

**RESPONSE TO QUEENSLAND  
COMPETITION AUTHORITY**

**Review of Electricity Pricing and Tariff  
Structures**

**Stage 2 – Request for Comments Paper**

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## **1. INTRODUCTION**

ENERGEX Limited (ENERGEX) welcomes the opportunity provided by the Queensland Competition Authority (QCA) to submit comments on the *Review of Electricity Pricing and Tariff Structures Stage 2: Request for Comments Paper* (Comments Paper).

ENERGEX understands the importance of a robust and consultative approach to electricity pricing reform. Obtaining the understanding and support of our customers in designing and implementing new tariffs will be a major component of the upcoming phases of the tariff review.

In consultation with a broad spectrum of representative groups from residential, commercial and business customers, ENERGEX will endeavour to identify the extent to which our customers can respond to tariff steps and time-of-use (ToU) signals without introducing unintended consequences. Integral to this research is a better understanding of essential or 'base load' energy use versus 'lifestyle' energy consumption, particularly in the context of large families and other residential customers who may be limited in their ability to respond to pricing signals (for example, those in rental accommodation).

Included in this work will be the extension of the current and planned trials of smart metering, reward based tariffs and voluntary air conditioning cycling trials. Another key element is to identify and implement methods to permit simple, accessible and low cost entry to off-peak energy through direct load control functions.

The following provides ENERGEX's comments and responses to the specific QCA questions. Attachment A provides a matrix representation of ENERGEX's view, by customer type, of the performance of different tariff mechanisms over time. Attachment B provides specific comments on each of the current notified prices for non-market customers.

### **1.1 ENERGEX's Growth Challenge**

ENERGEX is committed to the delivery of safe, reliable and affordable electricity in a commercially balanced way that provides value for our customers, manages risks and builds a sustainable future. In achieving this vision the challenge for ENERGEX, as an electricity distribution business operating in South-East Queensland (SEQ), is meeting sustained growth within a changing operating environment.

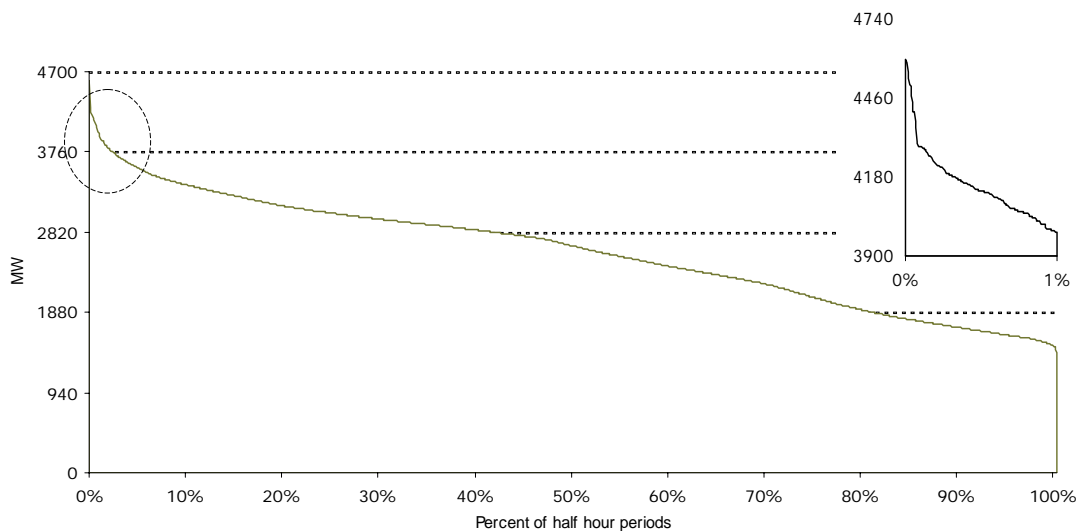
Strong economic growth, together with increasing population numbers and the ever increasing use of electrical appliances such as air-conditioners, computers and large screen televisions is resulting in higher peak demand. Accordingly, peak demand continues to play a major part in ENERGEX's growth challenge.

Based on historical weather patterns and usage trends, ENERGEX estimates peak demand in SEQ will rise by 71 per cent over the next decade from 4,367 MW in 2007 to an estimated 7,459 MW by 2018 with base-line demand anticipated to grow at an average annual growth rate of 4.36 per cent

– a significantly higher rate of growth than for energy. ENERGEX is required to build a network with the capacity to meet the electricity needs of all customers at times of peak demand.

Analysis of demand highlights the deteriorating utilisation of ENERGEX’s assets, with electricity infrastructure required to be built to meet peak demand and therefore used for relatively short periods. The 2008-09 load duration curve (Figure 1) highlights that the top 13 per cent of load occurs for less than one per cent of the year.

**Figure 1: Load duration curve 2008-09**



For the past 10 years, SEQ has also experienced high growth in customer numbers. The SEQ region continues to see large tracts of land being released for new subdivisions on urban fringes and a strong urban renewal program resulting in higher density housing in suburban regions. Interstate migration also remains strong. Consistent with this, ENERGEX customer numbers are forecast to increase at an average annual rate of 2.07 per cent.

ENERGEX’s operating environment has also changed significantly, creating new challenges for the electricity distribution network. Changes include:

- Higher expectations regarding the reliability and quality of electricity supply, driven in particular by increased reliance on digital equipment, such as computers;
- Greater uptake of energy efficient appliances and solar hot water systems or solar panels which tend to compound the ever increasing divergence between peak demand and energy consumption; and
- Heightened community pressure for electricity infrastructure that is less intrusive.

ENERGEX recognises that managing peak demand solely through network augmentation is not financially, socially or environmentally responsible nor sustainable over the long-term, particularly

when such network capacity has the potential to be underutilised for the majority of time. As such, ENERGEX's strategy is to implement a suite of concurrent, co-ordinated initiatives and to encourage demand management capabilities that will deliver a reduction in future peak demand.

## **1.2 Price as a Demand Management Tool**

Electricity tariff reform is considered a central plank of ENERGEX's wider strategy to reduce peak demand. ENERGEX believes that the price paid by customers for electricity should closely reflect their individual contribution towards network costs. Moreover, ENERGEX believes that network and retail pricing structures should allow customers, to the extent possible, to dynamically respond to short term price signals. Customers also need a degree of stability in tariff structures to foster long term value considerations when purchasing products such as hot water systems and air-conditioners. This is particularly important at a time when there are a number of other variables influencing these decisions, such as the possibility of a carbon pollution reduction scheme and the various rebates currently available.

To this end, pricing signals must be transparent and passed through to the customer so that they can make informed decisions about their energy usage. ENERGEX is very aware of the need to ensure clear integration and coordination of the network and retail components to ensure that neither one counteracts or negates the other, therefore losing the pricing signals for both distribution and retail completely. To ensure effective pricing signals it is essential network and retail tariffs are complementary.

In analysing the drivers of peak demand over time, it is also important to separate domestic 'base load' (for essential services such as lighting, cooking, refrigerators and necessary appliances) and 'lifestyle load' (additional air-conditioning, pool pumps, second refrigerators, multiple computers and plasma televisions). The increasing domestic load peak is being driven by an increase in lifestyle load. This points to where ENERGEX believes tariff reform could have most impact – in recognising customers whose consumption range lies in the base category and/or who consume at off peak times, while providing appropriate pricing signals for the lifestyle load, particularly when consumption occurs at peak time across the network.

For small customers, options for short term network price reform must also be considered in light of the current metering stock. ENERGEX currently undertakes the metering services for more than 1.3 million residential and small to medium business metered connections to the ENERGEX network. ENERGEX is currently replacing all accumulation meters with interval meters on a new and replacement basis. There are currently over 220,000 ToU meters installed in the ENERGEX distribution area, of which approximately 200,000 are installed at residential premises. Although most of these meters are currently being read on an accumulation basis, if these meters are re-programmed they would facilitate ToU pricing.

In the long term, ENERGEX envisages all residential customers being able to access ToU tariffs. In addition ENERGEX believes that voluntary controlled load should continue to be utilised to manage

electricity consumption during periods of network capacity constraints, reducing the capacity requirements on the network at these times.

### **1.3 Controlled Load & Reward Based Tariffs**

In Queensland, there is a long and successful history of utilising controlled load for hot water systems. At present, there are approximately 700,000 electric hot water systems connected to a controlled load tariff (retail notified Tariff 31 or Tariff 33), delivering approximately 450MW of managed hot water load in winter throughout ENERGEX's distribution area. Switching of load is an effective means of managing demand on the network and in effect minimises the level of capital expenditure required without affecting network reliability. Customers on these tariffs benefit through a lower rate for energy used to generate hot water.

Increased penetration of solar and heat pump hot water systems, due to policy initiatives and customer demand for less carbon intensive energy solutions, represent a key challenge to the ongoing benefits of controlled load. The net economic benefit of the solar hot water initiative is proportionate to whether the new solar hot water systems are on controlled load tariffs. If new solar hot water systems are not load controlled (and they replace electric hot water systems) then up to 125MW of load may be added to the winter peak, requiring significant capital investment to support this new load.

To maintain the effectiveness of controlled load for the purposes of demand management, it is necessary to consider the incentives to connect new solar and heat pump hot water systems as interruptible hot water load. Requiring new solar and heat pump hot water systems to be connected as interruptible load would minimise network related costs but consideration must be given to the impact on customers. ENERGEX will continue to work closely with the affected stakeholders on this issue.

There is now scope for broader application of controlled load devices on a voluntary basis. ENERGEX operates the most extensive Audio-Frequency Load Control (AFLC) system of any distributor in Australia, with around 60 per cent of all connected premises having remote control receivers installed with no negative impacts on customers. This capability provides a strong platform for the extension of direct load control capability.

To date, load control has focussed on the ability to time-shift blocks of load. Through the tariff mechanisms available under Tariff 31 and Tariff 33, storage hot water heating load has been shifted from the winter peak demand time of the early evening to later in the night and early morning. However, as mentioned, the overall effectiveness of the water heating controls are diminishing. This has led ENERGEX to re-examine the impact of direct load control in three areas to extend to:

- Consideration of voluntary load-shifting for other household and commercial electricity demand, including other home appliances, swimming pool pumps and alternative technology water heating such as heat pumps and mains-boost solar;

- The introduction of short-term load shifting where appliances are managed on a voluntary basis for only a small number of days per year and for a short number of hours on those days. The ENERGEX Cool Change trials for the voluntary management of residential air-conditioner load is the first example of this initiative; and
- Consideration of the greater use of voluntary direct load control for ‘contingency’ purposes. Essentially an interruptible tariff, ENERGEX would have the discretion to interrupt load where system demand is expected to reach a pre-defined limit, or there are other system constraints on the network. This tariff may operate as a contingency tariff where load control would occur in certain contingent conditions – for example, when the network capacity is highly utilised or supply is restricted.

With regards to short-term load shifting approaches, appliances such as air conditioners can be fitted with load management devices which make it possible to regulate the number of times the compressor cycles. If a sufficient number of customers choose to install such a device, there is the potential for a significant reduction in peak demand. Similarly, pool pumps can be connected as controllable load through fitting a load management device (or through connection to controlled load Tariff 33). These devices enable ENERGEX to more effectively operate the network and minimise or delay the amount of additional capital expenditure required to maintain current standards of reliability. Furthermore, based on post-trial customer surveys, installation of load management devices to air conditioners does not materially impact a customer’s level of comfort.

The utilisation of the emerging suite of load control devices is moving beyond pilots and trials. ENERGEX has been working through Standards Australia committees to achieve a new standard describing Demand Reduction Enabling Devices (DRED). This has established the platform for the development of specific standards for load management for air conditioners, pool pumps and hot water systems. Furthermore there is evidence of ‘early mover’ activity with a number of white goods manufacturers publicising new household products with load management capability and interfaces.

By reducing the need for capital expenditure or facilitating more efficient use of current network assets, the resultant cost savings can be shared with customers who choose to take up these options through the use of lower energy charges or financial rebates.

The practical issues of extending the application of controlled load as planned will require not only clarity of tariff application, but a review of the constraints and conditions surrounding the existing controlled load notified tariffs. The cost to the customer of actually taking advantage of a controlled tariff will need to be reduced.

In addition, consideration will need to be given to a more flexible means of passing the benefit of control load back to customers. Currently, the separately controlled and metered circuit related to a specific tariff is the primary mechanism, however over time more flexibility such as fixed rebates or seasonal discounts may need to be incorporated into retail billing capability.

More broadly than controlled load tariffs, ENERGEX intends to examine the potential costs and benefits of ToU and dynamic peak prices as a method of achieving customer demand responses. The reward based tariff pilot will include price signal pilots and measure customer response as well as the impact on the distribution network.

## **2. RESPONSE TO QUESTIONS**

ENERGEX's responses to the questions raised in the Comments Paper are provided below.

### **2.1 The Makeup of Individual Tariffs**

*Do the fixed charges currently specified in the existing tariffs, reflect the fixed costs incurred by retailers (other than network costs) when supplying retail electricity services to customers on those tariffs, including customers with little or nil consumption?*

*If not, which of the existing tariffs have fixed charges that are the closest to cost reflectivity and which fixed charges are the furthest from cost reflectivity?*

ENERGEX notes that the existing notified retail tariffs are 'bundled' tariffs, intended to recover costs across the whole electricity supply chain.

Consequently, the fixed component of existing retail tariffs is unlikely to be recovering simply retail costs. However, ENERGEX is not in a position to comment on which existing retail tariffs have fixed charges closest to cost reflectivity.

*Should the retail (non-network) prices include a fixed cost component as well as a variable cost component?*

ENERGEX would expect that efficient retail and network tariffs are likely to incorporate both fixed and variable components. This recognises that a key function of these tariffs is revenue recovery, as well as any signalling of the costs of network usage incorporated in the tariffs.

However, ENERGEX notes that the presence of a fixed charge in specific retail tariffs can affect a customer's choice between these tariff classes. In relation to the impact of fixed charges on the uptake of tariffs that are load management related, there is strong anecdotal evidence to suggest that fixed charges are a deterrent to customer uptake, particularly in the case of solar hot water systems where the booster is used infrequently.

*What alternatives, if any, are available for aligning network tariffs with retail tariffs?*

ENERGEX strongly supports the close alignment of network and retail tariffs. ENERGEX also recognises that stakeholders can have different tariff objectives at different points in time. As such, the refinement of existing and/or development of new notified tariffs must be progressed through close liaison between distributors, retailers and the Queensland Government. ENERGEX is committed to engaging on a cross-industry basis to mitigate the ongoing potential for retail pricing signals to neutralise network pricing signals. This issue is discussed further in section 2.9 of this submission.

## 2.2 Suite of Tariffs Available to Customers

*Which of the existing tariffs are closest to achieving cost reflectivity and why?*

*What of the existing tariffs are furthest from achieving cost reflectivity and why?*

*Is the existing schedule of tariffs sufficient to achieve cost reflectivity or should further tariffs be added (or deleted)?*

ENERGEX is not in a position to comment on the cost reflectivity of existing retail tariffs.

*What types of tariffs would ideally be included in the tariff schedule?*

ENERGEX considers that tariffs included in the tariff schedule should be consistent with the Government's Terms of Reference for this retail tariff review. In particular, tariffs included in the schedule should be those which are most likely to support cost reflectivity and which enable customers to manage their electricity consumption more efficiently, including through demand management incentives.

To determine which tariffs are included in the tariff schedule, ENERGEX considers that a set of tariff objectives should be developed and applied to inform the decision. In this regard, ENERGEX has proposed and discusses a number of tariff objectives under section 2.4 of this submission.

*Regarding the conditions that restrict the uptake of certain regulated tariffs, are there any conditions that should be changed or relaxed to allow or encourage more customers to take advantage of time-of-use tariffs, controlled load tariffs or other types of tariff that may be considered more cost reflective?*

ENERGEX sees benefit in the terms and conditions applying to the existing residential controlled load retail tariffs (Tariff 31 and 33) being reviewed to determine their ongoing relevance. For example, the specified conditions in the tariff schedule should be reviewed, as well as the inclusion of times when supply will be available "in general", references to particular types of appliances and the requirement for appliances to be directly connected.

The relationship between the minimum payment and variable components of Tariffs 31 and 33 compared to Tariff 11 should also be reviewed, having regard to the equivalent network tariffs. ENERGEX is becoming increasingly concerned that the notified retail tariffs are creating incentives for solar hot water boosters and heat pumps to be connected to Tariff 11 rather than the controlled load tariffs. ENERGEX believes that the QCA should consider the removal of the minimum monthly payment on Tariff 31 and 33. There is sufficiently strong anecdotal evidence to suggest that fixed charges are a deterrent to customer uptake.

The variable rate issue is highlighted in Table 1, which indicates the strong signal in the network controlled load tariffs being diminished in the corresponding notified retail price.

**Table 1: Consumption rates across domestic and controlled load network and retail prices (c/kWh)**

	Network Tariff	Retail Tariff
Domestic / T11	6.964	17.13
Controlled 1 / T31	1.124	6.99
Disparity	6.2 times	2.5 times

More broadly, ENERGEX considers that a review of all existing notified retail tariffs and proposed new tariffs should be undertaken every two years through a public consultation process, to ensure the notified retail tariffs on the schedule remain appropriate for the circumstances.

### **2.3 Promoting Competition Across Classes of Customers**

*Is there a greater level of retail competition evident for certain classes of customers? If so, what makes these types of customers more attractive for competition?*

*Are certain classes of customers, on average, currently on tariffs closer to cost reflectivity than other? Why?*

*How should the Authority best determine the prices necessary to promote competition for each customer class?*

ENERGEX has no comments to make on these questions.

*If prices are made cost reflective, are there any reasons why notified prices should not be retained for small and/or large business and commercial customers?*

From an economic perspective, notified prices are not required when effective competition is present. However, public policy may dictate that notified prices be part of a range of options to protect customers. The Australian Energy Market Agreement (AEMA) does provide a framework for the management of notified tariffs.

In terms of notified prices, ENERGEX would be concerned if notified prices conflicted with network pricing signals particularly for those customers that are capable of obtaining competitive offers from retailers and negotiating an appropriate contract.

ENERGEX notes that the National Energy Customer Framework (NECF), which forms part of ongoing energy market reforms, is being developed. This regime does not include energy-specific regulation in relation to the provision of customer retail services to large customers. Developments in this aspect of the NECF should be monitored during the electricity tariff reform process.

## **2.4 Removal and Consolidation of Tariffs**

*Should the three existing tariffs, that are labelled obsolete in the tariff schedule be removed, and if so, what are the implications of doing so?*

*What criteria should be used to consider which tariffs to consolidate?*

As noted in section 2.2, ENERGEX considers that the decision as to the types of tariffs to be included in the retail tariff schedule, including the removal of existing tariffs and inclusion of new tariffs, should be guided by a set of tariff objectives. Only those tariffs that best meet the objectives should be included in the tariff schedule. In practice, this is likely to mean that a smaller number of well-targeted tariffs should be included in the tariff schedule than is currently the case.

Having regard to the Government's Terms of Reference for this retail tariff review, ENERGEX proposes the following objectives to be applied in choosing which tariff classes to be included in the retail tariff schedule:

- Promotes efficient use of the network
  - A tariff should incorporate appropriate signals to network users of their impact on existing and future network capacity and costs.
- Achieves cost reflectivity
  - A tariff class should achieve cost reflectivity in a way that does not hinder efficient use of the network.
- Achieves equity across similar customers
  - Tariffs should reflect the customers' utilisation of the existing network and/or the use of specific dedicated assets, such that customers in similar circumstances can access the same tariff classes.
- Is relatively simple to apply and understand
  - Tariffs should be relatively straightforward to apply and enable customers to understand and manage their electricity consumption.
- Recognises metering constraints
  - Tariffs should be tailored to existing metering installations across customer groups (residential and business).

- Maximises consistency between the retail and network tariffs
  - To the extent possible retail and network tariffs should be consistent to ensure network price signals are seen by retail customers.

It is important that the objectives are applicable over time, recognising the rapidly evolving energy and environmental policy frameworks at both the Federal and State level. These evolving frameworks are likely to mean that the retail tariff schedule will need to change over time in order to ensure notified retail tariffs are cost reflective and enable electricity customers using those tariffs to understand and manage their electricity consumption.

It is also important to recognise that the scope for and timing of retail and network tariff reform is likely to differ for residential and business customers, for reasons such as metering constraints and previous exposure to more complex tariff structures.

In ENERGENX's view, customer education will be a critical element of any tariff reform. To this end, ENERGENX believes that trials, such as Cool Change, can be an important means of educating customers as to the network cost impacts of their electricity consumption.

It should also be recognised that individual customer impacts of proposed changes to notified retail tariffs should be assessed prior to any change being implemented.

For illustrative purposes, ENERGENX has applied the above tariff objectives to a range of tariff structure options in Attachment A to this submission.

*Which of the existing tariffs should be consolidated?*

ENERGENX considers that the whole retail tariff schedule should be reviewed applying our proposed tariff objectives or comparable criteria.

The outcome of such a review is likely to result in consolidation and/or removal of a number of the 13 existing business tariffs and refinements to the structure of the existing residential tariffs. In this regard, inclining block and ToU tariffs are discussed further in sections 2.6 and 2.7 of our submission respectively.

## **2.5 Alternative Tariff Structures to Encourage Efficient Use of Electricity**

*What should be the relevant consideration when choosing alternative tariff structures that promote demand management and energy efficiency?*

The choice between tariff alternatives should be guided by the tariff objectives outlined in section 2.4, namely the broad elements of efficiency, equity and technological capability.

Retail prices are just one of the actions available to promote demand management, be that to alter the level or pattern of energy consumption by customers, the source of energy use or use of the

distribution network. As such the tariff structure and associated terms and conditions should not preclude the use of other demand management initiatives such as direct negotiation with certain customer categories for network support or curtailable load. Overall there should be scope for customers to be incentivised to, and recognised for, consuming energy in a way that achieves increased efficiency of the energy infrastructure assets and/or facilitates the deferment of capital expenditure.

*What impacts will peak and off-peak pricing have on various customer classes? What classes of customers are likely to be affected most?*

The increased use of peak and off-peak pricing for business and residential customers can potentially deliver significant efficiency benefits.

There is scope for the increased use of peak and off-peak pricing, particularly in the small business and residential customer sectors. However, peak and off-peak pricing can only be used by customers with an interval or smart meter. In the short term, based on current metering capability there is increased scope for commercial and industrial customers to be subject to peak and off-peak pricing.

Over recent years the Queensland Government, electricity distributors and retailers have undertaken various education campaigns to increase end user awareness about energy efficiency. These campaigns have been successful but they have focused on the importance of overall consumption rather than the time of consumption. As a result ENERGEX considers that, in general, business customers are likely to be more familiar and comfortable with ToU pricing than residential customers. As will be discussed further in section 2.7 of our submission, ENERGEX is investigating the opportunity to conduct ToU pilots for residential customers.

Currently there is some misalignment between the definition of peak and off-peak in the network pricing schedules and retail tariff schedule. To ensure administrative simplicity and operational efficiency all existing tariffs and any potential new tariffs should be reviewed to ensure a consistent approach is adopted.

*To what extent could network tariff reforms better address demand management objectives rather than retail tariff reform?*

ENERGEX recognises its demand management strategies are fundamental to reducing growth in electricity peak demand, conserving resources and reducing the environmental impacts of today's energy-intensive living. ENERGEX also recognises that customer appliances drive peak demand and therefore any demand management strategy must be a partnership with customers.

ENERGEX has developed an integrated demand management strategy with the objective to reduce demand by a total of 144 MW over the 2010-15 regulatory control period. This will be achieved through a combination of broad-based energy management and peak demand management strategies including:

- Residential targeted initiatives that provide customers with demand management and energy conservation choices;
- Commercial and industrial targeted initiatives that deliver practical examples of demand management for business;
- Reward-based tariffs that better reflect the cost of the capital utilised to meet peak demand for short periods of time;
- Promotion of 'energy conservation communities' to connect demand management technologies with electricity end users (e.g. Cool Change trial); and
- Load curtailment agreements with customers to manage peak demand, particularly in network constrained areas.

Network pricing is a key element of ENERGEX's demand management strategy and is included to facilitate efficient use of network assets by providing customers with increased information about the cost impact of their electricity consumption profile. ENERGEX currently develops network tariffs in accordance with pricing principles which support amongst other things, efficient use of the network, equity and cost-reflectivity.

ENERGEX considers kVA based capacity and demand charges more accurately reflect the impact a customer has on the network. Therefore kVA based charges present an opportunity to move to more cost reflective pricing. ENERGEX released a final position paper in December 2008 concluding to seek the introduction of kVA tariffs from 1 July 2010, subject to regulatory approval. Although initially kVA tariffs will apply to both Individually Calculated Customers and Connection Asset Customers it is anticipated that it will be transitioned to include Standard Asset Customer demand tariffs. ENERGEX notes that existing demand based retail tariff are based on kW charges and may create a disconnect between network and retail pricing. ENERGEX welcomes engagement with stakeholders to determine the optimal method to address this disparity consistent with the desire to align network and retail tariffs more generally.

*How should the Authority ensure that the structure of tariffs does not impede the existing initiatives of distributors in managing peak demand?*

The development and implementation of tariff structures should be a dynamic rather than static process to ensure electricity prices reflect environmental factors, energy consumption (e.g. the nature, use and level of penetration of certain appliances) and supporting infrastructure. ENERGEX therefore undertakes a continual program to improve the structure of its network tariffs in accordance with agreed pricing principles.

Each year ENERGEX publishes a discussion paper to inform stakeholders of the network tariff structures under consideration over the medium term. ENERGEX undertakes a separate consultation process prior to implementing any significant change. This process would include the following stages:

- Release of a consultation paper for stakeholder feedback;
- Hold customer forum(s) to present the proposal to stakeholders and provide an opportunity to discuss the proposed changes;
- One on one meetings with customers, regulators and other stakeholders, as required;
- Release of a draft position paper for stakeholder feedback, which will set out the issues raised by stakeholders, ENERGEX's response to those issues and our preliminary position on the specific aspects of the proposed changes and implementation timeframe;
- If required, hold a customer forum to present the preliminary position to stakeholders and provide an opportunity to discuss the proposed changes;
- Release of a final position paper;
- Obtaining regulatory approval to implement the proposed changes to the tariff structures; and
- Implementation program, including stakeholder communications plan.

To ensure network pricing signals are transparent to end users and that retail tariffs do not encourage perverse outcomes, notified retail tariffs should complement network tariffs.

As noted in section 2.2, ENERGEX considers that a review of all existing notified retail tariffs and proposed new tariffs should be undertaken every two years through a public consultation process, to ensure the notified retail tariffs on the schedule remain appropriate for the circumstances. To ensure notified retail tariffs complement network tariffs, this process could be run alongside ENERGEX's tariff review. Once network tariffs have been determined for the short to medium term, notified retail tariffs could then be reviewed in conjunction with stakeholders and the Government to ensure efficient and complementary retail and network pricing signals.

## **2.6 Inclining Block Tariffs**

*Would the introduction of an inclining block tariff structure deliver significant benefits (in terms of more efficient use of electricity and reduced peak demand) by itself?*

The introduction of inclining block tariffs would represent part of a staged transition towards more cost reflective regulated retail prices. The rationale behind inclining block tariffs is that high consumption customers use significantly more energy and this additional energy is generally consumed during peak periods.

In an ideal world, customers would pay according to the demand imposed on the network, particularly during the peak. However, this is not possible with simple accumulation meters. Accordingly, an inclining block tariff could be considered a reasonable interim measure because, as a general rule, high consumption customers will probably be running air-conditioners during the peak period and should therefore contribute proportionally more to the cost of the network. Air-

conditioners are the most significant contributor to increasing residential peak demand. Effectively inclining block tariffs could be used as a transition to ToU pricing.

Given price does not vary with the time of consumption the direct demand management signal for the customer is to reduce consumption in response to the higher price. Inclining block tariffs can act as an incentive for high use customers to both reduce consumption and to request the installation of a ToU meter so that they may tailor their consumption patterns and potentially reduce costs by changing their usage patterns to avoid peak periods.

*Would an inclining block tariff structure be more suited to some tariffs than others? Which ones?*

Compared to declining block tariffs and flat rate consumption tariffs, the use of inclining block tariffs represents the next step change towards more cost reflective tariffs. As outlined in section 2.4, the use of inclining block tariffs is most suited to end users that do not have access to interval meters or smart meters. However as discussed further in the answer to the next question, due consideration must be given to the placement of the 'steps' in the inclining block tariff.

*What thresholds would be appropriate for each of these tariffs in order to provide appropriate pricing signals?*

Due consideration must be given to the placement of the 'steps' in an inclining block tariff, especially for residential tariffs (e.g. Tariff 11) because customers with large families should not be unnecessarily penalised for relatively high 'base load' usage. The setting of thresholds will require access to electricity consumption data and should consider the consumption thresholds within existing network tariffs.

## **2.7 Peak Demand and Time-of-Use Pricing**

*How widely available are time-of-use meters and to what types of customers?*

In simple terms, meter types can be categorised into basic (generally known as accumulation meters) and sophisticated (generally known as interval meters), reflecting the capability of the meters, including the nature of electricity consumption data the meter is capable of recording and the way it is read.

The majority of small customers consuming less than 100MWh per year, including residential and small business customers, have accumulation meters installed. The majority of installed accumulation meters on ENERGEX's network only have the capability to record energy consumption over time, with no ToU capability.

The basic nature of these meters means that the range of tariffs that could be used to encourage customers to switch their consumption from peak to off-peak times to reduce peak demand on the network is limited.

In contrast to the basic meter, interval meters are able to measure consumption on specific days and at specific times. The most sophisticated interval meters are also capable of being remotely read. In general, interval meters are installed on behalf of larger business customers (consuming greater than 100MWh per year) and these customers elect to be on existing ToU network tariffs.

ENERGEX is currently replacing all accumulation meters with interval meters on a new and replacement basis. There are currently around 200,000 ToU meters (10 per cent of small customer meters) installed in the ENERGEX distribution area, which are currently being read on an accumulation basis. Subject to re-programming these meters, peak and off-peak pricing could be applied at these small customer sites.

*Would the availability of peak pricing and time-of-use tariff structures deliver significant benefits (in terms of more efficient use of electricity and reduced peak demand) given the existing availability of the required metering?*

The objective of ToU tariffs is to provide a signal to customers to encourage usage during periods of low demand on the network and discourage usage during periods of high demand (i.e. when the network is heavily utilised). It does so by offering a lower tariff during off-peak periods and higher tariffs during peak periods.

ToU pricing encourages more efficient use of the network as many customers could be expected to switch non-essential electricity use to off-peak periods, reducing peak demand and, over time, benefiting all customers through lower network charges.

ToU pricing also allows customers the flexibility to minimise their own electricity costs by either manually switching appliances off or fitting plug-in timers. This alleviates the need for hard wired switching as is required for controlled loads such as hot water. Further, the customer retains the power to choose when they consume electricity.

ENERGEX introduced ToU tariffs for small and medium non-demand business customers from 1 July 2007 and for large business customers from 1 July 2008. These ToU tariffs are based on a simple peak / off-peak differential. It is still relatively early to determine the effectiveness of these tariffs in reducing peak demand on the network. However, ENERGEX considers that material peak demand reduction benefits will be delivered in the medium to long term.

ENERGEX is exploring the opportunity to reconstruct the existing ToU network tariffs to incorporate both a shoulder period and/or the introduction of a seasonal element. This initiative is designed to better reflect the expected patterns of network utilisation and enhance the signal to business customers of the impact of their consumption on the network.

Key issues that need to be considered in the reconstruction of the existing ToU tariffs are:

- How many ToU bands there should be during any one day and what time period should each band apply for?

- Whether the ToU bands should be priced the same for each day of the year. That is, whether different tariff rates should be applied in the summer, winter, spring and autumn periods.
- Whether the ToU bands should be the same for all customers, or different bands for different geographic parts of the network (reflecting that some parts of the network are more capacity constrained than others).
- What the price differential between ToU bands is required to be to act as an incentive for customers to shift consumption away from peak periods.

As noted by the QCA, for small residential customers, a major restriction on the application of ToU pricing is having suitable meters widely installed. In this regard, the existing penetration of ToU accumulation meters is mostly restricted to new and outer suburbs in ENERGEX's network. However, ENERGEX considers that the penetration of interval meters in the small customer segment is now sufficiently large that residential ToU tariffs would be suitable at least for newly connecting customers.

Moreover, the existing small business ToU tariff is calculated using the same data set as residential customers and accordingly this tariff could be made available if a residential customer is prepared to upgrade their currently installed meter (if it is not ToU capable). To encourage customers to install new ToU meters, ENERGEX would set a lower rate for energy consumption in off-peak periods.

ENERGEX's main concern in extending ToU tariffs to small residential customers is their lack of previous exposure to such tariffs. As a result, ENERGEX is conducting ToU pilots to provide better understanding of customer acceptance and responsiveness to such tariffs, as well as their effectiveness in reducing peak demand on the network.

ENERGEX envisages the widespread extension of ToU tariffs to small residential customers as potentially delivering significant benefits, in particular, a reduction in peak demand growth.

*Should time-of-use metering be encouraged and if so how?*

In principle, ENERGEX believes that ToU metering should be encouraged because of its potential to contribute to a material reduction in peak network demand.

In April 2007, the Council of Australian Governments committed to the national roll-out of smart electricity meters in areas where the benefits for customers outweigh costs. ENERGEX is proceeding with ToU meter pilots for small residential customers. The outcomes of these pilots will inform the cost-benefits analysis associated with smart metering in Queensland.

The switching times for current retail ToU tariffs were originally set to incorporate both energy purchase costs and efficient operation and development of the distribution network. With the separation of retail and distribution functions, along with changing customer behaviour and price characteristics of electricity generation, the opportunity now exists for the definition of peak and off-

peak energy, including the time of day settings, to differ. ToU on-peak and off-peak times that are appropriate for network purposes may differ from that for generators and retailers. A mechanism to reach agreement on the daily timing of ToU periods may be necessary.

## **2.8 Interruptible Tariffs**

*How effective are interruptible tariffs and/or individual control devices in managing customer demand during peak demand periods?*

*To what extent have customers in each distribution area that have the capacity to access an interruptible tariff take up the option?*

*What types of consumption would be suitable for interruptible tariffs and/or individual control devices?*

*Would a wider availability of interruptible tariffs under/or individual control devices enabling remote load control be an effective means of managing periods of peak customer demand? Which would be more cost effective?*

ENERGENX has found that interruptible tariffs and/or individual load control devices in managing customer demand during peak demand periods has been of significant benefit to residential customers in SEQ. As mentioned previously in this submission, the estimated amount of load under control in peak winter conditions is approximately 450MW, which ultimately translates into a price benefit for customers. The use of interruptible tariffs and/or individual control devices is best suited to energy load which is discretionary because managing the ToU will not affect the customer's quality of life, such as hot water and pool pumps. Alternatively interruptible tariffs and/or individual control devices can be effectively used to address the key contributors to peak demand growth, for example air conditioning. However this would be subject to the ability to fit a load management device to the appliance and the comfort of the user not being affected. ENERGENX's Cool Change trials have demonstrated an approximate 20 per cent reduction in peak demand with no material impact on customer comfort.

Provided interruptible tariffs and/or individual control devices are used for discretionary load and that there are sufficient incentives for customers to connect to the interruptible load, this can be a highly effective tool. It can facilitate the deferral of capital expenditure, promote more efficient utilisation of the electricity network and recognise the customer for more efficient energy consumption.

For more than five decades, ENERGENX has been a leading proponent of demand side management in particular the use of interruptible tariffs and/or individual control devices. This is evidenced by the flattening of the winter peak load profile due to the successful voluntary electric hot water load control program supported by an off-peak tariff. There is approximately 450MW of

interruptible hot water load under management during winter peaks and up to 100MW during summer peaks. It is estimated that there are over 700,000 electric hot water systems connected to controlled load tariffs.

This hot water load control program has been a highly successful and enduring partnership between ENERGEX and our customers. It has also contributed to the deferral of network augmentation and need for higher network tariffs. Our expertise in interruptible load/control devices with electric hot water systems is now being applied to meet the new challenges posed by other high energy uses appliances such as air conditioning load during the summer peak. This is being addressed by the expansion of Direct Load Control capability in three areas – further access to loads that can be reasonably time-shifted, expansion of cyclic or ‘diversity’ controls, and the introduction of contingency load reduction into the commercial and residential sector.

- Air Conditioning Direct Load Control.

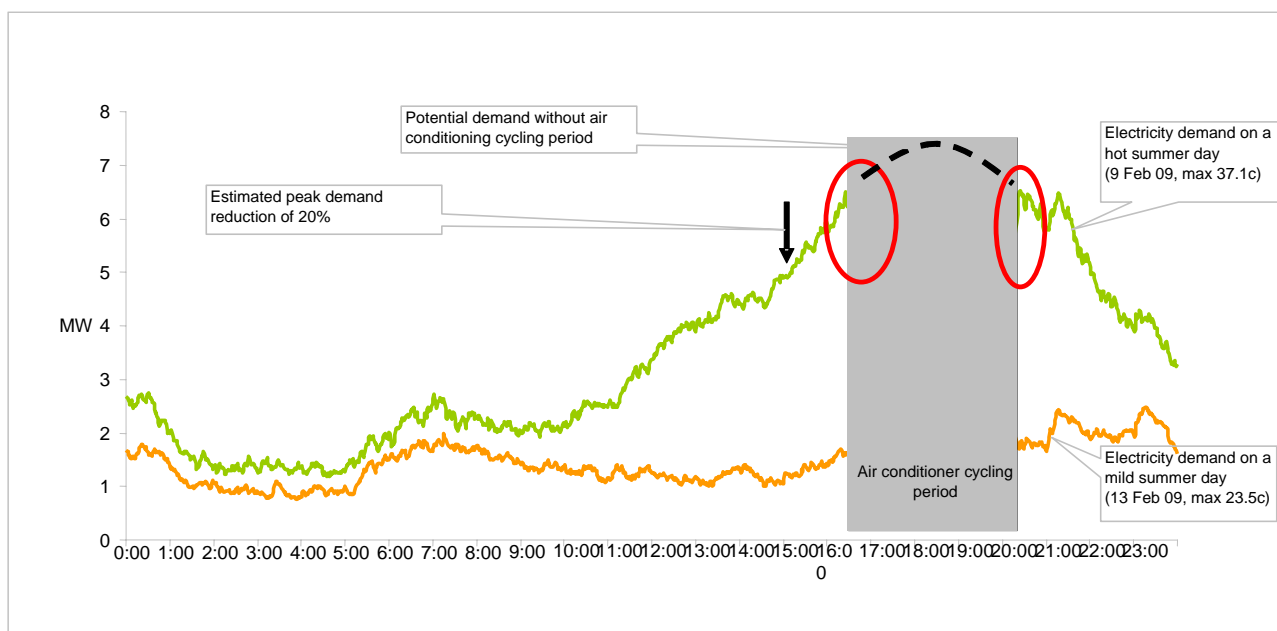
The Cool Change 1 trial involved ENERGEX partnering with the community to help manage demand for electricity from air conditioners. The trial was conducted in Albany Creek, Arana Hills, Bridgeman Downs, Bunya, Everton Hills, Everton Park, Ferny Hills, Ferny Grove and McDowall.

ENERGEX installed load management devices on air conditioners in homes on a voluntary basis, enabling the appliances to be remotely cycled by ENERGEX over the few hours of peak demand. The aim of the trial was to reduce demand in peak times without impacting on customer comfort or convenience.

The Cool Change 1 trial was expanded and now involves some 2000 residential volunteers. Ninety five per cent of customers who participated in the first Cool Change trial in 2007-08 are participating in Cool Change 2 through to 2011.

Results demonstrate a capability to reduce peak demand by approximately 20 per cent without affecting customer comfort, as shown for summer 2008-09 (Figure 2).

**Figure 2: Results from the first Cool Change trial**



- Pool Pump Direct Load Control

In addition to continuing to offer and promote a better rate for electricity used by pool pumps at off-peak times through Tariff 33, ENERGEX will be conducting further trials in 2009 to leverage off the learnings of the Cool Change air-conditioning trials. This pool pump trial will utilise a new generation of AFLC technology. This new method overcomes many of the dedicated electrical circuit issues that are required for Tariff 33 load control with pool pumps. More than 500 households have already subscribed to participate in trial.

In summary, ENERGEX considers that a wider range of interruptible tariffs incorporating air conditioning cycling capability and pool pump direct load control would result in a significant load management capability for the benefit of customers in SEQ. Based on our recent trials in this area, ENERGEX considers that it is important to give consideration to interruptible tariffs incorporating air conditioning cycling capability and pool pump direct load control.

*What are the metering requirements for hard wired appliances and those using individual control devices?*

The current metering solution is to use a two element meter with one element measuring general supply and the second element measuring the controlled circuit. These meters are capable of recording ToU information.

Some new direct load control options will continue to use this configuration. However, to alleviate the high-entry cost for customers to access the facility, terms and conditions around the existing Tariff 31 and 33 will be required. Similarly, without an individually metered circuit, reward to the

customer may need to take the form of a 'discounted tariff' or regular rebate through the retail billing system.

It should also be noted that individual load control devices do not necessarily require separate metering. The incentive to customers can potentially be through a recurring rebate.

## **2.9 Other Demand Management Initiatives**

*What other demand management initiatives are being undertaken by industry?*

The demand management initiatives, undertaken by industry participants, generally encompass the following classifications. For each category a number of relevant initiatives have been included.

- Energy Efficiency
  - Customer education programs on energy efficiency through media and industry participant websites. A number of industry participants have developed web based energy audit tools and action plans;
  - On-site energy audits aimed at assisting businesses and residential customers in reducing the amount of energy consumed in industrial processes or meeting end user needs;
  - Provision of compact fluorescent light bulbs;
  - Fuel substitution (e.g. solar hot water and solar inverters);
  - Energy Conservation Communities, incorporating demand management and energy efficiency programs.
- Load Management
  - Use of demand tariffs based on kVA (instead of kWh) which provide cost incentives for customers with a poor power factor to improve it and/or reduce demand through a higher tariff;
  - Load curtailment through the use of audio frequency load control to manage electric hot water load and agreements with large users to switch-off at times of network congestion;
  - ToU and dynamic pricing tariffs;
  - Trials of small customer air conditioner and pool pump direct load control; and
- Distributed Generation
  - Investment in or contracting for the services of, standby generators.

*Are such schemes capable of being integrated with any of the identified alternative tariff structures?*

A number of the programmes currently being pursued by industry participants are capable of being integrated with the existing tariff structures. For example:

- Assisting large industrial and commercial customers with power factor correction and the use of demand tariffs; and
- Hot water controlled load and the use of cheaper tariffs reflecting the ability to interrupt supply.

Nevertheless it should be acknowledged that some of these demand management programs are mutually exclusive or can form part of a suite of solutions. To ensure maximum efficiency and effectiveness it is essential that there are no impediments to the take up of these programmes.

*Are alternatives to the existing tariff structure necessary for such other demand management initiatives to be successful?*

As noted above, our energy needs as a community are increasing through our reliance on energy intensive appliances. For some appliances, there may be more efficient ways for them to be connected to the network or operate, due to the purposes in which they are used or the ToU. The current suite of tariffs need to be reviewed to ensure they are efficient, effective and complement current appliance use.

Due to the increased penetration of air conditioners and the potential for these appliances to operate as controlled load, ENERGEX intends to develop a new network tariff to ensure customers are able to benefit from programmes such as Cool Change. In the absence of an applicable tariff (and that air conditioning load is not separately metered) ENERGEX has been able to directly administer a rebate to participants under the Cool Change trial. This approach is administratively costly and limits the scale of these programmes.

With the increased uptake of solar and heat pump hot water systems it is essential that the effectiveness of existing controlled load tariffs (31 and 33) are maintained. As previously noted, this will require a review of Tariffs 31 and 33, including the fixed and variable components of the tariffs. Requiring new solar and heat pump hot water systems to be connected as interruptible load would minimise network related costs but consideration must be given to the impact on customers.

Transitional Arrangements and Future Options

*How should the Authority ensure that the structure of the notified tariffs will allow or complement the future use of smarter meters and similar technology?*

ENERGEX considers that the tariff schedule should be subject to regular review in liaison with stakeholders, to ensure that notified retail tariffs are responsive to technological and any policy developments in relation to meters. Otherwise, potential benefits from these developments could be diminished if customers cannot access appropriate tariffs.

*What transitional arrangements should the Authority consider to allow customers affected by any change the opportunity to respond to any changes that result from tariff restructure and the introduction of cost reflective tariffs?*

ENERGEX considers that customer education will be a critical element of the introduction of more sophisticated tariff structures, such as ToU, for the small residential sector. In this regard, ENERGEX previously outlined its consultation process prior to implementing any network tariff changes.

## ATTACHMENT A – PERFORMANCE OF TARIFF STRUCTURES BY CUSTOMER TYPE

Tariff Structure	Customer Type	Short Term			Medium Term			Long Term		
		Efficiency	Equity	Simplicity	Efficiency	Equity	Simplicity	Efficiency	Equity	Simplicity
Flat Rate Consumption (e.g. Tariff 11, 20)	Small	Orange	Green	Green	Orange	Green	Green	Red	Red	Green
	Large	Red	Green	Green	Red	Green	Green	Red	Red	Green
Declining Block Tariffs (e.g. Tariff 21)	Small	Red	Green	Green	Red	Green	Green	Red	Red	Green
	Large	Red	Green	Green	Red	Green	Green	Red	Red	Green
Controlled Load (e.g. Tariff 31, 33)	Small	Green	Green	Green	Green	Green	Green	Green	Green	Green
	Large	Green	Green	Green	Green	Green	Green	Green	Green	Green
Inclining Block	Small	Orange	Green	Green	Orange	Green	Green	Red	Red	Green
	Large	Red	Green	Green	Red	Green	Green	Red	Red	Green
Time of Use (e.g. Tariff 22, 43)	Small	n/a	n/a	n/a	Orange	Orange	Orange	Green	Green	Green
	Large	Green	Green	Orange	Green	Green	Green	Green	Green	Green
Demand Dependent (e.g. Tariff 41)	Small	n/a	n/a	n/a	Orange	Orange	Orange	Green	Green	Green
	Large	Green	Green	Orange	Green	Green	Green	Green	Green	Green

**Note:** 'Short Term' assumes that small customers (<100MWh p.a.) are metered on an accumulation basis and large customers (>100MWh p.a.) are metered on an interval/time of use basis. 'Medium Term' assumes increased penetration of interval meters at small customer sites and large customers (>100MWh p.a.) are metered on an interval/time of use basis. 'Long Term' assumes all users are metered on an interval/time of use basis. 'The *efficiency* criteria include cost reflectivity given that a strong version of cost reflectivity closely aligns with the objective of using existing system assets efficiently.

**Legend:** **Red** = fails to meet criteria;

**Orange** = satisfactory given metering technology, represents incremental improvement but not available to all users within a customer class and/or users require support to understand the nature and impact of the tariff structure

**Green** = effective given metering technology, understood by customer class.

**ATTACHMENT B – COMMENTS ON SPECIFIC NOTIFIED PRICES**

Tariff	ENERGEX Comments
11	<ul style="list-style-type: none"> <li>• Consider inclining block tariff as an interim step to create the incentive for customers with high energy use to move to a more cost reflective tariff, including a shift to ToU or controlled load signals.</li> <li>• Relationship between the minimum payment and variable components of Tariffs 31 and 33 compared to Tariff 11 should be reviewed, having regard to the equivalent network tariffs.</li> </ul>
21	<ul style="list-style-type: none"> <li>• Declining block tariffs do not send optimal pricing signals to customers regarding the use of electricity. Consideration could be given to consolidating Tariff 21 with Tariff 20. Customers currently on this tariff may require assistance with the transition, including energy efficiency advice.</li> </ul>
31	<ul style="list-style-type: none"> <li>• Consider removal of minimum monthly payment. There is sufficiently strong anecdotal evidence to suggest that fixed charges are a deterrent to customer uptake.</li> <li>• ENERGEX sees benefit in the conditions applying to the existing residential controlled load retail tariffs (Tariff 31 and 33) being reviewed to determine their ongoing relevance. For example, the specified conditions in the tariff schedule should be reviewed, including the appliance requirements and indicative switching times.</li> <li>• Relationship between the variable components of Tariffs 31 and 33 compared to Tariff 11 should be reviewed, having regard to the equivalent network tariffs.</li> </ul>
33	<ul style="list-style-type: none"> <li>• Consider removal of minimum monthly payment. There is sufficiently strong anecdotal evidence to suggest that fixed charges are a deterrent to customer uptake.</li> <li>• ENERGEX sees benefit in the conditions applying to the existing residential controlled load retail tariffs (Tariff 31 and 33) being reviewed to determine their ongoing relevance. For example, the specified conditions in the tariff schedule should be reviewed, including the specified minimum hours of supply and the times when supply is available.</li> <li>• Relationship between the variable components of Tariffs 31 and 33</li> </ul>

	compared to Tariff 11 should be reviewed, having regard to the equivalent network tariffs.
<b>37</b>	<ul style="list-style-type: none"> <li>• This tariff was essentially set up as a commercial time-of-use tariff to discourage commercial heating loads at the time of residential winter demand peak. With the more recent impact of air-conditioning on the network demand peaks, this tariff has become largely irrelevant.</li> <li>• Pricing periods do not appear to correspond with network tariffs.</li> <li>• Consider consolidation into Tariff 20.</li> </ul>
<b>41</b>	<ul style="list-style-type: none"> <li>• Monthly minimum chargeable demand provides an inappropriate signal. Consider removal and incorporation in fixed charge.</li> </ul>
<b>43</b>	<ul style="list-style-type: none"> <li>• Monthly minimum chargeable demand provides an inappropriate signal. Consider removal and incorporation in fixed charge.</li> </ul>
<b>53</b>	<ul style="list-style-type: none"> <li>• Monthly minimum chargeable demand provides an inappropriate signal. Consider removal and incorporation in fixed charge.</li> </ul>
<b>62</b>	<ul style="list-style-type: none"> <li>• ToU (Farm) - Consider consolidation into Tariff 22.</li> </ul>
<b>63</b>	<ul style="list-style-type: none"> <li>• ToU (Farm) - Consider consolidation into Tariff 22.</li> </ul>
<b>64</b>	<ul style="list-style-type: none"> <li>• Pricing periods do not appear to correspond with network tariffs.</li> <li>• Consider consolidation into Tariff 20.</li> </ul>
<b>65</b>	<ul style="list-style-type: none"> <li>• Pricing periods do not appear to correspond with network tariffs.</li> <li>• Consider consolidation into Tariff 20.</li> </ul>
<b>67</b>	<ul style="list-style-type: none"> <li>• Consider consolidation into Tariff 20.</li> </ul>