



**Introduction of Time of Use and Specified  
Demand Network Tariff Charging  
Components**

**Issues Paper**

**Version 1.1 – December 2008**

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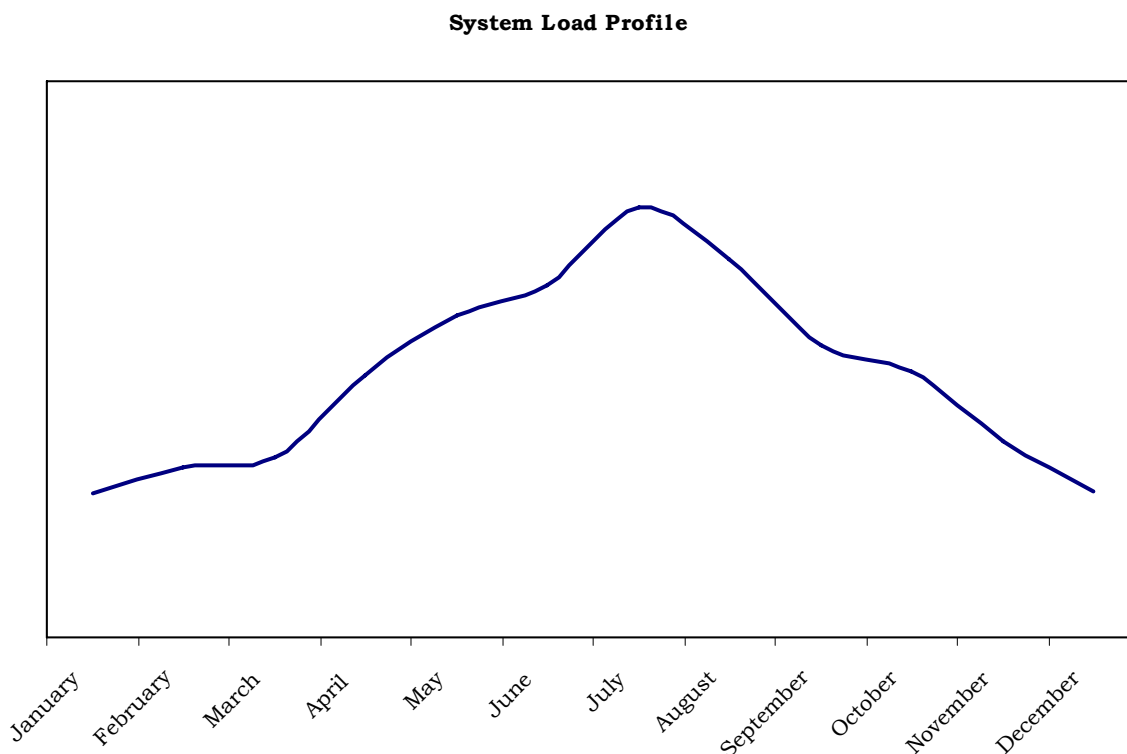
# 1 Introduction

As a regulated provider of distribution network services, Aurora Energy Pty Ltd ABN 85 082 464 622 (Aurora) is required to build its network to supply the demand of customers taking supply from its electricity network. To provide a reliable and adequate service, Aurora must build its network to meet the maximum demand of its customers. Failure to meet this criterion would result in reduced supply voltages, which would result in increased equipment failures for both Aurora and its customers.

There are two factors underlying the maximum demand that is placed upon Aurora’s distribution network; peak demand and increasing base-load demand. The peak demand of the Aurora distribution network occurs once a year, and is generally much larger than the normal load, the “base load”. This peak demand generally occurs in winter, and is driven by a number of factors; for example, the use of heat pumps by residential customers during winter months.

Aurora’s network utilisation profile is shown in the figure below and illustrates the winter peak system demand.

**Figure 1 – Distribution System Profile**



It is expected that base-load demand within Aurora’s network will increase year-on-year as the number of customers connected to the network increases and/or as existing customers take-up new technology, such as heat pumps. In addition, it has been found that as the base load increases, the peak demand on the system increases as well, as a proportion of this ‘new’ usage will occur in the peak period. To meet this additional peak demand, Aurora will be required to increase the capacity of its system (for example, with thicker wires, bigger sub-stations, etc), which comes at a cost to Aurora, and is in turn passed on to customers in the form of higher prices.

The role of economic regulators is to ensure that the regulated entities do not charge customers excessively for the provision of the services that are regulated. One of their approaches to this is to only allow regulated businesses to recover from customers the efficient costs of providing regulated services. In the context of the current discussion, the economic regulator ensures that Aurora does not spend money unnecessarily upgrading its network to a standard above that required to meet either peak demand or increasing base load.

One solution to the dual problems of increasing peak demand and base load is to provide an incentive to customers to manage their demand upon the distribution network: “Demand-side Management”. An alternative approach is “Supply-side Management”, where some control over consumption is managed by network service providers, for example, through the use of ripple control to manage the heating times of storage hot-water heater.

Both approaches to reducing peak demand are based upon providing customers with an incentive to move their electrical demands to a time of reduced overall network demand. The difference is the extent to which customers can directly influence when they use energy. Under the ‘Demand Side Management’ approach, a financial incentive is provided in the form of a lower Network Tariff rate at times of low network usage or, alternatively, a higher Network Tariff rate at times of high network usage. Either way, the customer, in the end, decides whether or not they will respond to that price signal by altering their energy consumption. Under the ‘Supply-side Management’ approach, customers are limited as to when they can use their electrical appliances, but in recognition of this they are charged a ‘reduced’ price relative to those customers who are not subject to the same usage constraints.

Following on from this, managing the increasing base load can be achieved by providing individual customers with an incentive to minimise the difference between their individual peak loads and their ordinary base loads and/or, to reduce their overall electricity usage. This can also be achieved through charging according to their demand on the network, perhaps incorporating a premium Network Tariff for “excessive” demand.

Considering the above, Aurora believes that there is merit in investigating the development of Network Tariffs that provide incentives to customers to alter their consumption behaviour, such that there is reduction in the ‘demand’ placed upon the distribution system at peak periods and furthermore, an overall reduction in the amount of electricity used in ‘peak’ periods. The overall benefits to the community may include:

- a reduction in the amount of future capital expenditure required to meet system peak demands, which would result in lower future prices to end customers; and
- more efficient consumption of electricity, which may lead to reductions in carbon emissions that result from the production of energy and the distribution of that energy to end users.

## **1.1 Purpose of this Issues Paper**

This Issues Paper is to outline the ‘time of use’ and ‘specified demand’-based Network Tariffs that Aurora is considering introducing, and to seek customer feedback in relation to these options.

Consistent with this objective, the Issues Paper asks a number of questions, a particular focus of which will be on whether or not Aurora’s customers:

- support the implementation of the proposed tariff structure;
- believe that they may be able to change their usage behaviour in response to the proposed Network Tariff structure;
- whether there are alternative ways of meeting the objective underpinning the development of the Network Tariff structure, and if so, what that method may be and an outline of the benefits associated with that method.

The following sections of this Issues Paper are:

- Background
- Network Tariff Development
- Time of Use tariffs
- Specified Demand Tariffs
- Small LV Customer Tariffs
- LV Irrigation Tariffs
- Large LV Commercial Customer Tariffs
- HV Business Metered kVA Demand (less than 2 MVA)
- Large HV Business Metered kVA Demand (greater than 2 MVA)
- Retailer Obligations; and
- Next Steps.

## **1.2 Process**

Interested parties are invited to make written submissions to Aurora on the questions asked and the issues discussed in this paper by the close of business on Monday, the 19<sup>th</sup> of January 2009. Submissions can be sent electronically to [networktariff@auroraenergy.com.au](mailto:networktariff@auroraenergy.com.au).

Alternatively, written submissions can be sent to:

- (a) Mr Leigh Mayne  
Network Regulation Manager  
Network Division  
Aurora Energy  
177 Main Road  
Moonah TAS 7009
- (b) Tel: (03) 6271 6544  
Fax: (03) 6271 6517

Aurora prefers that all submissions be in an electronic format and publicly available, to facilitate an informed, transparent and robust consultation process. Accordingly, submissions will be treated as public documents and posted on Aurora's website, [www.auroraenergy.com.au](http://www.auroraenergy.com.au), except and unless prior arrangements are made with Aurora to treat the submission, or portions of it, as confidential.

Any enquiries about this Issues Paper, or about lodging submissions, should be directed to Leigh Mayne on (03) 6271 6544 or at the above email address.

Aurora will publish submissions as they are received unless an arrangement is made with the submitter to the contrary

A response to the submissions will be made on or before Friday, the 30<sup>th</sup> of January 2009.

A Position Paper will be published for comment during February 2009.

As required by the Guideline, a Pricing Proposal for the period covering the 1<sup>st</sup> of July 2009, to the 30<sup>th</sup> of June 2010, will be lodged with the Regulator by the 30<sup>th</sup> of April 2009.

## 2 Background

### 2.1 Who is Aurora?

Aurora is an electricity distribution and retail company formed in July 1998 pursuant to the Electricity Companies Act 1997, and incorporated under the Corporations Law. Aurora is wholly owned by the Tasmanian Government, with the only two shareholders being the Minister for Energy and the Treasurer.

As the monopoly provider of electricity distribution services and certain metering services within the Tasmanian jurisdiction, Aurora is required to hold a distribution licence issued by the Tasmanian Economic Regulator (the Regulator) in accordance with the *Electricity Supply Industry Act 1995* (ESI Act). This licence was issued in December 1998, and authorises Aurora to distribute electricity on mainland Tasmania subject to certain conditions and regulatory controls.

As the focus of this Issues Paper is on Aurora's distribution network pricing, unless otherwise indicated, all mention of Aurora throughout this document should be understood to mean Aurora in its capacity as a regulated, licensed provider of distribution network services on mainland Tasmania, not as a Retailer of electricity in Tasmania or any other Australian jurisdiction.

### 2.2 Tasmanian Regulatory Arrangements

The Office of the Tasmanian Energy Regulator undertakes the regulation of distribution services within the Tasmanian jurisdiction. A key component of this jurisdictional regulation is the review and monitoring of the economic framework that applies to the regulated businesses within the jurisdiction. Under this economic framework, the Regulator is required to investigate, in accordance with the *Electricity Supply Industry (Price Control) Regulations 2003*, the prices for the distribution and metering services that Aurora is licensed to provide. Such an investigation culminates in the release of a pricing determination outlining the maximum allowable revenues that Aurora may earn and the maximum prices that Aurora may charge for the provision of certain regulated distribution and metering services during a given period of time. The 2007 Determination was delivered in October, 2007, and sets the maximum allowable revenues and prices that Aurora may earn for the regulatory period from the 1<sup>st</sup> of January 2008, to the 30<sup>th</sup> of June 2012.

Network Tariffs for collection of revenues allowed by the Determination are constructed in compliance with the Determination and the *Guideline Approval of Network Tariffs in Accordance with the 2007 Determination* (the Guideline) issued by the Regulator in November, 2007. The Guideline also requires Aurora to produce a Network Tariff Strategy and an annual Pricing Proposal. The specific principles underpinning the development of Network Tariffs are discussed in more detail in section 3.

The Network Tariff Strategy indicates Aurora's intentions with regard to pricing for regulated network services for the entire regulatory period. The annual Pricing Proposal provides an explicit description of the Network Tariffs and charges for the forthcoming year, and must be approved by the Regulator before implementation.

As required by the Guideline, Aurora undertook a public consultation in the development of the Network Tariff Strategy during March 2008. It became evident during the course of this consultation that several of the changes to Network Tariffs proposed by Aurora were potentially contentious. Recognising that it would not be possible to successfully address all of the concerns raised by interested parties in the time available before the publication of the Network Tariff Strategy, Aurora indicated that it would consult with interested parties before the introduction of new or revised Network Tariff terms and conditions.

This Issues Paper is to consult with interested parties prior to the introduction of 'time of use' and 'specified demand' based Network Tariffs.

### **2.3 Aurora's Current Network Tariffs**

Network Tariffs, in the context of this Issues Paper, are a schedule of rates and charges levied by an electricity network operator so that it may recover the allowed cost of operating the network. In particular, the Network Tariffs published by Aurora are designed to recover each year from customers connected to its distribution network the Annual Allowable Revenue set by the Regulator. In addition, Aurora's Network Tariffs include the charges levied upon Aurora by the operator of the transmission system, (Transend Networks Pty Ltd ABN 57 082 586 892) to which Aurora's distribution network is connected.

It is important to bear in mind during the reading of this Issues Paper that the Network Tariffs being discussed are a component of the final tariff charged by electricity retailers in Tasmania. In addition to the network component are charges for the energy consumed by the customer, and charges associated with the activity of running the retail business. Currently, network charges make up approximately 45% of the final retail charge<sup>1</sup> for those customers on a regulated retail tariff. For other customers, the fraction apportionable to network charges varies primarily with the price of energy.

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<sup>1</sup> Page 1 of the Investigation of Prices for Electricity Distribution Services and Retail Tariffs on Mainland Tasmania Overview to the Final Report issued by the Regulator in September 2007.

Aurora's current suite of Network Tariffs is presented in table 1 below.

**Table 1 – Network Tariffs**

Network Tariff Code	MSATS Code	Description	Network Tariff components
N01	AURESGEN	General Network – Residential	Daily charge with declining three step energy charge
N02	AUBLVGEN	General Network – Business	Daily charge with declining two step energy charge
N03	AUBLVDMKW	LV kW Demand	Daily charge, single energy charge and declining two step demand charge
N05	AUHEATUNCO	Uncontrolled Heating	Daily charge with single energy charge
N06	AUHEATCONT	Controlled Heating	Daily charge with single energy charge
N07	AUUMS	Small LV Unmetered	Daily charge with single energy charge
N08	AUIRRIG	LV Day/Night (Irrigation)	Daily charge with peak and off-peak energy charge
N09	AUBLVDMKVA	LV kVA Demand	Daily charge, single energy charge and declining two step demand charge
N10	AUBHVDMKVA	HV kVA Demand	Daily charge, single energy charge and single demand charge
N11	AUBHVDMKW	HV kW Demand	Daily charge, single energy charge and single demand charge
N13	AUPAYG	LV APAYG	Daily charge with single energy charge
N15	AUCHVDM2	HV kVA Specified Demand (> 2.0MVA)	Daily charge, time of use energy charge, specified and excess demand charges and nodal transmission charge
N20		Street Lighting	Single demand charge
ITC	AUSPCCUST1	Individual Network Tariff Calculation	Charges individually calculated for each customer

## 2.4 Retail Competition

On the 29<sup>th</sup> of May 2005, Tasmania entered the National Electricity Market, a major characteristic of which is free competition in the retailing of electricity. To move from the state of a retail monopoly, as it was on market entry, to free competition, the State Government mandated a staged approach through the *Electricity Supply Industry (Contestable Customer) Regulations 2005* (the Contestable Customer Regulations). Under this approach, the Tasmanian consumer base was grouped according to consumption, with the groups with the largest consumption becoming eligible to choose their electricity retailer earliest. The timetable for the introduction of contestability is given in table 2 below.

**Table 2 – Contestability Timetable**

Tranche	Date of Contestability	Minimum Annual Consumption
1	1 July 2006	20 GWh
2	1 July 2007	4 GWh
3	1 July 2008	750 MWh
4	1 July 2009	150 MWh

The final Tranche, composed of residential customers and small businesses with annual consumption less than 150 MWh per annum, was not automatically granted contestability. Rather, the State Government intended that retail contestability would be granted to the final tranche in the event of a positive cost-benefit analysis. The State Government requested the Regulator to perform such a cost-benefit analysis in September 2007; the final report of the investigation has not yet been made public.

## **2.5 Climate Change**

It has become accepted that man-made emissions are contributing to global climate change. To address this issue, governments have initiated, or are in the process of initiating, several initiatives, including emissions reporting and carbon trading, as part of a broader Carbon Pollution Reduction Scheme (CPRS).

The aim of the CPRS is to reduce carbon emissions by using energy resources more efficiently, by pricing the cost of carbon and rationing the total amount of carbon that can be emitted in any given year. It is therefore not unrealistic to expect that all the cost components that go into the final cost of electricity will be put under scrutiny to ensure that efficient price signals are given to customers, which then deliver an efficient consumption outcome. It is in this context that the requirement for network transmission and distribution pricing needing to be efficient will increase and come under a greater level of scrutiny than in the past.

This will put further pressure on electricity transmission and distribution business to ensure that:

- efficient tariff structures are implemented;
- there are appropriate incentives to reduce network losses;
- more emphasis on demand management;
- distributed / embedded generation is encouraged; and
- feed in tariffs are developed to encourage the penetration of solar energy and energy sourced from other renewable sources (like geothermal).

As stated previously, this Issues Paper focuses on introducing time of use and specified demand-based Network Tariffs to further improve tariff and consumption efficiency.

## ***2.6 Roll out of Electronic Meters***

Aurora's metering strategy, consistent with the 2007 Electricity Pricing Investigation – Final report, is to replace all mechanical meters with electronic meters as they reach the end of their useful life and connect all new customers with electronic meters.

The implementation of this metering strategy will result in the introduction of electronic meters capable of measuring and recording electricity consumption in 30 minute intervals. This paves the way for the introduction of time of use Network Tariffs.

### 3 Principles Underpinning the Development of Network Tariffs

There are a number of principles that Aurora uses to guide the development of its suite of Network Tariffs. In particular, the “2007 Electricity Pricing Investigation – Final Report” states that:

“The Regulator considers that the pricing principles set out in the Draft Distribution Rules provide a sound basis for developing distribution tariffs.”<sup>2</sup>. These principles are given in Box 14.1 of the same document, and are as follows:

- (a) *For each tariff class, the revenue expected to be recovered should lie on or between:*
  - (1) *an upper bound representing the stand alone cost of serving the customers who belong to that class; and*
  - (2) *a lower bound representing the avoidable cost of not serving those customers.*
- (b) *A tariff, and if it consists of 2 or more charging parameters, each charging parameter for a tariff class:*
  - (1) *must take into account the long run marginal cost for the service or, in the case of a charging parameter, for the element of the service to which the charging parameter relates; and*
  - (2) *must be determined having regard to:*
    - (i) *transaction costs associated with the tariff or each charging parameter; and*
    - (ii) *whether customers of the relevant tariff class are able or likely to respond to price signals.*
- (c) *If, however, as a result of the operation of paragraph (b), the Distribution Network Service Provider may not recover the expected revenue, the provider must adjust its tariffs so as to ensure recovery of expected revenue with minimum distortion to efficient patterns of consumption*<sup>3</sup>.

One of the key aspects to note from the above guidelines is the need for Aurora to signal the “long run marginal cost for the service or, in the case of a charging parameter, for the element of the service to which the charging parameter relates”. The purpose of this principle is to ensure that the variable price of providing a service (for example, electricity at peak times) reflects the estimated incremental cost of providing that service. This promotes economic efficiency, more specifically allocative efficiency, in that consumers only consume that service if the marginal benefit to them of making that consumption decision exceeds the marginal cost to the community of providing that service.

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<sup>2</sup> 2007 Electricity Pricing Investigation – Final Report – page 257

<sup>3</sup> Ibid, page 258

Aurora's network utilisation shows that there is a significant difference between its base load and its peak usage<sup>4</sup>. As a result, peak demand represents the primary driver of both the size and timing of future augmentations to the system, which in turn means that this is a key driver of future investment costs (that is, long run marginal cost).

As such, a strict adherence to this principle would necessitate the adoption of a charging arrangement that targets either maximum demand, or alternatively, consumption during these peak periods.

Furthermore, it is noted that the principles stipulate that Aurora must have regard to "whether customers of the relevant tariff class are able or likely to respond to price signals". This reflects that fact that for such a charging scheme to be effective, it must elicit from customers a change in the time and/or amount of electricity that they consume. In order to meet this objective, customers' must be able to actually change their electricity consumption behaviour in response to that price signal. The amount that customers change their consumption behaviour in response to a change in price is termed a customer's 'elasticity of demand'. A customer's 'elasticity of demand' for electricity distribution services will be influenced by, for example, their ability to:

- change their electricity using appliances, such that they can change the amount of electricity consumed; or
- change the time period of electricity consumption (year/month/week/day).

Overall, Aurora believes that there are two possible tariff structures that may better reflect Aurora's forward looking investment costs – long run marginal cost – and which, if introduced, may lead to a change in the consumption behaviour of its customers and result in a more efficiently utilised network. These two tariff structures are:

- time of use based energy charges; and
- specified demand-based charges.

These are discussed in further detail in the following two sections.

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<sup>4</sup> It should be noted that this type of consumption profile is common across all electricity distribution companies, although the peaking factor (ratio of peak to base load demand) and the time of peak demand (eg: summer versus winter) vary across different distribution businesses.

## 4 Time of Use Network Tariffs

Time of use Network Tariffs are charging regimes that provide time-dependent rates for certain components.

An example of such a tariff structure is Aurora's existing LV Day / Night Irrigation Network Tariff (N08). In Period 2, this Network Tariff has a "night" energy rate that is 14% of the "day" rate for the "Distribution Use of System" (DUoS) component<sup>5</sup>, and 25% of the day rate for the "Transmission Use of System" (TUoS) component<sup>6</sup>. The adoption of this type of time of use tariff allows Aurora to provide primary producers with an incentive to irrigate their crops at night, when the general demand on the network is lower. Alternatively, should they wish to irrigate during periods of high network usage during the day, they will pay a higher rate.

In addition to the above, Aurora offers two other time of use Network Tariffs<sup>7</sup>:

- the LV Controlled Heating Network Tariff (N06) is a de-facto time of use because Aurora constrains supply to certain times deemed to be off-peak; and
- the HV Specified Demand, >2 MVA Network Tariff (N15), for customers with a demand of greater than 2 MVA at a single connection point, has three, time-dependent energy rates.

Historically, Aurora has not considered extending time of use tariffs to its broader customer base, as the majority of its existing meter fleet are mechanical or accumulation meters and are unable to capture energy consumption at different times of the day, week or year. As stated in section 2.6, Aurora will be rolling out electronic meters to its broader customer base, thus removing the key impediment that currently exists in relation to the adoption of such a time of use Network Tariff structure.

As such, Aurora and its customers may benefit if it were to expose more of its customers to a time of use charging arrangement, once electronic meters are installed. Moreover, such a tariff structure is likely to be consistent with the principles outlined in section 3, in that it better reflects Aurora's long run marginal cost of supply of distribution services. In particular, a lower price for 'off-peak' consumption reflects the fact that consumption during these periods may not contribute to Aurora's future investment costs, whilst a higher charge for peak consumption reflects the fact that consumption during these periods is a primary driver of Aurora's future investment costs. Overall, time of use Network Tariff structures provide incentives to customers to move their consumption to times of low overall network demand. If customers respond to this price signal, Aurora will be able to reduce its overall future investment costs, relative to a scenario that excludes the adoption of a time of use Network Tariff.

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<sup>5</sup> The charge levied by the Aurora for the use of its distribution network.

<sup>6</sup> The charge levied by the operator of the transmission networks to which Aurora's distribution network connect.

<sup>7</sup> For a complete list of Aurora's Network Tariffs, see section 13.2.

## 5 Specified Demand Network Tariffs

Distribution networks are built to serve maximum apparent demand. Consistent with the key underlying pricing objectives outlined in section 3, this key driver of Aurora's future investment costs should, where feasible, be signalled to customers through the adoption of a cost-reflective tariff. This should lead to more economically efficient consumption decisions at the margin, whereby customers will only seek to increase their maximum apparent demand where the benefit to them is greater than the cost to the community of providing that increased demand.

Aurora notes that, in theory, the development of an efficient pricing structure to reflect demand may necessitate the adoption of a time of use demand tariff structure. This would capture the fact that it is co-incident peak demand within its system that is the true driver of network capacity augmentations, and furthermore, that co-incident peak demand is time based. For example, a business that reaches its maximum demand at midnight, or in summer, or on the weekend, is not going to contribute to Aurora's overall system peak, and therefore, in theory, it is neither efficient nor equitable for this firm to be charged the maximum peak price.

Notwithstanding this, for a number of reasons, Aurora is not, at this stage, proposing to adopt time of use components for demand. Rather, Aurora is proposing to adopt a time of use energy component instead. The reasons underpinning this approach include:

- the current direction of metering in the National Electricity Market is towards time of use components for energy consumption only;
- that these customers' are likely to have a better understanding and greater capacity to respond to an energy related time of use tariff, as opposed to a demand-based time of use tariff;
- that focus on energy is more consistent with the need to reduce carbon emissions stemming from the consumption and distribution of electricity; and
- that there is a clear linkage between the two and therefore, it would be expected that a reduction in peak energy consumption would in fact lead to a reduction in the peak demand within the system, thus leading to a reduction in Aurora's future investment costs.

Aurora's existing suite of tariffs incorporate two types of demand-based tariffs:

- A basic metered demand Network Tariff, for example, Aurora's HV Metered Demand kVA Network Tariff (N10), which has a charging component based upon the maximum demand of a customer's installation during a billing period; or

- A specified demand Network Tariff, for example the N15 specified demand tariff for customers over 2 MVA. Customers under this Network Tariff specify the level of demand that they require from the network for a period of one year. This tariff has two rates of charging for demand consumption, the specified demand charge and a higher excess demand charge. For all demand consumption up to the specified demand threshold, customers pay network charges based on the specified demand charge multiplied by the specified demand quantity. For demand consumption above the specified demand level, customers pay the higher excess demand charge multiplied by the demand quantity above the specified demand level.

In relation to the above, Aurora believes that for HV customers, there are benefits in extending the current specified demand Network Tariff to all HV customers.

Aurora's rationale for adopting a specified demand charge for all HV customers is the following.

- Under this specified demand-based Network Tariff, there are strong incentives for customers to provide accurate demand forecasts, resulting in a better optimised network investment profile. This is because, accurate forecasts allow Aurora to better plan its network augmentation activities, potentially even delaying or removing the need for the construction of new assets, thereby reducing the overall Network Tariff charges for customers on the distribution network.
- The specified demand-based Network Tariff will assist in demand side management. This is because the implementation of this tariff will provide incentive towards the adoption of demand side management methods to reduce demand below the specified level or shift demand during periods of lower forecast demand.
- These large customers are likely to have a detailed understanding of their own electricity demand, and furthermore, they are likely to have greater scope to change their demand on the system in response to a specified demand tariff, thus reducing the costs of implementation and increasing the benefits of implementation.

Aurora's rationale for not introducing a specified demand-based Network Tariff for LV customers is because these customers:

- may not have the same knowledge of their energy consumption behaviour as larger HV customers, and therefore the cost to them and Aurora of understanding, implementing, and actively responding to such a tariff, will be larger than for HV customers;
- may exhibit a lower elasticity of demand than most HV customers that are subject to the specified demand tariff signal (because they have less options for changing their consumption behaviour), which means that the allocative efficiency benefits associated with sending a more cost reflective price signal are likely to be less than for HV customers; and
- have smaller volumes, therefore the benefits of adopting a more complex pricing structure are muted.

## **6 Proposed Network Tariff - LV Small Customers**

This section of the issues paper discusses the proposed introduction of time of use Network Tariffs for domestic and small commercial customers

### ***6.1 Introduction of Time of Use (ToU) Network Tariffs for Residential and Small Commercial Customers***

Consistent with the final determination of OTTER, Aurora will replace all mechanical meters with electronic meters as the mechanical meters reach the end of their useful life. All new meters used to connect new customers will also be electronic, not mechanical. The proposed electronic meters will be capable of implementing time of use tariffs, as metering data will be recorded every half hour. This presents the opportunity for Aurora to introduce a time of use Network Tariff for all customers with electronic metering.

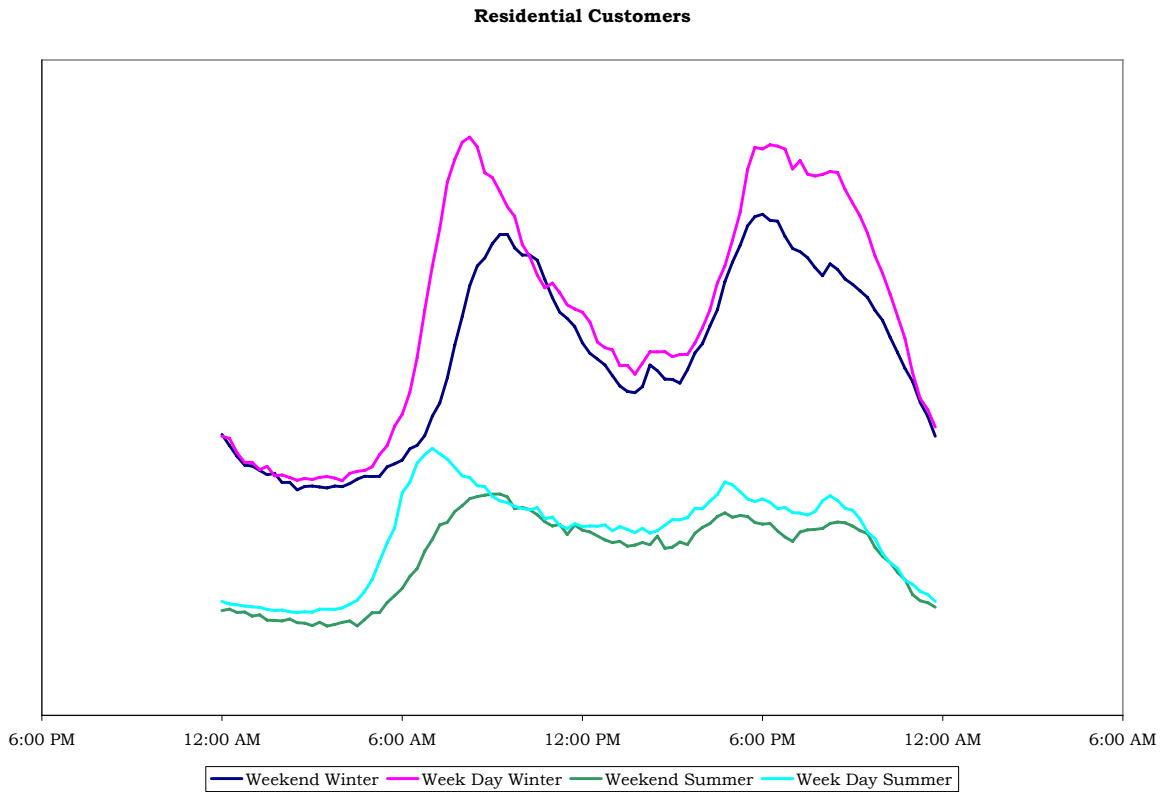
The benefits of time of use Network Tariffs have been explained in Section 4 of this issues paper. In summary, time of use Network Tariffs are more cost reflective as higher prices can be charged at peak times (for which the network is built) and lower prices at off-peak. Time of use Network Tariffs also provide signals to customers to shift their consumption from more expensive peak periods to lower off-peak periods. If customers respond by shifting consumption from peak to off-peak, then the cost of network augmentation is deferred and the network is utilised more efficiently which results in lower network cost to customers in the long run.

In designing an efficient time of use Network Tariff the classification of what period is defined as peak and what is defined as off-peak periods and the pricing of peak and off-peak periods are critical. This Issues Paper will deal with the former, the structure of the time of use tariff and the definitions of peak and off-peak periods.

Aurora have analysed the consumption profiles of the residential and commercial customers and the profiles are presented in figure 2 and figure 3 below.

### 6.1.1 ToU Network Tariff for Residential Customers

**Figure 2 – Residential Profile**



Based on the consumption profiles, Aurora recommends the following time of use tariff structure for residential customers. The consumption profile changes somewhat between summer and winter, but at this stage Aurora does not plan to introduce seasonal time of use tariffs for residential customers. Aurora will analyse customer response to the proposed tariff structure and further consult before it introduces any seasonal component.

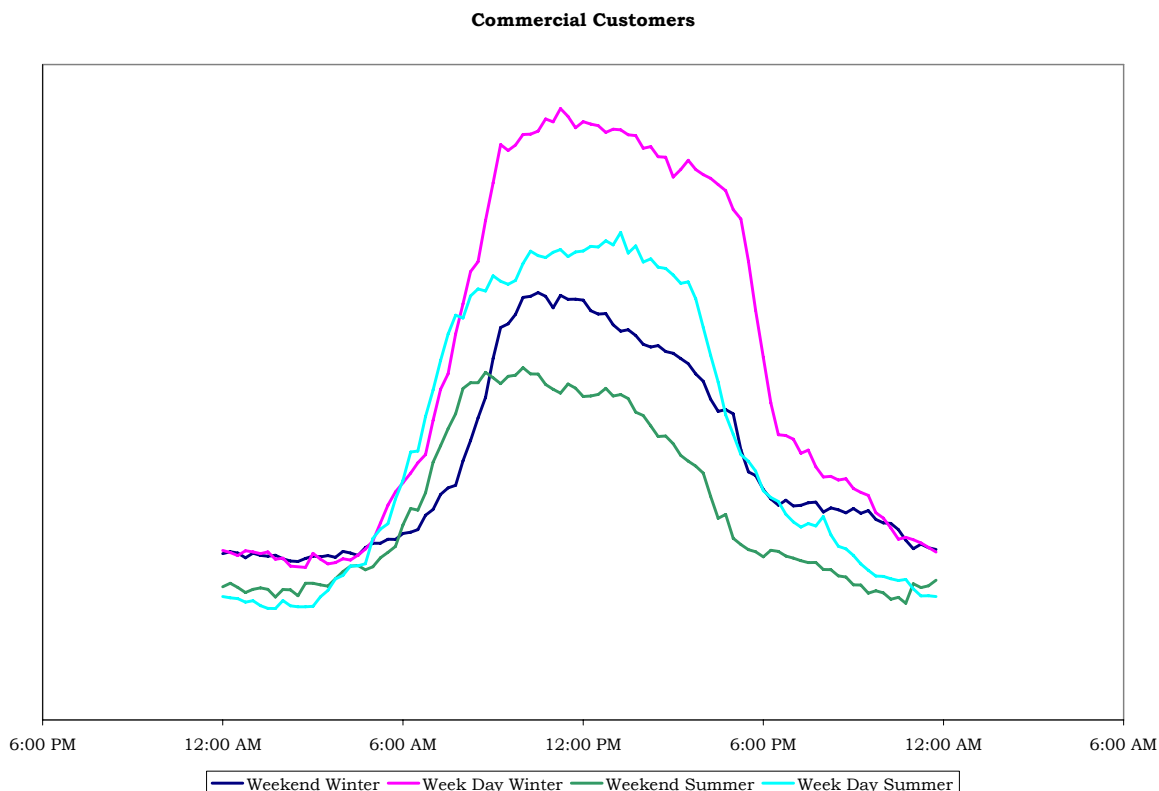
**Table 3 – Residential ToU Structure**

Time Period (All times are AEST)	Tariff Rate
Week Day (0600 – 1100) (Monday – Friday)	Peak
Week Day (1100 – 1630) (Monday – Friday)	Shoulder
Week Day (1630 – 2200) (Monday – Friday)	Peak
Weekend Day (0600 – 2200) (Saturday & Sunday)	Off-peak
Any Day (2200 – 0600) (Monday – Sunday)	Off-peak

As can be seen, the definition of peak periods represents the time of highest consumption; and the off-peak period represents the period of low consumption. The definition of peak is not too wide and therefore presents an opportunity to customers to shift their consumption to shoulder or even off-peak periods. For example, residential customers can shift their electric washing and electric drying consumption from peak to off-peak periods.

**6.1.2 ToU Network Tariff for Small Commercial Customers**

**Figure 3 – Commercial Profile**



Based on the consumption profiles, Aurora recommends the following time of use tariff structure for small commercial customers. The consumption profile changes little between summer and winter and at this stage Aurora does not plan to introduce seasonal time of use tariffs for small commercial customers.

**Table 4 – Small Commercial ToU Structure**

Time Period	Tariff Rate
Week Day (0800 – 2200) (Monday – Friday)	Peak
Weekend Day (0800 – 2200) (Saturday & Sunday)	Shoulder
Any Day (2200 – 0800) (Monday – Sunday)	Off-peak

As can be seen, the definitions of peak period represents the time of highest consumption; and off-peak period represents period of low consumption. The definition of peak is wider than that of residential customers as commercial operators have little ability to shift their consumption during the business day.

Aurora seeks feedback from customers on the proposed time of use tariff structure and the ability of customers to shift consumption from peak periods to off-peak periods.

The proposed time of use tariff structures will not be mandatory. Aurora will give customers choice to migrate from the current N01 and N02 Network Tariff to the new time of use Network Tariff. Aurora will also give current customers on N01 and N02 the ability to switch all their consumption from Network Tariffs N05 (Uncontrolled energy) and N06 (controlled energy) to the new time of use Network Tariff. Customers that choose to switch all their consumption to the new time of use Network Tariff will no longer have access to Network Tariffs N05 and N06.

In addition, all customers on Network Tariff N13 (Aurora Pay as You Go) will be given the choice to move to the new time of use Network Tariff.

## 7 Proposed Network Tariff - Irrigation Customers

This section of the Issues Paper discusses the proposed introduction of a new LV irrigation Network Tariff with time of use energy-based tariff components.

### 7.1 Background on Existing Irrigation Customer Tariff

Aurora currently offers a LV Irrigation Network Tariff (N08) to irrigation customers that has simple peak and off-peak energy components.

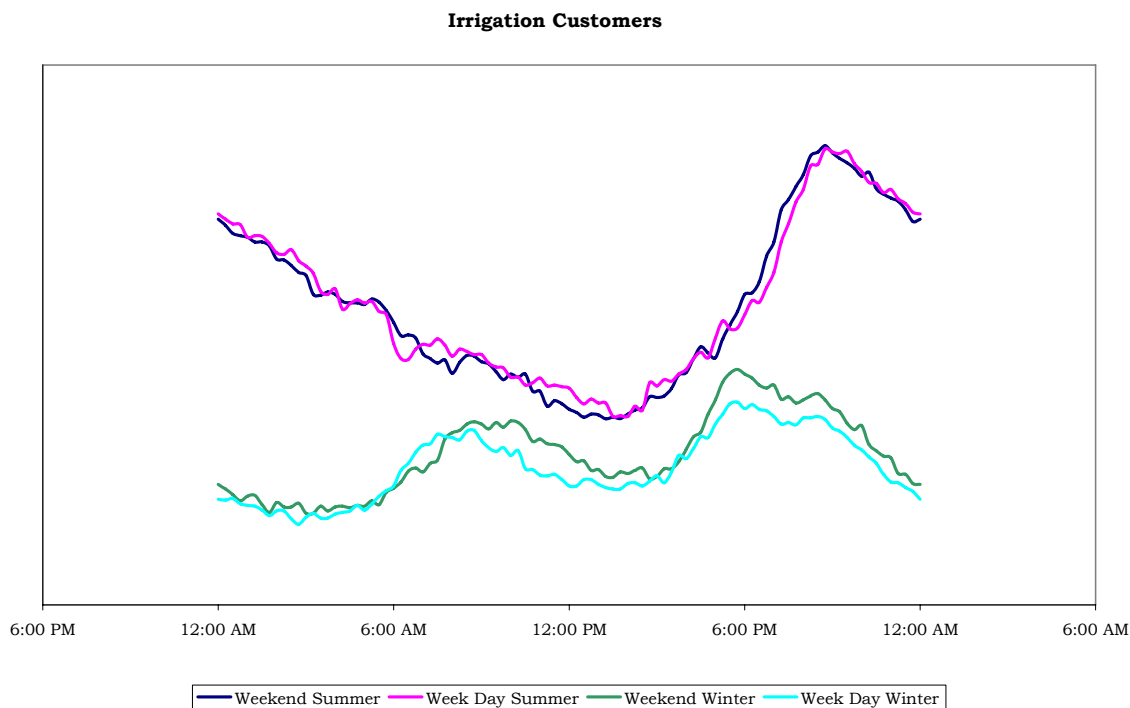
The energy pricing structure provides an irrigation customer with an incentive to irrigate at night, a time of low network demand.

Whilst these irrigation customers currently have access to a time of use tariff (peak, off-peak) the intended introduction of other time of use tariffs may mean that irrigation customers may choose to move to these new tariffs in preference to the existing N08 Irrigation Network Tariff. Aurora believes that this class of customer has seasonal consumption patterns that result in the bulk of their operations occurring during the warmer months of the year when system demand is lower. Aurora therefore intends to introduce a seasonal time of use tariff for irrigation customers.

### 7.2 Proposed Introduction of Time of Use Energy-Based Tariff Components for the new LV Irrigation Tariff

Aurora have analysed the consumption profile of irrigation customers and the profiles are presented below.

**Figure 4 – Irrigation Profile**



Based on the consumption profiles, Aurora recommends the following time of use tariff structure for irrigation customers. The consumption profile changes markedly between summer and winter and Aurora plan to introduce seasonal time of use tariffs for irrigation customers. Irrigation customers utilise the network at times of low system demand and Aurora plans to introduce the same seasonal time of use tariffs for irrigation customers as those with a demand greater than 2 MVA.

**Table 5 – LV Irrigation ToU Structure**

<b>Time Period</b>	<b>Summer (1 October → 31 March)</b>	<b>Winter (1 April → 30 September)</b>
Week Day (0800 – 2200) (Monday – Friday)	Shoulder	Peak
Weekend Day (0800 – 2200) (Saturday & Sunday)	Off-peak	Shoulder
Any Day (2200 – 0800) (Monday – Sunday)	Off-peak	Off-peak

The proposed time of use irrigation tariff structure will not be mandatory. Aurora will give customers choice to migrate from the current N08 Irrigation Network Tariff to the new time of use LV Irrigation Network Tariff.

Aurora seeks feedback from customers on the proposed time of use irrigation tariff structure.

## 8 Proposed Network Tariff - LV Large Customers

This section of the Issues Paper discusses the proposed introduction of a new LV Network Tariff with time of use energy-based tariff components.

### 8.1 Background on Existing LV Large Customer Tariffs

Aurora currently offers two LV Network Tariffs with demand-based charging components, although neither of these has time of use energy components.

**Table 6 – LV Demand Tariffs**

Network Tariff Name	MSATS Code	Network Tariff Code	Number of Customers
LV Metered Demand (kVA)	AUBLVDMKVA	N09	519
LV Metered Demand (kW)	AUBHLDMKW	N03	337

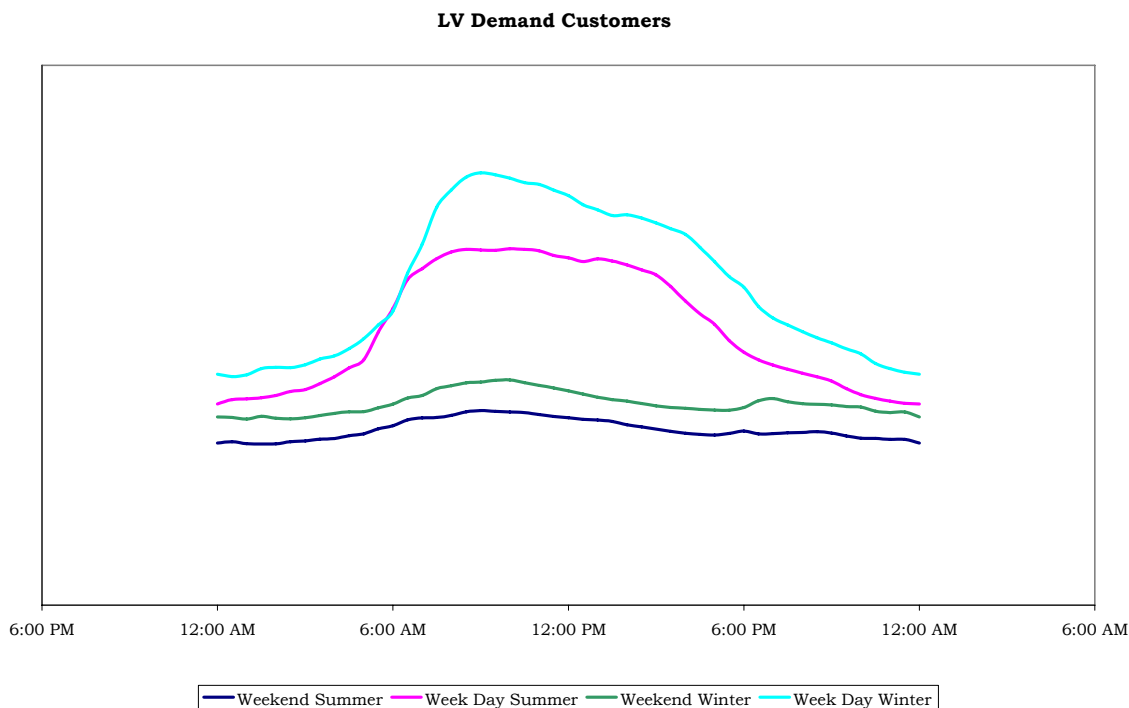
As noted in the Network Tariff Strategy, Aurora intends to phase out the kW-based N03 demand Network Tariff, with all customers being moved across to the kVA-based demand N09 by the end of Period 5 (the year from the 1<sup>st</sup> of July, 2011, until the 30<sup>th</sup> of June, 2012). In recognition of this, N03 has already been declared obsolete.

### 8.2 Proposed Introduction of Time of Use Energy-Based Tariff Components for the new LV Network Tariff

Consistent with the proposed introduction of time of use energy-based tariff components for domestic and HV customers, Aurora plan to introduce time of use energy-based tariff components for the new LV Demand Network Tariff.

Aurora have analysed the consumption profiles of commercial LV demand customers and the profiles are presented below.

**Figure 5 – LV Demand Profile**



Based on the consumption profiles Aurora recommend the following time of use tariff structure for the new LV Demand Network Tariff. The consumption profile changes little between summer and winter and at this stage Aurora does not plan to introduce seasonal time of use tariffs for LV Demand commercial customers.

**Table 7 – LV Demand ToU Structure**

Time Period	Tariff Rate
Week Day (0800 – 2200) (Monday – Friday)	Peak
Weekend Day (0800 – 2200) (Saturday & Sunday)	Shoulder
Any Day (2200 – 0800) (Monday – Sunday)	Off-peak

Aurora will analyse customer response to the proposed tariff structure and further consult before it introduces the seasonal component.

Aurora seeks feedback from customers on the proposed time of use tariff structure and the ability of customers to shift consumption from peak periods to off-peak periods.

Aurora will also monitor the consumption profile of LV demand customers as interval data becomes available and will consult with customers prior to any intended change to the ToU tariff structure for the new LV Demand Network Tariff.

The proposed time of use tariff structure will not be mandatory. Aurora will give customers choice to migrate from the current N09 and N03 Network Tariff to the new time of use LV Demand Network Tariff.

### ***8.3 Discussion of the Applicability of Specified Demand-Based Charging Regime for all LV Demand Customers***

At this stage Aurora does not plan to introduce a specified demand-based charging regime for LV demand customers.

However Aurora would like to get some feedback from LV demand customers on this issue.

## 9 Proposed Network Tariff - HV Customers

This section of the Issues Paper discusses the proposed introduction of a new HV Network Tariff with specified demand charges and time of use energy-based tariff components.

### 9.1 Background on Existing HV Tariff Structure

Aurora currently offers three published HV Network Tariffs, all with demand-based charging components. Only the Network Tariff N15 for the largest HV customers has time of use energy components and a specified demand charging structure.

**Table 8 – HV Demand Tariffs**

Network Tariff Name	MSATS Code	Network Tariff Code	Number of Customers
HV Specified Demand, > 2 MVA	AUCHVDM2	N15	17
HV Metered Demand (kVA)	AUBLVDMKVA	N10	60
HV Metered Demand (kW) (tariff obsolete)	AUBHVDMKW	N11	15

### 9.2 Proposed Introduction of Specified Demand Charging Regime for the new HV Network Tariff

Aurora proposes to introduce a new Network Tariff for all HV customers on N10 and N11 Network Tariff. The new HV Network Tariff will have a specified demand charging regime and a time of use energy-based tariff component. This sub section outlines the details of the proposed specified demand charging regime.

Unlike N15, there will be no demand-based connection charge, nor will the TUoS charges be based on the transmission system nodal charges. These two charges arise because the customers on the N15 tariff generally have dedicated connection assets, an arrangement that does not apply to other HV customers.

All HV customers who elect to move from their current tariff to the new HV Network Tariff will have to specify their demand for a year. The demand-based charges for an installation on the new HV tariff based on a specified demand Network Tariff would be calculated monthly as follows:

- (a) if any daily maximum demand in the month is less than or equal to 100% of the specified demand, the demand charge for the day will be equal to the specified demand multiplied by the specified demand rate; or if the maximum demand is greater than the specified demand, but no greater than 120% of the specified demand, then the demand charge for the day will be the maximum demand multiplied by the specified demand rate; or
- (b) if any daily maximum demand in the month is greater than the specified demand by 120%, the daily demand charge will be the sum of:
  - 120% of the specified demand multiplied by the specified demand rate; and
  - the difference between the maximum demand and 120% of the specified demand multiplied by the excess demand rate.

Aurora will give some flexibility to customers and will therefore allow a margin of 20% before the excess demand rate is applied to customers. It is expected that the excess demand rate will be about 10 times the specified demand rate. These rates should provide to the customers on this Network Tariff a strong incentive to manage their overall demand on the network.

In special cases the specified demand value may be varied to recognise changes in customer installation operating conditions; for example, a mine temporarily suspending operations leading to an on-going reduced base demand, or an industry installing new equipment that would increase the base demand. Aurora considers that to deny customers that opportunity to renegotiate their nominated threshold values would, in such cases, be punitive.

Aurora will give customers choice to migrate to the new HV tariff, from the existing N10 and N11 HV Network Tariffs.

Aurora seeks feedback from customers on the proposed specified demand charging regime for the new HV Network Tariff. In particular, Aurora seek feedback on:

- (i) the annual lock in period for the specified demand;
- (ii) the 20% margin which provides customers flexibility; and
- (iii) the concept of the excess demand rate.

### ***9.3 Proposed Introduction of Time of Use Energy-Based Tariff Components for the new HV Network Tariff***

The current HV metered demand Network Tariffs N10 and N11 do not have time of use energy charging components. As discussed in Section 4 of the Issues Paper, there is economic merit in introducing time of use energy-based tariff components to better reflect the cost of the network and encourage customers to shift consumption to off-peak periods. If customers are able to shift consumption to off-peak periods, this defers network augmentation expenditure and results in lower cost for customers in the long term. Customers also benefit immediately by shifting consumption to lower price off-peak and shoulder periods.

As explained in Section 4 and Section 6 of the Issues Paper, the definition of peak, shoulder and off-peak periods must be designed to not only adequately reflect the current utilisation and forward looking costs for Aurora, but also give the ability to customers to respond to the time of use price signals by shifting consumption from peak to off-peak and shoulder periods.

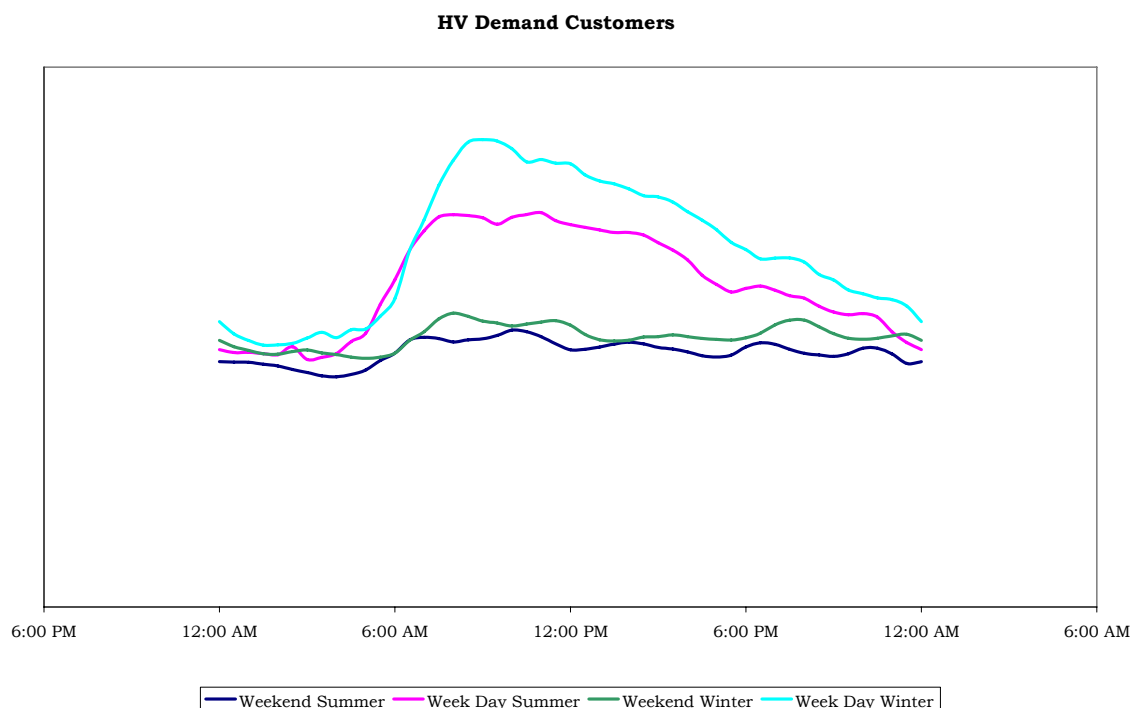
The time of use energy-based tariff components for the N15 Network Tariff is shown in the table below.

**Table 9 – HV Demand >2 MVA ToU Structure**

<b>Time Period</b>	<b>Summer (1 October → 31 March)</b>	<b>Winter (1 April → 30 September)</b>
Week Day (0800 – 2200) (Monday – Friday)	Shoulder	Peak
Weekend Day (0800 – 2200) (Saturday & Sunday)	Off-peak	Shoulder
Any Day (2200 – 0800) (Monday – Sunday)	Off-peak	Off-peak

Aurora have analysed the consumption profiles of customers on N10 and N11 Network Tariffs and the profiles are presented below.

**Figure 6 – HV Demand Profile**



Based on the consumption profiles, Aurora recommends the following time of use tariff structure for the new HV Network Tariff. The consumption profile changes somewhat between summer and winter and Aurora plan to introduce the same seasonal time of use tariffs for all HV customers as those with a demand greater than 2 MVA.

**Table 10 – HV Demand ToU Structure**

Time Period	Summer (1 October → 31 March)	Winter (1 April → 30 September)
Week Day (0800 – 2200) (Monday – Friday)	Shoulder	Peak
Weekend Day (0800 – 2200) (Saturday & Sunday)	Off-peak	Shoulder
Any Day (2200 – 0800) (Monday – Sunday)	Off-peak	Off-peak

Aurora seeks feedback from customers on the proposed time of use tariff structure and the ability of customers to shift consumption from peak periods to off-peak and shoulder periods.

The proposed time of use tariff structure will not be mandatory. Aurora will give existing customers choice to migrate from the current N10 and N11 HV Network Tariffs to the new time of use HV Network Tariff.

## **10 Alteration to Network HV Tariff – N15**

### ***10.1 Background on Existing N15 Tariff Structure***

Aurora currently offers a published HV Network Tariff, N15, for customers with loads greater than 2 MVA. This Network Tariff includes times of use energy charges and a specified demand charging structure.

The specified demand charging structure allows a customer to specify a maximum demand for their site. If the site maximum demand for the month is in excess of the specified demand, the customer is charged for the demand in excess of the specified demand at 3 times the specified demand rate for the entire month. This excess demand charge applies to the DUoS, Connection and TUoS components of the N15 Network Tariff.

Whilst these large customers have the ability to manage their loads, the current N15 excess demand regime means that an excursion on a single day attracts a penalty for the entire month (nominally 30 days). Aurora believes that this may be punitive in its operation and intends to modify this excess demand regime. Aurora proposes to modify the N15 Network Tariff specified demand charging regime component.

### ***10.2 Proposed Alteration of Specified Demand Charging Regime for the N15 Network Tariff***

All HV customers with demand in excess of 2 MVA will continue to have to specify their demand for a year. The demand-based charges for an installation on the N15 HV tariff based on a specified demand Network Tariff would be calculated monthly as follows:

- (a) if any daily maximum demand in the month is less than or equal to the specified demand, the demand charge for the day will be equal to the specified demand multiplied by the specified demand rate; or
- (b) if any daily maximum demand in the month is greater than the specified demand, the daily demand charge will be the sum of:
  - the specified demand multiplied by the specified demand rate; and
  - the difference between the maximum demand and the specified demand multiplied by the excess demand rate.

It is expected that the excess demand rate will be 5 times the specified demand rate. These rates should provide the customers on this Network Tariff a strong incentive to manage their overall demand on the network.

In special cases the specified demand value may be varied to recognise changes in customer installation operating conditions; for example, a mine temporarily suspending operations leading to an on-going reduced base demand, or an industry installing new equipment that would increase the base demand. Aurora considers that to deny customers that opportunity to renegotiate their nominated threshold values would, in such cases, be punitive.

Aurora seeks feedback from customers on the proposed specified demand charging regime for the N15 HV Network Tariff. In particular, Aurora seeks feedback on the concept of the daily excess demand rate.

## 11 Retailer Obligations

Unless customers contract directly with Aurora for the provision of distribution network services the only electricity account they receive will be from their nominated electricity retailer. The structure of the retailer invoice is for agreement between the customer and the retailer and may or may not include a bundling of the individual components that comprise the final charges.

Each customer's electricity account has charges for the provision of transmission and distribution network services; energy purchases; and retailing costs. These charges can be separately identified on the bill or may be bundled by the retailer to form a final charge for the customer. The bundling of these charges is an important issue as part of the introduction of time of use Network Tariffs.

Aurora currently produces Network Tariffs that comprise separate charges for the provision of:

- distribution network services;
- metering services; and
- transmission network services.
- Under a time of use energy regime both distribution and transmission network services may include differing energy rates (peak, shoulder, off-peak) for consumption at differing times of the day, week and/or year. These rates are set so that they provide a pricing signal to consumers to shift their energy consumption from periods of higher charges/demand to those of lower charges/demand.
- Electricity retailers are under no obligation to pass these pricing signals through to consumers and may aggregate charges, periods and times to arrive at their own retail tariff charge. By way of example, a Network Tariff may comprise energy charges for peak, shoulder and off-peak consumption; a retailer may 'repackage' these charges to an average flat rate for all consumption effectively removing the signal from the network provider's tariff.
- Aurora would hope that retailers choose to preserve the pricing signals built into Network Tariffs by adopting a 'pass through' of network charges wherever possible.

## 12 Next Steps

Written submissions to the questions canvassed in this Issues Paper, and other related issues, should be received by Aurora by the close of business Monday, the 19<sup>th</sup> of January 2009. Submissions can be sent electronically to [networktariff@auroraenergy.com.au](mailto:networktariff@auroraenergy.com.au).

Alternatively, written submissions can be sent to:

- (a) Mr Leigh Mayne  
Network Regulation Manager  
Network Division  
Aurora Energy  
177 Main Road  
Moonah TAS 7009
- (b) Tel: (03) 6271 6544  
Fax: (03) 6271 6517

Aurora prefers that all submissions be in an electronic format and publicly available, to facilitate an informed, transparent and robust consultation process. Accordingly, submissions will be treated as public documents and posted on Aurora's website, [www.auroraenergy.com.au](http://www.auroraenergy.com.au) except and unless prior arrangements are made with Aurora to treat the submission, or portions of it, as confidential.

Any enquiries about this issues paper, or about lodging submissions, should be directed to Leigh Mayne on (03) 6271 6544 or at the above email address.

Aurora will publish submissions as they are received unless an arrangement is made with the submitter to the contrary

A response to the submissions will be made on or before Friday, the 30<sup>th</sup> of January 2009.

A Position paper incorporating accepted submissions will be published for comment during February 2009.

As required by the Guideline, a Pricing Proposal for the period covering the 1<sup>st</sup> of July 2009, to the 30<sup>th</sup> of June 2010, will be lodged with the Regulator by the 30<sup>th</sup> of April 2009.

## 13 Additional Information

### 13.1 Glossary

Following are some definitions of terms used in this Issues Paper.

Term	Explanation
Aurora	Aurora Energy Pty Ltd, ABN 85 082 464 622
Contestable Customer Regulations	Electricity Supply Industry (Contestable Customer) Regulations 2005
Draft Network Tariff Strategy	The document published by Aurora in February 2008, in accordance with the Guideline. The Draft Network Tariff Strategy is available on Aurora's website <a href="http://www.auroraenergy.com.au">www.auroraenergy.com.au</a>
DUoS	Distribution Use of System
DUoS Charges	Charges, excluding charges for metering, levied upon customers for their use of the distribution system.
ESI Act	Electricity Supply Industry Act 1995
Guideline	<i>Approval of Network Tariffs in Accordance with the 2007 Determination</i> issued by the Regulator in November 2007
HV	High Voltage, as defined in the ESI Act
kVA	kiloVoltAmps, a measure of active power. One kVA is equal to 1,000 watts under ideal conditions, more than 1,000 Watts under non-ideal conditions.
kVAR	kiloVoltAmpsReactive, a measure of reactive power.
kW	kiloWatts, a measure of power, equal to 1,000 Watts.
LV	Low Voltage, as defined in the ESI Act
Network Tariff Strategy	The document published by Aurora in June 2008, in accordance with the Guideline. The Network Tariff Strategy is available on Aurora's website <a href="http://www.auroraenergy.com.au">www.auroraenergy.com.au</a>
NUoS	Network Use of System
NUoS Charges	The sum of DUoS, TUoS and Metering Charges
OTTER	Office of the Tasmanian Economic Regulator
Period 2	The second period covered by the 2007 Determination; that is, the year starting on the 1 <sup>st</sup> of July 2008, and ending on the 30 <sup>th</sup> of June 2009.
Period 5	The fifth period covered by the 2007 Determination; that is, the year starting on the 1 <sup>st</sup> of July 2011, and ending on the 30 <sup>th</sup> of June 2012.
Pricing Proposal	A document setting out the rates and conditions for Network Tariffs in accordance with the Guideline. The Pricing Proposal for Period 2 is available on the Aurora website <a href="http://www.auroraenergy.com.au">www.auroraenergy.com.au</a>
Regulator	The Tasmanian Economic Regulator, as defined in the ESI Act
TUoS	Transmission Use of System
TUoS Charges	Charges levied upon customers for their use of the transmission system.

### 13.2 Current Network Tariffs

The current suite of Aurora's Network Tariffs are presented below.

**Table 11 – Network Tariffs**

<b>Network Tariff Code</b>	<b>MSATS Code</b>	<b>Description</b>	<b>NUoS Components</b>
N01	AURESGEN	General Network – Residential	Daily charge with declining three step energy charge
N02	AUBLVGEN	General Network – Business	Daily charge with declining two step energy charge
N03	AUBLVDMKW	LV kW Demand	Daily charge, single energy charge and declining two step demand charge
N05	AUHEATUNCO	Uncontrolled Heating	Daily charge with single energy charge
N06	AUHEATCONT	Controlled Heating	Daily charge with single energy charge
N07	AUUMS	Small LV Unmetered	Daily charge with single energy charge
N08	AUIRRIG	LV Day/Night (Irrigation)	Daily charge with peak and off-peak energy charge
N09	AUBLVDMKVA	LV kVA Demand	Daily charge, single energy charge and declining two step demand charge
N10	AUBHVDMKVA	HV kVA Demand	Daily charge, single energy charge and single demand charge
N11	AUBHVDMKW	HV kW Demand	Daily charge, single energy charge and single demand charge
N13	AUPAYG	LV APAYG	Daily charge with single energy charge
N15	AUCHVDM2	HV kVA Specified Demand (> 2.0MVA)	Daily charge, time of use energy charge, specified and excess demand charges and nodal transmission charge
N20		Street Lighting	Single demand charge
ITC	AUSPCCUST1	Individual Network Tariff Calculation	Charges individually calculated for each customer