market participants and the provision of connection services to retail customers.
National Metering Identifier	NMI	A unique number assigned to each metering installation.
Network Coupling Point	NCP	The point at which connection assets join a distribution network, used to identify the distribution service price payable by a customer.
Network Tariff Code	NTC	Energex's nominated code that represents the network tariff being charged to customers for network services.
Network Use of System	NUoS	The tariff for use of the distribution and transmission networks. It is the sum of both Distribution Use of System (DUoS) and Designated Pricing Proposal Charge (DPPC).
Non-Demand tariff		The tariff is based around a daily supply charge and the actual usage (kWh) used by the customer.
Non-Standard		Where specialist resources or extensive man-hours for a small customer connection are required to assess the applicants proposed changes to connection agreements or standard methods of connection to the DNSP's network.
Off-peak period		All hours which are outside Peak and Shoulder periods.
Operating expenditure	Opex	Opex is the combined total of maintenance and operating costs. Maintenance Costs are those that are directly and specifically attributable to the repair and maintenance of network assets, while Operating Costs are those that relate to the day to day operations of Energex which are not maintenance costs.
Peak period		Meter Type 1–4 (ICC, CAC & SAC Large): The hours between 7 am and 11 pm, Monday to Friday. Meter Type 6 (SAC Small - Business): The hours between 7 am and 9 pm, Monday to Friday. Meter Type 6 (SAC Small - Residential): The hours between 4 pm and 8 pm, Monday to Friday.
Power factor		Power factor is the ratio of kW to kVA, and is a useful measure of the efficiency in the use of the network infrastructure. The closer the power factor is to one (1), the more efficiently the network assets are utilised. Power factor = kW / kVA

Term	Abbreviation / Acronym	Definition
Preliminary Decision		A Preliminary Decision is produced by the AER in its role as Energex's economic regulator. A Preliminary Decision is an interim Determination for the forthcoming regulatory control period provided to Energex by the AER, prior to the release of a Final Determination. In this proposal, reference to the Preliminary Decision refers to the Preliminary Decision Energex determination 2015-16 to 2019-20.
Price path		Outlines the escalation factors to be applied to the initial price over the Regulatory Control Period.
Pricing objectives		Objectives established by Energex to complement (and ensure compliance with) the pricing principles set out in the Rules, and to provide clarity when formulating tariffs.
Pricing principles		The pricing principles are established in Clause 6.18.5 of the Rules and provide guidance to Energex for setting tariffs.
Pricing Proposal		This document. Prepared by Energex in accordance with Clause 6.18.2 of the Rules. It is provided to the AER for approval and outlines how Energex will collect its revenue during the relevant regulatory year.
Primary tariff		Tariff applied to a particular customer that reflects the primary use of the premises or the volume of the load, and is capable of existing by itself against a NMI. Primary tariffs include (NTC8400 – Residential Flat, NTC8900 – Residential ToU, NTC7000 – Residential Demand, NTC8500 – Business Flat, NTC8800 – Business ToU, NTC7100 – Business Demand, NTC8100 – Large Demand, NTC8300 – Small Demand, NTC7300 – LV Demand ToU)
Queensland Government Solar Bonus Scheme	SBS FiT	A program that pays residential and other small energy customers for the surplus electricity generated from roof-top solar photovoltaic (PV) systems that is exported to the Queensland electricity grid.
Regulatory Control Period		A standard Regulatory Control Period for DNSPs is a period of not less than 5 regulatory years. Energex's current Regulatory Control Period is 2015-20, commencing 1 July 2015.
Regulatory depreciation		Also referred to as the return of capital – the sum of the (negative) straight–line depreciation and the (positive) annual inflation effect on the opening regulatory asset base (RAB).
Regulatory year		A specific year within the regulatory control period.
Return on capital		The return necessary to achieve a fair and reasonable rate of return on the assets necessarily invested in the business.

Term	Abbreviation / Acronym	Definition
SAC Large (Demand tariff)		The customer's connection point has a meter installed that is capable of measuring energy consumption (kWh) and demand (kW). This meter records total energy consumption (kWh) and demand over 30 minute periods. A customer's demand is the average demand (kW) over the 30 minute period.
SAC Small (Non-Demand tariff)		The customer's connection point has a meter installed that is capable of measuring the total energy consumption (kWh).
Secondary tariff		Any tariff relevant to a particular customer which is applied in addition to their primary tariff. It is not capable of existing by itself against a NMI. Secondary tariffs include controlled tariffs (NTC9000 – Super Economy, NTC9100 - Economy and NTC7300 – Smart Control) and solar PV tariff (NTC9900 – Solar FiT).
Service Target Performance Incentive Scheme	STPIS	A scheme developed and published by the AER in accordance with clause 6.6.2 of the Rules, that provides incentives (that may include targets) for DNSPs (including Energex) to maintain and improve network performance.
Short-Run Marginal Cost	SRMC	The cost (short term, fixed investment) of a customer connecting to the network but using only the existing network capacity.
Shoulder period		The hours between 7 am to 4 pm and 8 pm to 10 pm, Monday to Friday and 7 am to 10 pm weekends. For residential ToU tariff (NTC8900).
Side constraint		A side constraint is an upper limit on price increases applied at the tariff class level for SCS and is calculated in accordance with clause 6.18.6 of the Rules by taking into account volume forecasts, CPI, X Factor, STPIS and Capital Contributions. The purpose of a side constraint is to mitigate the impact of prices on customers from one year to the next within a regulatory control period.
Site-specific charge		This charge is calculated for a site and is specific to the individual connection point.
Small customer classification		As per tariff class assignment process for customers with consumption less than 100 MWh per year.
Solar Photovoltaic	Solar PV	A system that uses sunlight to generate electricity for residential use. The system provides power for the premises with any excess production feeding into the electricity grid.
Standard Asset Customer	SAC	Generally those customers connected to the LV network.

Term	Abbreviation / Acronym	Definition
Standard Control Service	SCS	Services that are central to electricity supply and therefore relied on by most (if not all) customers. This service class includes network, connection and metering services.
Street lights (Major)		Lamps in common use for major road lighting including: a) High Pressure Sodium 100 watt (S100) and above; b) Metal Halide 150 watt (H150) and above; and c) Mercury Vapour 250 watt (M250) and above.
Street lights (Minor)		All lamps in common use for minor road lighting, including Mercury Vapour, High Pressure Sodium and Fluorescent.
Super economy		Tariff whereby a customer's specified permanently connected appliances are controlled by network equipment so that supply will be permanently available for a minimum period of 8 hours at the absolute discretion of Energex but usually between the hours of 10:00pm and 6:00am.
Tariff		The set of charges applied to a customer in the respective billing period. A tariff consists of one or more charging parameters that comprise the total tariff rate.
Tariff class		A class of customers for one or more direct control services who are subject to a particular tariff or particular tariffs (as per chapter 10 of the Rules).
Tariff Structure Statement	TSS	Document prepared in accordance with Part I of chapter 6 of the Rules, setting out Energex's network price structures and indicative tariffs that will apply over each year of the regulatory control period.
Time of use	ToU	Refers to tariffs that vary according to the time of day at which the electricity is consumed.
Total allowed revenue	TR	Refer to AER, Final Framework and Approach for Energex and Ergon Energy Regulatory control period commencing 1 July 2015 (April 2014). Total allowed revenue used to be formerly known as maximum allowable revenue (MAR).
Transmission Use of System	TUoS	Superseded terminology for Designated Pricing Proposal Charges (DPPC) which are charges incurred for use of the transmission network.
Unmetered supply		A customer who takes supply where no meter is installed at the connection point.

Term	Abbreviation / Acronym	Definition
Usage charge		This part of the tariff seeks to reflect costs not directly allocated to network drivers and costs that are proportional to the size of the customer. The energy usage (kWh) for the period, as recorded by the customer's meter, is utilised to calculate this part of the tariff charge. This charge is applied as an amount (cents) per kilowatt hour (kWh), i.e. c/kWh. This charging parameter is also known as energy, volumetric or flat charge.
Usage charge (Off-peak)		This charge is applicable to those customers who are on a Residential and/or Business Time of Use tariff. The energy consumption (kWh) during off-peak periods (refer to Off-peak Period for times), as recorded by the customer's meter, is utilised to calculate this part of the tariff. This charge is applied as an amount (cents) per kilowatt hour (kWh), i.e. c/kWh.
Usage charge (Peak)		This charge is applicable to those customers who are on a Residential and/or Business Time of Use tariff. The energy consumption (kWh) during peak periods (refer to Peak Period for times), as recorded by the customer's meter, is utilised to calculate this part of the tariff. This charge is applied as an amount (cents) per kilowatt hour (kWh) i.e. c/kWh.
Usage charge (Shoulder)		This charge is applicable to those customers who are on a Residential Time of Use tariff. The energy consumption (kWh) during shoulder periods (refer to Shoulder Period for times), as recorded by the customer's meter, is utilised to calculate this part of the tariff. This charge is applied as an amount (cents) per kilowatt hour (kWh), i.e. c/kWh.
Weighted Average Cost of Capital	WACC	The return a business must earn on an existing asset base. For Energex, the WACC is set by the AER in a Determination for a specific regulatory control period.
Work Day		Work days are week days but do not include a gazetted public holiday