Tariff Structure Explanatory Statement

Regulatory Control Period
1 July 2019 to 30 June 2024

Tasmanian Networks Pty Ltd
Tasmanian Distribution Tariff Structure Explanatory Statement
Regulatory Control Period: 1 July 2019 to 30 June 2024

Tasmanian Networks Pty Ltd
ABN 24 167 357 299
PO Box 606
Moonah TAS 7009

Enquiries regarding this document should be addressed to:

Leader Regulation
PO Box 606
Moonah TAS 7009
Email: revenue.reset@tasnetworks.com.au

Table of Contents

1 Introduction 6

2 Distribution pricing strategy 7

Pricing strategy overview 7

The benefits of pricing reform 8

Strategy objectives and phasing 10

What we will deliver in the 2019-24 TSS 14

3 Tariff classes, structures and charging parameters for standard control services ... 28

What are standard control services? 28

What charging methods do we use? 28

Taking time of use into account 29

Network tariff reform 29

Our network tariffs and charging structures 32

4 Network tariff setting process 36

Objectives 36

Methodology 36

Annual pricing proposal 39

Stakeholder engagement 39

Customer charge comparisons 71

Distribution network customer, tariff and revenue breakdown 75

5 Assignment to network tariff classes 78

Assignment of existing customers to tariff classes 78

Assignment of new customers to a tariff class 78

Reassignment of existing customers to another tariff class 79

The impact of tariff assignment and reassignment on customers 82

Objections to proposed assignments and reassignments 82

Assessing and reviewing the basis on which a customer is charged 83

Assignment process 84

6 Tariff classes, structures and charging parameters for alternative control services 85

What are alternative control services? 85

Tariff classes 85

Metering, public lighting, and ancillary services 86

Ancillary services – Quoted services 92

7 Further information 95

Supporting documents 95

Application and Price Guides 95

Contact details 95

Appendix A: Network tariffs for 2019-24 96

Appendix B: Designing cost reflective tariffs 109

B.1 Targeting cost reflective tariffs 109

B.2 Calculating what cost reflectivity looks like 112

B.3 Designing our new tariffs 121

Appendix C: Engaging customers in our pricing plan & tariff designs 123
Appendix D: Network charge comparisons (Residential & Small Business)..... 126
Residential customers 127
Small businesses..... 140
Irrigators..... 142
Large businesses..... 144
Appendix E: Setting time of use time windows 146
Choosing the time of use periods..... 146
Appendix F: Pricing related feedback from stakeholders 149
Appendix G: TEC Methodology – The Application of the Total Efficient Cost (TEC) Model in the tariff setting process 167
1 Introduction..... 171
2 Background..... 172
3 Geographic region definition 173
4 Asset group definition 175
5 Customer group definition..... 176
6 Revenue entitlement grouping definition and allocation process..... 177
6.1 Allocation to asset classes 177
6.1.1 Return on capital 177
6.1.2 Regulatory depreciation 178
6.1.3 Operating expenditure 178
6.1.4 Tax allowance 178
6.1.5 Under/over recoveries and pass through events 178
6.1.6 Transmission charges 179
6.2 Allocation to customer classes 179
6.2.1 Transmission assets 179
6.2.2 Subtransmission assets..... 179
6.2.3 Zone substation assets 179
6.2.4 High voltage assets 179
6.2.5 Distribution transformer assets..... 180
6.2.6 Low voltage assets..... 180
6.2.7 Common service assets 180
6.2.8 Connection assets..... 180
7 Tariff group definition 181
8 Allocation to tariff groups..... 182
8.1.1 Unmetered 182
8.1.2 Street lighting 182
8.1.3 Uncontrolled energy..... 182
8.1.4 Controlled energy 182
8.1.5 Residential (light and power)..... 182
8.1.6 Low voltage < 25 kVA..... 183
8.1.7 Low voltage 25 to 70 kVA 183
8.1.8 Low voltage 70 to 300 kVA 183
8.1.9 Low voltage > 300 kVA..... 183

8.1.10 High voltage < 2 MVA 184
8.1.11 High voltage > 2 MVA 184
8.1.12 Embedded generation 184
8.2 Cost allocation summary 184
Glossary 186

1 Introduction

When lodging a regulatory proposal with the Australian Energy Regulator (AER), distribution network service providers (DNSPs) are also required under the National Electricity Rules (the Rules) to submit a proposed tariff structure statement (TSS). The purpose of a TSS is to clearly explain to customers and other stakeholders how a DNSP's tariffs have been developed and how they will be applied during the course of a regulatory control period. The proposed tariff structure statement must be accompanied by an indicative pricing schedule.

This *Tariff Structure Explanatory Statement* (TSES) is a companion document to TasNetworks' TSS for the five-year regulatory control period beginning on 1 July 2019 and ending 30 June 2024. It should be read together with TasNetworks' TSS.

The TSS sets out the network tariff classes, tariff structures and tariff components which TasNetworks intends offering in the 2019-24 regulatory period, the policies and procedures for applying those tariffs, and an indicative pricing schedule for the first year of the regulatory period. It also includes indicative charges applying to the metering services that TasNetworks will continue to offer during the 2019-24 regulatory period, as well as public lighting.

This TSES provides explanations of our approach to designing and setting those tariffs, our objectives in pursuing network tariff reform, our reasons for choosing the tariffs which appear in the TSS and how they comply with the Rules. In doing so, it:

- outlines how we propose to move to pricing which is fairer for all our customers;
- facilitates customer and stakeholder understanding of our pricing by providing an overview of network pricing and associated concepts;
- sets out our proposed network tariff structures and charging parameters, as well as the approach for setting each tariff annually; and
- explains how we arrived at our proposed network tariffs and our future plans for tariffs in accordance with our strategy.

TasNetworks is committed to making customers central in all we do. We have engaged with our customers and a wide range of stakeholders in developing the network tariffs that feature in the TSS. Importantly, this document also summarises the views expressed by customers and their advocates during the four years of consultation that led to the development of the TSS, as well as TasNetworks' response to that feedback.

We are confident that the network tariffs proposed by TasNetworks in the 2019-24 TSS strike a workable balance between the diverse range of views held by stakeholders about network tariff reform and a range of often competing interests, and that they will meet with the AER's approval and the approval of our customers.

2 Distribution pricing strategy

Pricing strategy overview

Along with TasNetworks' TSS for the 2019-24 regulatory period, this TSES is part of the five-year distribution pricing strategy documentation required under the Rules. We have engaged our customers in developing it, will seek the AER's approval of it, and will then ensure our annual distribution prices and practices align with it during the 2019-24 regulatory control period.

Many of our existing network tariffs need to change. When network tariffs were introduced in Tasmania, they were developed based on the existing retail electricity tariffs, and did not reflect underlying network cost drivers for many of our customers. This means many of our tariffs do not meet the needs of Tasmania's energy market, nor are they consistent with the cost reflective pricing principles.

Technological and customer driven changes in the electricity market mean that the flat, consumption based network tariffs which have been used to recover the cost of building and operating the electricity distribution network from customers are no longer fit for purpose. Changes to the Rules also require us to apply a more cost reflective approach to setting our network tariffs and other regulated charges. So, like other electricity networks across Australia, TasNetworks is looking to improve the way we charge for the delivery of electricity.

Since commencing operations on 1 July 2014, TasNetworks has embarked on a process of tariff reform, which has seen us gradually moving towards more cost reflective pricing. Each year we aim to transition the component charges for each tariff closer to meeting the NER's requirements regarding cost reflectivity.

This includes adjusting the prices of our existing network tariffs to unwind some long-standing cross subsidies between tariffs and between different classes of customer. We have also been developing new types of tariffs that more accurately reflect the impact that customers' use of electricity has on the cost of running the network, including at different times of the day and different days of the week.

Over the five-year period covered by the TSS which this TSES accompanies, we will continue with pricing reform by:

- continuing to progressively reduce cross subsidies between customers and between tariffs.
- embedding the two new demand based time of use (ToU) tariffs introduced in TasNetworks' 2018-19 Annual Pricing Proposal (with a start date of 1 December 2018) to give households and small businesses who invest in distributed energy resources (DER) new opportunities to control their electricity costs;
- assigning new residential and low voltage (LV) business customers, residential and LV business customers who change or upgrade their connection and residential and LV business customers whose existing accumulation meter is replaced with an advanced meter to a ToU consumption based network tariff, on an opt-out basis; and
- offering 'introductory' discounts for our demand based time of use tariffs for both residential and small business customers, to encourage customer take up of the new tariffs;

We will also be changing the way we measure peak demand for small business and residential customers on demand based network tariffs by moving from single monthly peaks recorded in peak and off-peak periods to using an average of the four highest peaks[1] in the month recorded during peak and off-peak periods.

The changes to our tariffs come at a time when amendments to the national regulatory framework for metering have paved the way for advanced meters to be rolled out in Tasmania. Our new time of use tariffs are designed to capitalise on the services that advanced meters can support, enabling households and small businesses to:

- pay different network charges depending on how and when they use electricity;
- be supplied under just one network tariff for all their electricity needs; and
- offset the energy they generate themselves against all of their electricity use, including hot water and/or home heating.

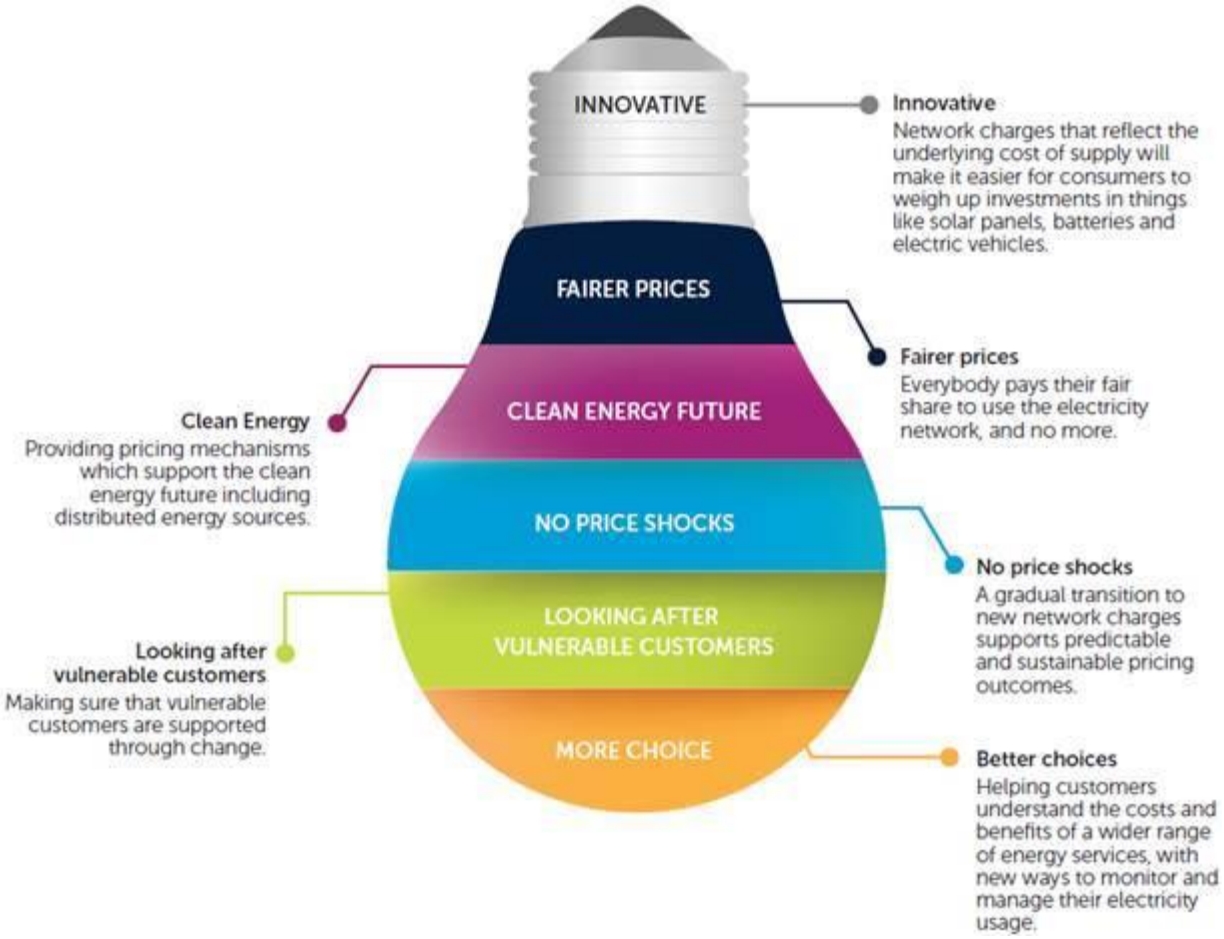
We will continue to work with electricity retailers to progress our pricing strategy and reform to ensure that our new and adjusted network charges are incorporated into the retail tariffs offered to customers. And we will continue to engage with our customers and their advocates, to help us understand what customers want and value from their electricity service.

The benefits of pricing reform

Customers are central to everything we do at TasNetworks and our success is anchored to their prosperity and well-being. While the changes to the Rules that require us to apply a more cost reflective approach to setting our network tariffs and other regulated charges has been a catalyst for change, we have constantly viewed the reform of network prices in Tasmania in terms of the best interests of customers. The following illustration highlights some of the key benefits for our customers and the principles which guide our plans for network tariff reform.

[1] Recorded on different days of the month.

Figure 1 The benefits of network tariff reform



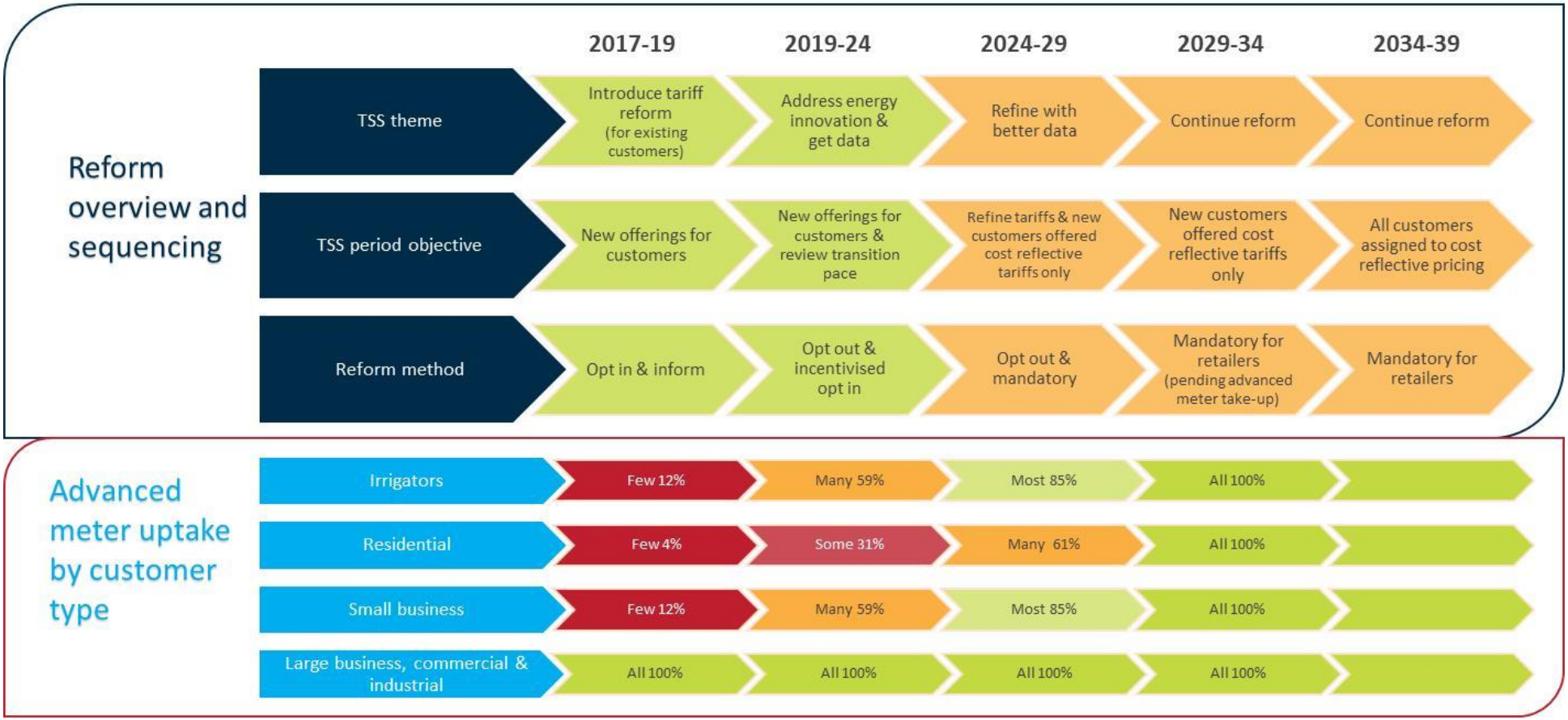
Strategy objectives and phasing

Our pricing strategy covers multiple TSS periods. Each year we aim to transition the component charges for each tariff closer to meeting the NER requirements regarding cost reflectivity, but we expect at least four TSS periods will be needed before most of our customers assume fully cost reflective network pricing. This phasing reflects the fact that:

- Tasmania's meter fleet is largely comprised of accumulation meters – we estimate that it will take 2 – 3 regulatory periods before most customers in Tasmania have advanced meters; and
- our engagement has shown we need to continue to assess and better understand the impacts of price adjustments for our customers. This takes time and also requires the data from advanced meters to test and refine our tariff designs and transition approach.

Our phased approach to distribution pricing reform is illustrated in Figure 2 (see following page).

Figure 2 Distribution pricing reform overview



Our 2017-19 TSS involved introducing tariff reform for existing customers

The AER approved our first TSS for 2017-19 in April 2017. This was the 'establishment' phase of our reforms that set a pathway for the subsequent regulatory periods by:

- introducing the nature and objectives of tariff reform to our stakeholders;
- introducing some new, more cost reflective tariffs as a choice for our customers, via their retailer; and
- progressing the gradual (multi-period) process of unwinding the discounts that exist in some of our network tariffs to reduce the level of cross subsidies between tariffs and within classes of customers (e.g. heating and hot water specific tariffs[2]).

In this TSS period we have:

- introduced new demand based time of use tariffs as an opt-in choice for residential and small business customers via their retailer;
- continued to realign the relative prices of several existing tariffs to eliminate some longstanding cross subsidies between different customer groups; and
- rebalanced the service and variable charging parameters of most of our existing tariffs.

Our 2019-24 TSS focusses on addressing energy innovation and gathering data

Our TSS for 2019-24 builds on the work started in the 2017-19 TSS, and has been informed by the customer engagement and analysis we have undertaken since developing our TSS for 2017-19, along with feedback from the AER. This analysis has considered our future costs, our customers' likely future demand, the growing role of distributed energy resources and early data coming from our trials of new network tariffs and energy management technologies[3].

In the 2019-24 TSS period we will focus on:

- opportunities to further prioritise our reform approach and ensure we are designing tariffs for new energy technologies and customer types;
- leveraging the roll-out of advanced meters to residential and LV business customers, by assigning new customers, customers who change or upgrade their connection and customers who have their existing accumulation meter replaced with an advanced meter to a ToU consumption based network tariff, on an opt-out basis;

[2] Uncontrolled Low Voltage Heating network tariff (TAS41)

[3] TasNetworks' emPOWERing You Trial, https://www.tasnetworks.com.au/customer-engagement/tariff-reform/empoweringyou/ and CONSORT Bruny Island Battery Trial, https://www.tasnetworks.com.au/customer-engagement/tariff-reform/consort-bruny-island-battery-trial/

- continuing to facilitate a customer led transition to cost reflective tariffs by offering financial incentives to encourage residential and small business customers to opt-in – through their retailer – to ToU demand based network tariffs, while being clear from the start about the proposed transition period and tariff assignment rules;
- our plan to obtain interval metering data to better inform tariff design and pricing, and to manage customer impacts of transitioning our legacy tariffs over multiple TSS periods to a more cost reflective footing; and
- continuing the gradual process of unwinding cross subsidies.

We are not proposing to change the design of existing tariffs for large business customers supplied at high voltages. These tariffs already feature a combination of cost reflective elements such as ToU and demand based charges. The focus of our network tariff reforms is on residential and small business customers who have, in the main, been assigned to network tariffs that generally do not meet the criteria of cost reflectivity.

Our engagement with customers and stakeholders leading up to and during the 2019-24 regulatory period has focussed on the following key areas:

- new tariffs for new energy and customer types;
- charging methodology changes for demand based tariffs;
- the transition timeline to cost reflective pricing; and
- incorporating initial learnings from our trials of ToU network tariffs and advanced metering for residential customers.

What we will deliver in the 2019-24 TSS

Network tariffs for customers with distributed energy resources

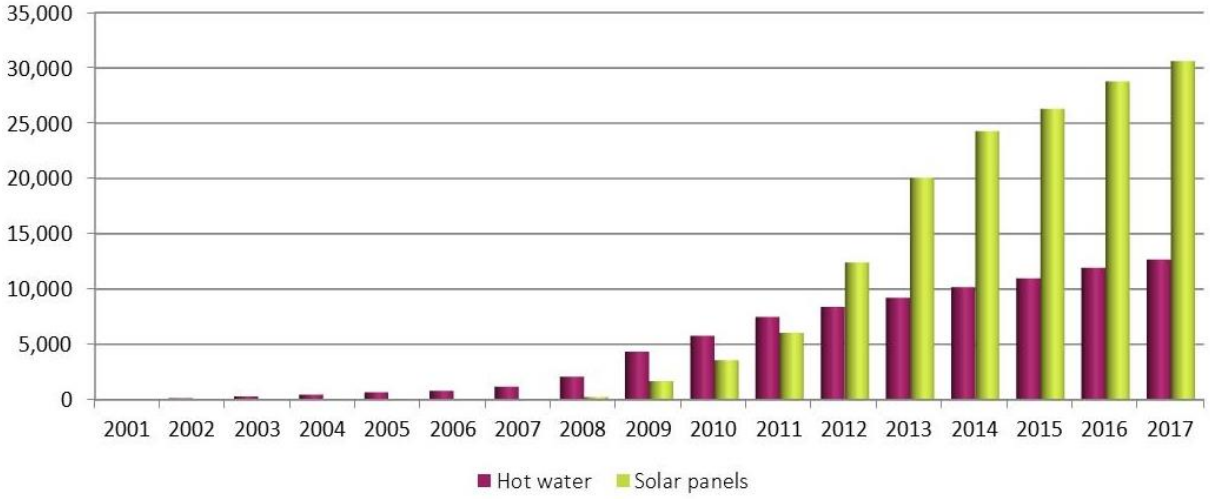
During the 2019-24 TSS period, we expect to see a growing class of customers that can be classified as 'early adopters' who invest in electricity storage, generation, or management technology – collectively referred to as distributed energy resources (DER) – as well as electric vehicles, which can also be used as a form of mobile electricity storage. The figure below illustrates some of the technology which is changing the way customers use electricity and the way they use our network.

Figure 3 Distributed energy resources

The first form of DER to gain mass-market acceptance is the use of photovoltaic (PV) solar panels. Solar hot water systems could also be considered a form of DER, in that they generate heat energy and store it for later use, and the uptake of solar hot water heating in Tasmania has also risen significantly over the same period, albeit at a slower rate than solar panels in recent years. The following graph charts the growth in the number of customers installing solar panels and solar hot water systems[4] in Tasmania since 2000.

[4] Includes air-source heat pump hot water systems

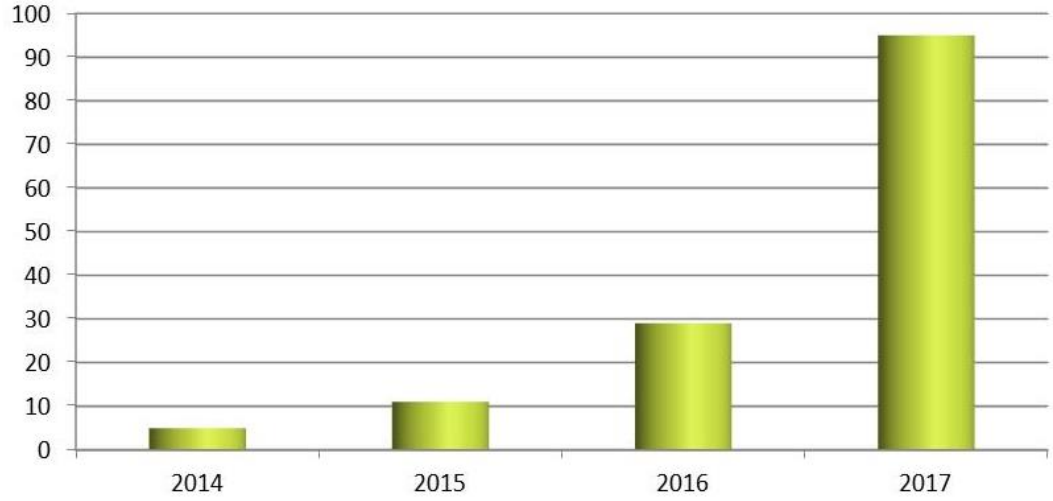
Figure 4 Uptake of PV solar panels and solar hot water systems in Tasmania



Source: Australian Government Clean Energy Regulator

While still in its infancy, the following chart illustrates the take-up of battery storage in Tasmania (as part of new solar panel installations).

Figure 5 Uptake of battery storage in Tasmania (cumulative)



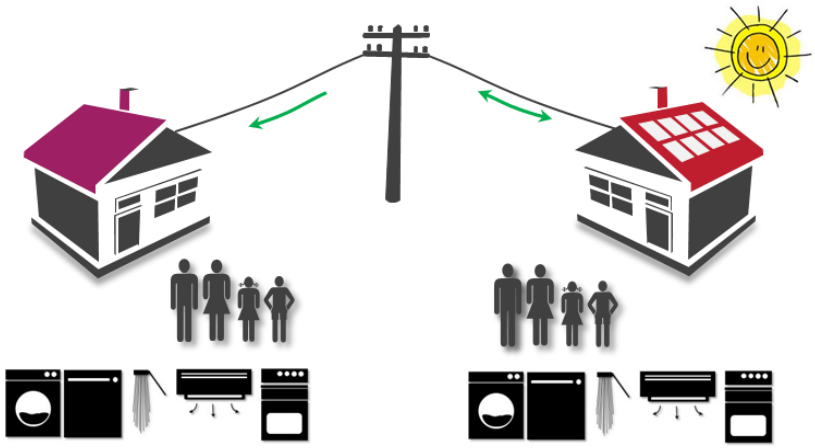
Source: Australian Government Clean Energy Regulator

The rapid uptake of this technology has had some unintended consequences for distribution networks and customers alike – amongst them, power quality issues. As we expect this growth to continue, it is important for us to be able to identify these customers and ensure we have appropriate tariff arrangements in place.

Network costs are largely driven by the maximum load that has to be met, with the demand for electricity in Tasmania typically peaking during winter on weekday mornings and evenings. Solar panels rarely generate much electricity at those peak times, and solar panel owners can put as much load on the network at those times as everyone else. Yet, under flat, consumption based network tariffs these customers are charged less for their use of the network. This is because our network tariffs, like the retail tariffs they evolved from, have been based on energy consumed, and solar panel owners typically consume less energy from the electricity grid.

The following illustration (Figure 6) shows two households with the same composition, the same appliances, same energy use and the same maximum demand – that pay very different amounts for their network services, despite being on the same flat-rate network tariff and having the same network capacity requirements at peak times. The difference is that one house has solar panels, and because the network tariff is a flat, consumption based tariff, factors like demand or time of use are not taken into account when calculating either household's network charges.

Figure 6 One of the unintended outcomes of DER



Consumption	7,410 kWh p.a.	Consumption (total)	7,410 kWh p.a
Maximum demand	4.5kW at 8am during winter	Maximum demand	4.5kW at 8am during winter
Power sourced from the grid	7,410 kWh	Power sourced from the grid	4,490 kWh
		Solar generation	2,920 kWh
Network charges	**$741**	**Network charges**	**$457**

The renewable energy targets, grants and feed-in tariffs which encouraged people to install solar panels were not envisaged when the current network tariffs were originally designed. As a result, households and businesses that have not installed solar panels have been subsidising the network costs of those that have. This is because customers with solar panels avoid making their full contribution towards the cost of the network by virtue of being billed for the delivery of less energy, even while placing the same demand on the network.

Further, as the concentration of solar panels has increased, the intermittent and variable nature of the power they generate causes power quality issues for the network, bringing with it the risk of damage to customers' appliances or network infrastructure. This has required components of the network – often transformers – to be upgraded in order to preserve a safe and compliant power supply for all customers. However, the costs of upgrading the network haven't been recovered from customers with solar panels, but have been borne by the wider customer base.

Customers who generate their own electricity and take less energy from the network should pay less for energy in the bill they receive from their retailer. However, unless these customers also reduce their contribution to demand on the network at peak times, they should still contribute the same as other customers do towards network costs.

DER are going to be an important part of Tasmania's energy sector solution in the decades to come and an important part of TasNetworks' role is to facilitate its uptake in a way that maintains a safe, reliable and affordable service that does not disadvantage customers without DER.

Our distribution network makes it possible for customers who generate more electricity than they need to 'sell' their excess to other customers via the network. The network also provides a reliable source of 'backup' energy when the sun isn't shining or the wind isn't blowing.

In a changing energy sector, we must respond to the customer uptake of DER and make it possible for them to be integrated with our network. The work we have done with Energy Networks Australia and the Commonwealth Scientific and Industrial Research Organisation (CSIRO) on the Energy Network Transformation Roadmap highlights the potential opportunities to purchase services from DER customers to reduce long-term network upgrade costs. Our aim is to ensure that customers with DER can benefit from their investment, including by providing network support services – without the rest of our customers incurring the cost.

With solar panels – and battery storage – becoming more affordable, a key part of our distribution pricing strategy over the five year period covered by our 2019-24 TSS will be developing a greater understanding of how DER can be deployed in ways that benefit, rather than disadvantage, the network and other customers who do not have DER. The next section of this TSES discusses some of the innovative projects and tariffs that TasNetworks is working on to do just that.

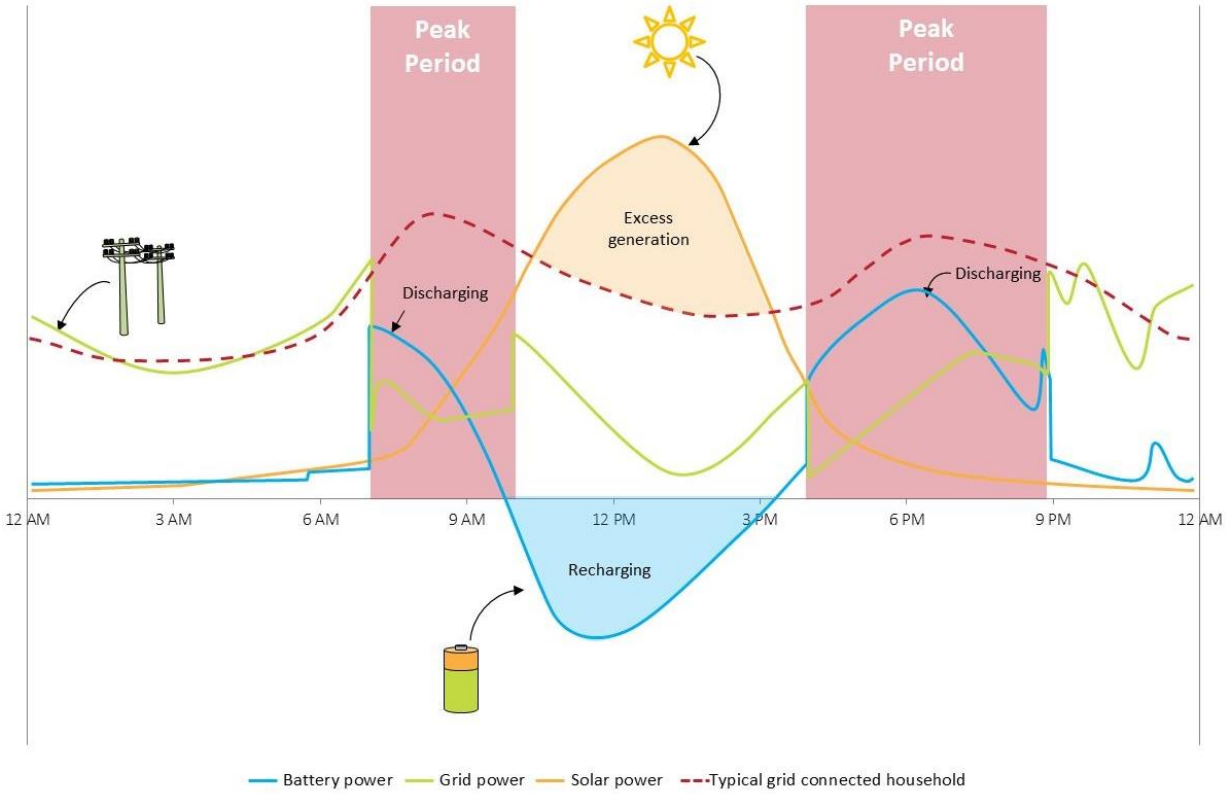
Distributed Energy Resource case study

We are undertaking a trial of solar panels and batteries in around 40 homes on Bruny Island, as part of the CONSORT group, along with Reposit Power and a number of universities, including the University of Tasmania. This trial is already providing valuable insights into the potential for customers to manage their electricity usage and control their electricity costs using DER – while also using these resources to benefit our electricity network and other customers.

The homes on Bruny Island who are participating in the trial have been provided with subsidised photovoltaic solar panels. When combined with battery storage, the energy generated by customers using their solar panels can either be used for their own immediate use, stored for later use or exported back to the network. And when batteries are used together with advanced energy management software, the release of electricity from the batteries can be timed to decrease the demands placed on the undersea power cable supplying Bruny Island and/or respond to time of use pricing signals. This has the added benefit of reducing the use of diesel generators on the island during peak season and even potentially delaying the need to upgrade the expensive undersea cable, therefore reducing network costs for all customers.

Figure 7 (below) compares a typical weekday demand profile for residential customers that rely on the network to supply all of their electricity with the average daily load profile for a sample of the residential customers participating in the Bruny Island Battery Trial.

Figure 7 Household load profile with and without distributed energy resources



The energy management software provided to participants in the trial has been configured to respond to time of use pricing signals, based on the peak and off-peak periods which are a feature of our new consumption and demand based time of use network tariffs for residential and small business customers.

Figure 7 shows that when the morning peak period begins at 7am (as per our residential time of use consumption and demand based network tariffs), the Bruny Island trial participants are discharging energy from their batteries, significantly reducing the energy that they draw from the network, when the network charges which apply are at their highest.

Then, as the sun reaches the right angle for the customers' solar panels to start making a significant contribution towards their electricity needs, the chart shows the energy being drawn from the customers' batteries reducing. When the morning peak period concludes at 10am, there is a brief spike in the amount of power being taken from the grid, before the output of the solar panels increases to the point where virtually no power is being sourced from the grid, and the excess energy being produced by the solar panels is being used to recharge the batteries.

As the beginning of the evening peak period at 4pm gets nearer, the energy being produced by solar panels is in decline and the amount of power being sourced from the grid begins to increase – until the batteries are deployed again at 4pm to reduce the energy being supplied from the grid. The chart shows customers continuing to draw on their batteries until 9pm, when the evening peak period ends and the overnight off-peak period, with its lower network charges, begins, making electricity from the grid more attractive again.

From this we can see the ability of the batteries to not only reduce the consumption of energy from the network in outright terms, but to significantly reduce the amount being drawn at peak times,

potentially reducing customers' network charges while at the same time placing less pressure on an already constrained part of the network.

At the time of writing, the Bruny Island Battery trial is only in its early stages. The lessons being learned from the trial are already influencing the design of our network tariffs for the future and our pricing strategy, and in the longer term will potentially inform our network planning.

Tariffs for new energy, new technologies and new customer types

Since the approval of our 2017-19 TSS, we are already seeing customers adopt new technology and know that the future will see new types of customers and technologies connecting to our network.

The 2019-24 TSS features cost reflective tariffs for residential and small business customers who invest in DER, designed to ensure that customer investments in new energy technologies allow these customers, and other customers, to reduce energy network costs rather than increase them.

Although these DER tariffs have always been intended to be a central component of our TSS for the 2019-24 regulatory period, their introduction was brought forward to 1 December 2018, to coincide with the planned end of the 'grandfathered' feed-in-tariff (**FiT**). The grandfathered FiT applies to customers with photovoltaic solar panels who applied to connect their solar panels before 31 August 2013 and had them installed before 31 August 2014.

If retailers take up this network tariff offering, it will provide customers who currently have access to the Grandfathered FiT or the Transitional FiT Rate[5] with alternative network tariffs to consider when looking to maximise the benefits they derive from having solar panels, as they transition to the lower Fair and Reasonable FiT[6] arrangements, once the Transitional FiT finally ends on 31 December 2019[7].

Because the DER tariffs were not a part of our 2017-19 TSS and have been introduced via TasNetworks' Annual Pricing Proposal for 2018-19, we are required to resubmit the tariffs as part of our 2019-24 TSS in order to embed them as an ongoing part of our suite of network tariffs.

Introducing tariffs specifically for small businesses and households that install DER will allow us to:

- provide price signals to encourage these customers to use their DER to reduce their peak load or shift demand to off-peak periods, thus minimising their own network charges while avoiding increasing costs for us and all our customers; and
- identify these customers, so we can start learning how to best integrate their energy use, energy export and network support capabilities into our own network operation practices. This will help us tailor our services and lower our costs over time which thereby means lower prices for all customers in the future, relative to the case where these technologies are not used efficiently or optimally integrated into the network.

[5] The Transitional FiT Rate was originally scheduled to expire on 1 January 2019 http://www.economicregulator.tas.gov.au/electricity/pricing/feed-in-tariffs

[6] http://www.economicregulator.tas.gov.au/electricity/pricing/feed-in-tariffs

[7] During 2018, the State Government conducted a review of Tasmania's Feed in Tariffs and, based on the findings of that review, decided to extend availability of the transitional FiT until 31 December 2019.

The DER tariffs will also offer a number of benefits to customers:

- Customers with micro-embedded generation (such as solar panels) will be to apply the energy they generate against all of their energy usage – including space heating and hot water – rather than just general light and power as is currently the case.

  This will help minimise the amount of power that customers without battery storage have to export at times of the day when their solar panels, for example, are producing more electricity than less energy consumptive appliances and lighting are able to consume. In turn, this opens up the potential for customers to reduce the electricity bill they get from their retailer by saving the full retail price of each kWh they generate and use themselves, rather than having to export the energy and earn the (lower) Fair and reasonable FiT.

- Customers on the DER tariffs will only pay a single service fee.

  Most residential and small business customers currently pay two service charges because they're assigned to two network tariffs – one for general power and lighting and another for hot water/space heating.

- Neither of the two DER tariffs will include a network charge which is based on the amount of energy consumed during the course of the monthly billing cycle.

  While it is likely that their retail tariffs will continue to feature consumption-based charges, TasNetworks will not be billing retailers for the amount of energy conveyed to customers assigned to the new DER tariffs. This means that customers will not have to reduce the amount of power they use in order to reduce the network charges we bill to their retailer. Instead, they can control those costs by controlling when they consume energy and minimising their maximum demand, particularly in peak times.

Initially, both tariffs (one for residential and one for small business customers) will be offered on a discounted basis, to provide economically-justified incentives to encourage take-up of the new tariffs on an opt-in basis, while complying with our obligation under the Rules to treat micro generators 'no less favourably' than other users.

The tariffs will be set at levels equivalent to the new demand based time of use tariffs we introduced in 2017, which feature reduced prices at off-peak times but higher prices at peak times. The new tariffs are designed to encourage customers to avoid running lots of appliances at once, to draw on battery storage at times of peak demand for the network or switch their demand to off-peak periods to reduce their network charges.

To encourage uptake of new demand based tariffs we will further discount the off-peak demand charge for a fixed period. Our proposed approach to discounting (both the level and period that it will apply to) was discussed with our Pricing Reform Working Group (PRWG) and our proposed tariff design is further outlined in Section B.3 *Designing our new tariffs*.

We propose applying the same discounting arrangements to the cost reflective time of use demand tariffs introduced in 2017 to further incentivise their uptake as well.

With the goal of cost reflectivity in mind, the discounts will be offered on a transitional basis only, and will decline progressively over the course of the 2019-24 TSS period, to the point that no discounts will be offered from 1 July 2024.

TasNetworks will fund the discount cost directly, meaning that the cost of offering the discounts will not be passed on to other customers. This strategy means that TasNetworks is likely to recover less than the annual revenue allowances set by the AER for the 2019-24 regulatory period, depending on the level of take-up of the new tariffs. Unlike the under or over-recoveries of revenue which sometimes occur due to factors like variations in annual consumption when compared to the forecasts that inform our price setting, any under-recoveries which are attributable to the discounting of these new tariffs will not be recovered in subsequent years. Along with the concept of the discount, the funding of the incentive by TasNetworks was also tested with the PRWG. The level of the discount, the period it will apply for and the means by which it will be funded was supported by the PRWG.

Advanced meter deployment in Tasmania and data availability

Changes to the regulatory framework for metering commenced in December 2017 to support the rollout of advanced meters in Tasmania, and across all states and territories in the National Energy Market (NEM). These changes mean that, at a minimum, over the 2019-24 TSS period we will see advanced meters deployed to new customers, customers whose meters need to be replaced and customers who choose to have an advanced meter installed by their energy retailer.

By 2024 we estimate that around 30 per cent of households and nearly 60 per cent of small business customers will have advanced meters. This projection is based on the estimated number of meter replacements based on meter age and historic trend data, forecast growth in customer numbers and customer demand for the innovative services and retail tariffs that advanced meters make possible. Commencing in 2019, Tasmania's main electricity retailer, Aurora Energy, will also be replacing the obsolete pre-payment meters used as part of its Pay As You Go product with advanced meters. The uptake of advanced meters will:

- help us understand the usage characteristics of customers;
- markedly improve the availability of data for us to test and refine our tariff offerings and help us explain to customers the impacts of switching to more cost reflective tariffs;
- allow more of our customers to better understand how they use electricity; and
- allow customers to better understand how they can manage their electricity demand and use to save money.

Why are advanced meters being rolled out?

The AEMC made these changes to facilitate advanced meter deployment and expand competitive provision of metering and related services to all customers. Previously only large industrial customers were subject to metering competition.

As advanced meters become commonplace, customers may look to consumption or demand based time of use tariffs to realise the potential benefits of this technology. It should be noted that customers will require an advanced meter if they choose a time of use tariff, whether it be demand based, consumption based or both. Advanced meters also have potential benefits for how we operate our network, such as enabling remote disconnection and re-connection services, and we will be undertaking further analysis to identify how best to realise those benefits.

We encourage customers to contact their Retailer to understand more about advanced metering arrangements in Tasmania.

What are we doing to help realise the benefits of advanced meters?

Our plans for implementing more cost reflective tariffs have regard to competitive metering changes and their timing. We recognise that advanced meters will support more cost reflective pricing, as they will support the provision of better customer and network information, including information about customers' demand and their responsiveness to network pricing signals.

The most visible thing that we will be doing in the 2019-24 regulatory period to help realise the benefits of advanced meters is the automatic assignment, under certain scenarios, of residential and LV business customers to time of use, consumption based network tariffs. The default assignment will apply to new and 'replacement' residential and LV business customers that:

- move into newly connected premises from 1 July 2019;
- upgrade their connection to the distribution network from 1 July 2019 (e.g. by changing from a single phase to multi-phase power supply);
- modify their connection to the distribution network from 1 July 2019 (e.g. through the installation of solar panels); or
- have their existing accumulation meter replaced with an advanced meter (e.g. when the existing meter reaches the end of its service life or fails).

The assignment of these residential and small business customers to a ToU consumption based network will be done on an opt-out basis, meaning that to move to another network tariff the customer will be required to actively pursue a change through their retailer. This means that while assignment to these more cost reflective tariffs may be the default for customers with advanced meters installed as a result of a qualifying trigger event, assignment to a time of use consumption network tariff will not be mandatory.

The default assignment of these customers to a time of use consumption based network tariff will also be delayed by 12 months from the 'trigger' date (i.e. installation of the meter). The delay is intended to enable the collection of time of use metering data, which can be used to inform the customer's choice about the retail and, by association, network tariffs they want to be supplied under in the future.

Based on the addition of around 3,000 new residential connections per annum, the application of ToU consumption tariffs on an opt-out basis could see in the order of 15,000 residential customers that would otherwise have been on a flat consumption based network tariff assigned to a ToU network tariff by the end of the 2019-24 regulatory period.

Ultimately, the sustained uptake of the ToU consumption network tariff will depend on the number of customers who are assigned to a cost-reflective tariff by default but choose to opt-out. However, the estimate of the number of residential and LV business customers who could be on a ToU consumption network tariff by the end of the 2019-24 regulatory period is potentially conservative, given that it doesn't, for example, factor in the volume of changes to customer connections that would trigger assignment to a ToU consumption network tariff.

One of the advantages of this plan is that it maintains a gradual approach to reform that also keeps pace with the installation of the advanced meters needed to facilitate ToU metering, whether on a consumption or a demand basis.

We have been undertaking our emPOWERing You Trial, which includes the deployment of off-market advanced meters, to support our ongoing pricing strategy development and implementation. During the trial we have engaged with customers, rolled out advanced meters and collected electricity usage data for some 600 households. Participants were provided with access to a web-based interface (or app) displaying their household consumption and demand. The data we captured is assisting us in:

- understanding, supporting and managing customer charge comparisons under different tariff structures;
- testing customer communication and education processes, to help us establish the most effective methods to support customers and retailers during this transition; and
- building community awareness of changing tariff offerings and advanced meter benefits.

Our emPOWERing You Trial will help us share customer stories with the Tasmanian community and build awareness about electricity usage and prices amongst the wider customer base.

We will continue to look for opportunities to conduct further trials in the 2019-24 TSS period where these will allow us to learn more about specific customer types and test fit-for-purpose pricing solutions. For example, for constrained feeders it may be helpful to test having rolling peak and off-peak periods that cycle different customers in a given location—to get the best utilisation of our available capacity at that location and avoid costly augmentations. We are also investigating options for a trial involving irrigation customers, focussing on both demand side management and tariff options.

What are the costs associated with the rollout of advanced meters?

Under the AEMC's reforms, retailers are required to assume the responsibility for delivering and maintaining advanced meters, including the costs associated with the installation and operation of advanced meters. For Tasmanian customers with standing offer pricing, the Tasmanian Economic Regulator sets the framework for customer electricity tariffs, including metering costs.

The mandatory introduction of advanced meters from 1 December 2017 has implications for TasNetworks' metering costs during the 2019-24 TSS period. This is because many of the Type 6 meters that have been used in Tasmania, some of which will have been deployed only very recently, are likely to end up being retired from service before they reach the end of their normal operating life.

As a result, TasNetworks proposed accelerating the recovery of the regulated metering asset value, to reflect the expected shorter average remaining life, and to reduce the number of customers simultaneously paying both a capital charge for a retired regulated meter and a charge for a new advanced meter.

We proposed fully recovering our regulated metering capital costs by June 2024 by applying an accelerated rate of depreciation when deriving the capital charge for metering services. In this way, the costs of our existing metering assets would have been recovered over a period that reflected their shortened economic life.

Under our proposal, there would have been an increase in metering capital charges during the 2019-24 TSS period. It was estimated that the metering charges applying to a single phase Type 6 meter used by a small business or residential customer would have increased from around $12[8] per year in 2018-19 to around $22 per year from 2019-20 to 2023-24.

However, while metering charges would have increased during the 2019-24 TSS period, for any Type 6 meters that remained in use at 30 June 2024, there would have been no further capital charge. As a result, customers would have experienced an ongoing reduction in their metering charges, which would have reflected only the regulated service operating costs, until such time as their Type 6 meter is replaced with an advanced meter, via their retailer.

Customers would also have paid less in metering charges (in total) over the 2019-24 regulatory period (around 10% less) under an accelerated depreciation scenario, even though on a Net Present Value basis, TasNetworks would have still recovered the full cost of the meters currently in service.

TasNetworks proposal did not, however, receive the support of a number of key customer advocates, which was a prerequisite of the AER viewing such an approach favourably.

Without accelerating the depreciation of these meters, which in the coming regulatory periods will be replaced by advanced meters, it could take until at least 2034 before the capital cost of the meters is recovered from customers. The rejection of TasNetworks' proposal to accelerate the depreciation of its fleet of accumulation meters also means that, while customers who replace their Type 6 accumulation meter with an advanced meter before the end of 2033-34 will avoid paying the metering charge which recovers the regulated operating costs associated with providing the old meter, they will continue to pay a capital metering charge for that meter – in addition to whatever metering charges are associated with their new advanced meter.

In keeping with the AER's draft decision, during the 2019-24 regulatory period TasNetworks will continue to recover the capital cost of the Type 6 meter fleet from customers in line with the current rate of depreciation and standard asset lives. However, TasNetworks will re-engage with customers over the coming regulatory period, with a view to putting forward a new proposal for the application of accelerated depreciation in the 2024-29 regulatory period which has the support of customers.

Continuing what we started in the 2017-19 TSS

Gradually removing cross subsidies between types of customers

As identified in our 2017-19 TSS, in the past a number of TasNetworks' tariffs have included a discount when compared to the general tariff applied to that type of customer. These discounted tariffs were:

- Business Low Voltage Nursing Homes tariff (TAS34);
- General Network – Business Curtilage tariff (TASCURT); and
- Uncontrolled Low Voltage Heating tariff (TAS41).

[8] Real 2018-19 dollars

The discounts had their origins in historical policy settings, policy settings that are no longer consistent with the current regulatory requirements. As approved by the AER in our 2017-19 TSS, we have been working to progressively align these network tariffs with the general tariffs applied to other similar customers. Given there are no discernible differences in the demands that the customers on these discounted tariffs place on our network compared to customers on general tariffs, maintaining these discounts would have resulted in the customers on the discounted tariffs being cross-subsidised by other customers.

The aim of the realignment process has been for each component of the discounted tariffs to reach parity with the equivalent tariffs that apply to other customers. To achieve this, we have been gradually adjusting the prices of each of the tariff components in the discounted tariffs until they are aligned with the equivalent tariff The TAS34 and TASCURT network tariffs were also made obsolete, meaning that they haven't been available to new customers for some time. The TASCURT network tariff, for example, was obsolete in 2012-13 when Aurora Energy was still the operator of the State's distribution network. However, existing customers were able elect to remain on the obsolete tariffs, as long as no alterations were made to their installations.

While the final step in aligning TASCURT with TAS22 was to occur in 2019-20, with the alignment of the two tariffs' service charge components (the consumption charges are already aligned), with Aurora Energy having abolished its retail curtilage tariff for businesses, the TASCURT network tariff will now be abolished from 1 July 2019. No customers will be affected by the abolition.

The Nursing Homes tariff (TAS34) achieved pricing parity with the TAS22 network tariff in 2018-19 and will also be abolished from 1 July 2019. No customers will be affected by the abolition.

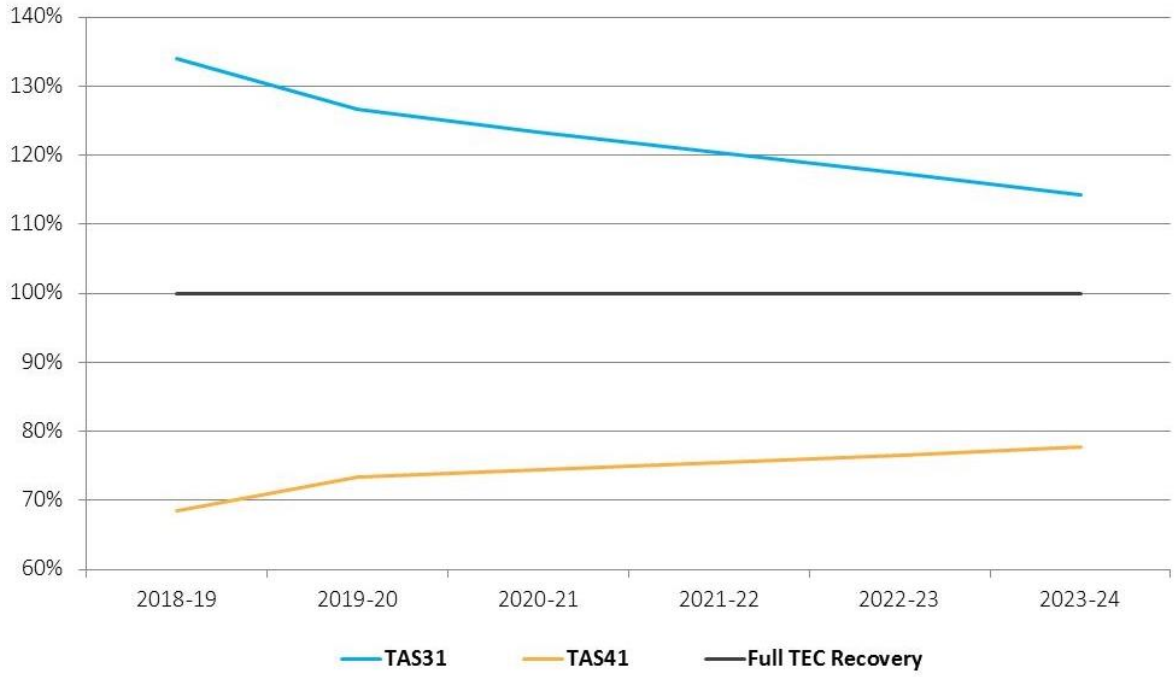
The realignment process which we started in our 2017-19 TSS, and will continue in the 2019-24 TSS, now revolves around TAS41.

The TAS41 network tariff still provides customers with significantly discounted network charges for hard-wired space heating and hot water. We will continue to gradually rebalance the price of this discounted tariff with the Residential Low Voltage General (TAS31) tariff, in recognition of the demands that heating loads place on our network. Customers can only access TAS41 if they also have TAS31, and over time the charges under both tariffs will be the same.

In its draft decision on TasNetworks 2019-24 TSS, the AER suggested that TasNetworks should provide forecasts of the change in the revenue to be recovered from certain network tariffs over the course of the 2019-24 regulatory period as a result of the continued unwinding of the longstanding discounts associated with some of those tariffs. The uncontrolled low voltage heating tariff (TAS41) was a case in point.

The following chart (Figure 8) illustrates the progress that is expected to be made in the coming regulatory period towards redressing the imbalance between the TAS31 and TAS41 network tariffs. It does this by comparing the percentage of the Total Efficient Cost (TEC) allocated to each tariff that is expected to be recovered from customers on each tariff – noting that customers on TAS41 also have to be supplied under TAS31, and 77 per cent of residential customers are supplied under this combination of network tariffs.

Figure 8 Total Efficient Cost Recovery – TAS31 v TAS41



TasNetworks has already begun the process of unwinding the cross subsidy between the residential general power and light tariff and the uncontrolled load tariff applying to home heating and hot water. The preceding chart shows an expected reduction in the cost shifting between the two tariffs of 56 per cent over the course of the 2019-24 regulatory period.

We are still aiming for discounted tariffs to be completely realigned by the end of the 2024 - 2029 TSS period. However, we may seek to rebalance the tariffs more quickly if revenue determinations, inflation levels and customer charge impacts allow.

Summary of tariff structures

The figure below (Figure 9) shows the current and future state charging structures applicable to each tariff class. For all our new tariffs introduced since 1 July 2017, we now offer default monthly billing to the customer's retailer, although it is up to the retailer whether they elect to bill customers on those network tariffs monthly.

Figure 9 Current to future state charging structures

Current state

Tariff components	Residential	Small business	Controlled	Uncontrolled	Large business (LV)	Large business (HV)	Irrigation	Unmetered supply
Demand					✓	✓		✓
Consumption (Time of use)	✓	✓				✓	✓	
Consumption	✓	✓	✓	✓	✓			✓
Service	✓	✓	✓	✓	✓	✓	✓	

Future state

Tariff components	Residential	Small business	Controlled	Uncontrolled	Large business (LV)	Large business (HV)	Irrigation	Unmetered supply
Demand (Time of Use)	✓	✓			✓	✓	✓	
Demand					✓			✓
Consumption (Time of use)	✓	✓				✓	✓	
Consumption	✓	✓	✓	✓	✓			✓
Service	✓	✓	✓	✓	✓	✓	✓	
Temporary Off-Peak Demand Incentive Rate	✓	✓						

Over the forthcoming regulatory period, we intend reviewing the impact that the new tariffs and charging structures have on customers and our revenue. Customer consultation is an important part of our ongoing tariff reform journey. We will continue to work with our PRWG and other stakeholders to test and refine our pricing strategy. This information will help inform whether our tariff structures are fit for purpose.

3 Tariff classes, structures and charging parameters for standard control services

What are standard control services?

'Standard control' refers to an approach taken by the AER to the regulation of network charges which involves the use of a cap on the amount of revenue that we are permitted to recover from our customers each year. The AER classifies the generic distribution network services which are relied on by most (if not all) customers, including the provision of complex connections to our distribution network, as standard control services.

The annual revenue allowance applying to our standard control services is recovered through general network charges (network tariffs), and pays for the building, running and maintenance of the electricity distribution network. We apply a service charge to every connection to our network so that every household, business and organisation connected to the network makes a contribution towards the cost of the network service available to them, regardless of how much or how little electricity they use.

Because the amount of revenue we recover from our customers through general network charges (tariffs) is capped by the AER, we cannot recover more or less revenue in total from our customers. This is regardless of variations in customer consumption of electricity or the network tariffs they've been assigned to or, where possible, chosen through their retailer. Each year we 'true-up' our revenue allowance and the revenue recovered from our customers for that year, and adjust future year prices to account for the difference.

What charging methods do we use?

When designing network tariffs, there are four general types of tariff components which can be weighted, measured and combined in different ways to provide a wide range of possible tariff structures. Different charging parameters are used to create a complete tariff. These are summarised in the table below.

Table 1 Network tariff components

Component	Description
Service Charge	$/time period (cents per day charge) which does not change with usage, demand or capacity.
Consumption Charge (usage)	$/time period (actual usage, for example kWh) based on consumption during the billing period. Consumption charges may vary with time of day or season, charges are based on the total level of usage within the defined billing period.

Component	Description
Demand Charge	$/kW or $/kVA (actual) based on either the: • actual demand within the defined charging windows in a billing period, or; • average of the four highest 30 minute demand periods within the defined charging windows in a billing period. Demand charges may vary with the time of day or season, with charges being based on demand recorded within the defined billing period.
Specified Demand Charge	$/kW or $/kVA (agreed) based on agreed maximum demand for a defined billing period, not actual demand. A customer pays for capacity made available, rather than necessarily used. Capacity charges may vary with time of day or season, with the charge based on capacity within the defined billing period.

Taking time of use into account

In addition to deciding on the components (charges) which make up our various network tariffs, for some tariffs we must also set the time periods that apply to any tariff components which take time of use into account. For most customer classes, these periods typically reflect the level of demand collectively being placed on the electricity network by all customers because, in the long term, the cost of providing the network is driven by having to build and replace the network to adequately cater for peaks in demand.

We set the time periods applying to tariff components with a time of use element by looking at our system load profiles to work out when in the day, week or year our system typically experiences peak loads or capacity constraints. Time can then be divided into peak, shoulder or off-peak periods, and different prices applied to the use of the network during those periods.

In addition to dividing a single 24-hour day into multiple charging windows, time of use periods can also be used to distinguish between electricity usage on weekdays and weekends, as well as different 'seasons' of the year – noting that time of use seasonality may not correspond with the four seasons.

More information about the setting of the time of use periods that will apply in the 2019-24 regulatory period to our network tariffs that incorporate time of use charges is provided in *Appendix E: Setting time of use time windows*.

Network tariff reform

The other factor which is shaping the network tariffs that TasNetworks will offer in the 2019-24 regulatory period and beyond is the need for network tariff reform.

The electricity market in Australia is changing rapidly. The uptake of solar panels, and now battery storage, continues to grow. Our customers aren't just consuming electricity anymore – they're generating it, storing it and supplying it back to the grid. And even though Tasmanian customers enjoy some of the lowest electricity prices in the country, like customers all over Australia they are concerned about their electricity bills.

When it came into being in 2014, TasNetworks inherited a number of tariffs which led to cost shifting between tariffs and between different classes of customers. There have also been changes to the National Electricity Rules that require us to apply a new, more cost reflective approach to setting our network tariffs and other regulated charges, rather than rely on the flat consumption based charges that have been used for years. Those changes require TasNetworks to base its network tariffs on TEC and Long Run Marginal Cost (LRMC). The means by which we allocate TEC and LRMC to tariff classes and to individual tariffs is explained in this TSES.

As a result, since 2014 we have been changing the way we price our services to better reflect the demands that our customers' use of electricity place on the network and to give customers more control over their energy costs. To that end we have been incrementally adjusting and realigning the prices of some of the legacy network tariffs that have been in use for decades, to gradually remove cross subsidies and make them more cost reflective.

In 2017 we made new demand based time of use network tariffs available for residential and small business customers, which offer customers that switch to the new network tariffs, via their retailer, reduced prices at off-peak times but higher prices at peak times.

In the 2019-24 regulatory period we will introduce two new demand-based time of use tariffs for customers with Distributed Energy Resource (DER), like solar panels and batteries.

To accelerate the take up of cost-reflective network tariffs in Tasmania, the AER has determined that from 1 July 2019, under certain scenarios some LV residential and small business customers will be assigned to time of use, consumption based network tariffs by default, on an opt-out basis. . The default assignment applies to new and 'replacement' residential and LV business customers that:

- move into newly connected premises from 1 July 2019;
- upgrade their connection to the distribution network from 1 July 2019 (e.g. by changing from a single phase to multi-phase power supply);
- modify their connection to the distribution network from 1 July 2019 (e.g. through the installation of solar panels); or
- have their existing accumulation meter replaced with an advanced meter (e.g. when the existing meter reaches the end of its service life or fails).

However, the default assignment of these customers to a time of use consumption based network tariff will be delayed by 12 months from the 'trigger' date (i.e. installation of the meter). The delay is intended to enable the collection of time of use metering data, which can be used to inform the customer's choice about the retail and, by association, network tariffs they want to be supplied under in the future.

In the case of a new dwelling or business premises, the delay process means that the network tariffs initially requested by the customer's retailer – if different from the default tariff – will apply to that customer for 12 months, at which point TasNetworks will reassign the customer's installation to the relevant default tariff.

In the case of a customer that upgrades their connection, modifies their connection or has their meter replaced, the network tariffs applying to the customer's installation before the change will continue to apply for another 12 months after the change, at which point TasNetworks will then reassign the customer's installation to the relevant default tariff.

Once reassigned to the applicable default network tariff, that tariff will continue to apply unless the customer for the installation in question elects to opt-out, through their retailer, to a different network tariff.

Affected customers may also choose to exercise their choice of network tariff before the 12 month delay period ends, which means that the automatic reassignment to the default tariff would not be processed. Similarly, customers who are initially assigned to what is the default tariff for that type of customer, such as the occupant of a new home who elects to be supplied under a time of use tariff at the outset, will also not be subject to the default assignment process after 12 months have elapsed.

The default time of use consumption based network tariffs to be applied to residential and LV business during the 2019-24 regulatory period are, respectively, the Residential low voltage time of use network tariff (TAS93) and the Business low voltage time of use network tariff (TAS94).

While the default tariffs applying in the above circumstances are time of use consumption based tariffs, customers who choose to be assigned to a time of use demand based network tariff at any point in the 12 month delay period after a trigger event for tariff assignment by default will not be reassigned to the default consumption based alternative. This is also the case for LV business customers who, through their retailer, opt-in to an alternative time of use consumption tariffs during the delay period.

At the end of the 12 month delay period applying to each installation, if no instruction is received through the customer's retailer to be assigned to a network tariff other than the default, TasNetworks will commence charging the customer's retailer for the customer's use of the network using a ToU consumption network tariff. It will then be up to the retailer as to whether they choose to pass those time of use network pricing signals on to the customer via their retail billing process.

Once assigned to the default time of use consumption network tariff, for the customer to be assigned to a different network tariff, they will have to opt for a retail tariff through their retailer which incorporates a different network tariff, such as a ToU demand tariff, if that's what they prefer.

In addition to customers who would otherwise qualify for automatic assignment to a default time of use consumption network tariff but who are initially assigned or opt-in to cost reflective network tariffs before the 12 month delay period has elapsed, there are a number of circumstances in which the default application of a time of use consumption tariff will not be carried out. These include:

- customers occupying premises that are supplied under a Pay As You Go network tariff; and
- customer installations that are already assigned to controlled load tariffs.

TasNetworks' billing systems do not track changes in the customer associated with each National Metering Identifier (NMI) over time. This means that the delayed application of a time of use consumption tariff as the default residential and small business network tariff will be effected on a per installation or NMI basis. Therefore, a change in the retail customer associated with an installation which is subject to a 12 month delayed default tariff assignment will not cause the delay period to be reset or extended, or reassignment to the default network tariff to be deferred.

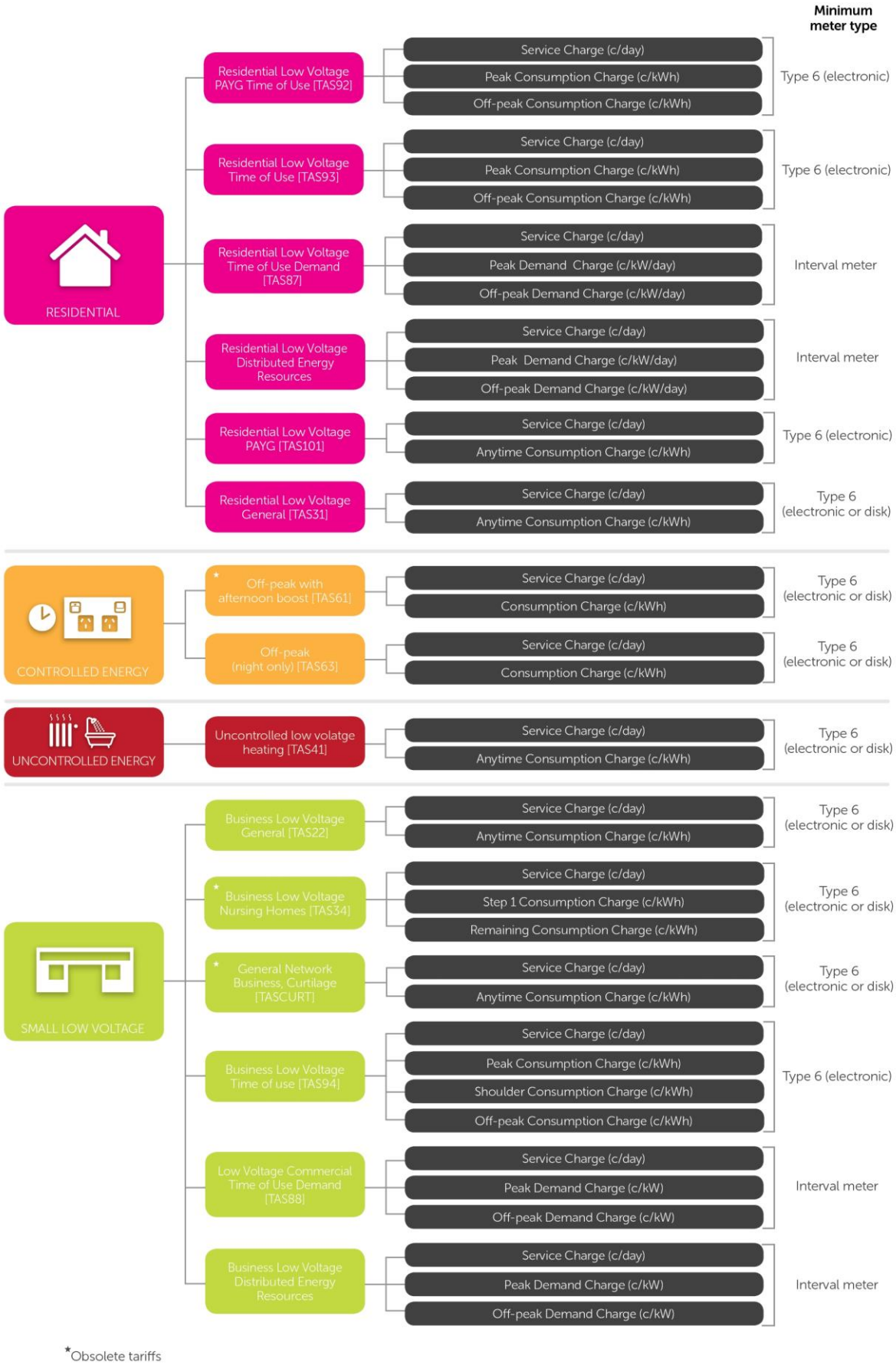
Therefore, any customer moving into a property part way through a 12 month delay before reassignment to a default network tariff will only remain on the network tariffs currently assigned to that installation for the balance of the 12 month delay period, unless they choose to opt-in to another network tariff(s) before the tariff reassignment is due to take place.

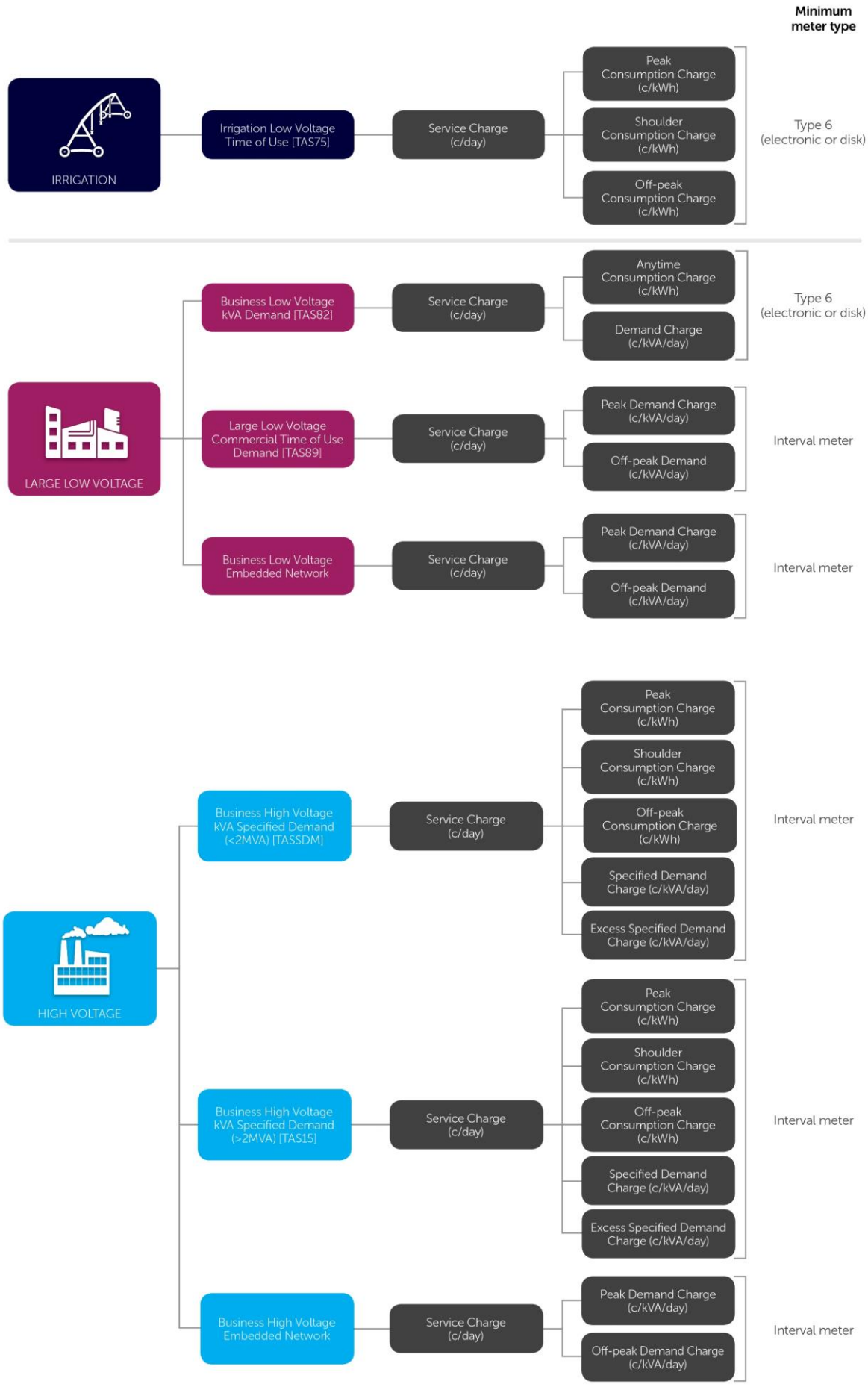
Our network tariffs and charging structures

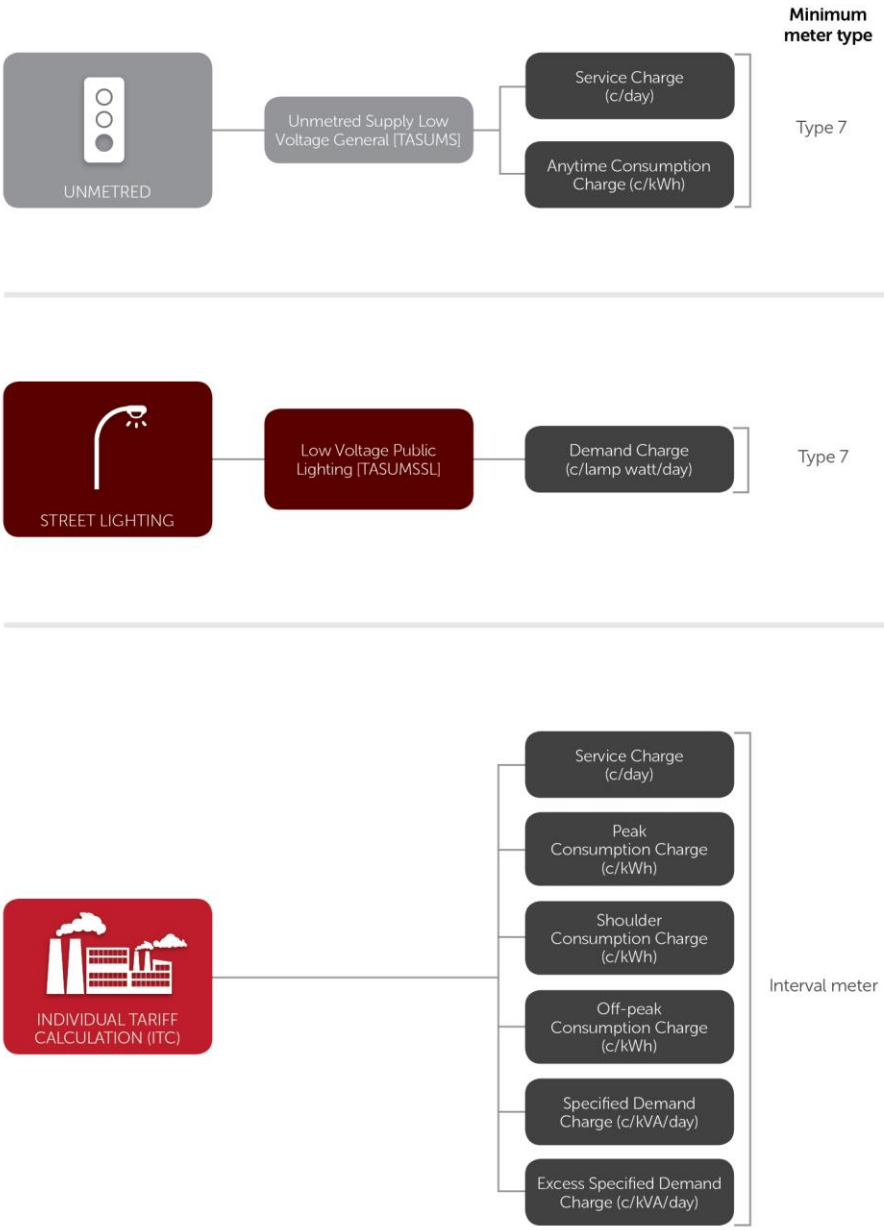
The figure below (Figure 10) provides a summary of the network tariffs, tariff structures and charging parameters that will apply to standard control services for each tariff class during the 2019-24 regulatory period, along with the associated tariffs and tariff components. Further detail on our tariffs and customer eligibility is provided in *Appendix A: Network tariffs for 2019-24*.

Indicative prices for our tariffs during the 2019 to 2024 regulatory period are set out in the Indicative Pricing Schedule provided in Appendix B of the TSS.

Figure 10 Tariff classes, structures and charging parameters




Minimum meter type
IRRIGATION
Irrigation Low Voltage Time of Use [TAS75]
Service Charge (c/day)
Peak Consumption Charge (c/kWh)
Shoulder Consumption Charge (c/kWh)
Off-peak Consumption Charge (c/kWh)
Type 6 (electronic or disk)
LARGE LOW VOLTAGE
Business Low Voltage kVA Demand [TAS82]
Service Charge (c/day)
Anytime Consumption Charge (c/kWh)
Demand Charge (c/kVA/day)
Type 6 (electronic or disk)
Large Low Voltage Commercial Time of Use Demand [TAS89]
Service Charge (c/day)
Peak Demand Charge (c/kVA/day)
Off-peak Demand (c/kVA/day)
Interval meter
Business Low Voltage Embedded Network
Service Charge (c/day)
Peak Demand Charge (c/kVA/day)
Off-peak Demand (c/kVA/day)
Interval meter
HIGH VOLTAGE
Business High Voltage kVA Specified Demand (<2MVA) [TASSDM]
Service Charge (c/day)
Peak Consumption Charge (c/kWh)
Shoulder Consumption Charge (c/kWh)
Off-peak Consumption Charge (c/kWh)
Specified Demand Charge (c/kVA/day)
Excess Specified Demand Charge (c/kVA/day)
Interval meter
Business High Voltage kVA Specified Demand (>2MVA) [TAS15]
Service Charge (c/day)
Peak Consumption Charge (c/kWh)
Shoulder Consumption Charge (c/kWh)
Off-peak Consumption Charge (c/kWh)
Specified Demand Charge (c/kVA/day)
Excess Specified Demand Charge (c/kVA/day)
Interval meter
Business High Voltage Embedded Network
Service Charge (c/day)
Peak Demand Charge (c/kVA/day)
Off-peak Demand Charge (c/kVA/day)
Interval meter



Note: Specific conditions apply. Refer to TasNetworks' Network Tariff Application and Price Guide

4 Network tariff setting process

Objectives

Our overall aim is to set each element of our tariffs so that we can provide our customers with appropriate signals about how and when their use or sharing of energy impacts on our costs. In this way, over time, customers might change the way they use electricity – drawing less from the network at times that add to peak demand, helping to reduce expenditure on network augmentation and replacement and lower network costs for all customers in the future.

Our network costs are largely fixed, with variable costs being limited to the investment we must make to provide capacity for peak periods of network use or to connect new customers to the network. In this context:

- Our service charges for each tariff are designed to recover the fixed costs that arise from the connection and management of each customer. This sends a consistent and predictable price signal to customers about the value of their network connection, which assists customers when making decisions about investments in electricity generation, storage and/or control technology. The service charge can also be used to recover part of the shared network costs (residual unavoidable costs) where those costs are not recovered entirely through demand or volumetric charges.
- Our volume based charges are designed to recover the costs of the shared network on a basis which reflects how our customers use the distribution network. Over time we plan to reduce our reliance on flat consumption based network charges and move towards a greater reliance on time of use consumption and time of use demand based network charges. Throughout this transition we will continue to consult with our customers and will also provide further detail as part of the annual Pricing Proposal process.
- Our demand and specified demand based network charges are designed to recover the costs of the shared network on a basis which reflects how our customers use the distribution network at the peak times that drive our variable costs. We are in the process of transitioning so that our demand based network charges are fully reflective of our estimates of long run marginal cost.

Methodology

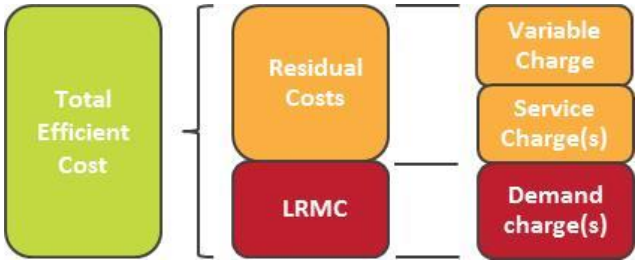
Our network tariffs each year are based on target tariff parameters and forecast customer numbers, consumption and demand related to each tariff. We determine the target network tariff parameters by:

- estimating the total efficient cost for each tariff;
- estimating the long run marginal cost for each tariff;
- determining the required long run marginal cost revenues for each tariff;
- calculating the residual costs for each tariff, which is the difference between the total efficient cost and the revenue for each tariff based on long run marginal cost; and

- Allocating the residual costs to tariffs in a manner which minimises distortions to the long run marginal cost price signals.

Residual costs are allocated between the service charge and variable charge(s) that make up a tariff, with allocation dependent on the characteristics of the tariff. In terms of the demand based time of use tariffs, for example, most of the residual costs are recovered via service charges and off-peak demand charges.

The following diagram shows the relationship between TEC, LRMS and Residual Costs for each network tariff, and the basis on which they are typically allocated against the different components that make up our network tariffs.



Note: For tariffs without a demand based charge, the residual cost is equal to the TEC for that tariff.

In the medium to long term, our goal is to offer all customers network tariffs which are fully cost reflective and satisfy the Rules' requirement that tariffs be based on long run marginal cost and total efficient costs. For historical reasons, not all of our existing tariffs currently meet these targets and so we are transitioning those tariffs towards full cost reflectivity. We are doing this gradually over time for a number of reasons, including the avoidance of price shocks for our customers.

The checks and balances that we apply to the process of tariff adjustment include ensuring that:

- the overall forecast revenue in any year, when summed across network tariff classes, is not more than the revenue allowance approved by the AER for that year, after allowing for any under or over recoveries in prior years, adjustments for actual inflation and pass-throughs;
- the annual percentage changes in individual tariffs are within the side constraints set out in the Rules;
- the revenue for each tariff class lies between the stand alone and avoidable costs of servicing that tariff class;
- where possible, the revenue for each tariff is at, or moving towards, recovery of the total efficient cost for that tariff; and
- where applicable, the demand component of the tariff is at, or moving towards, recovery of the long run marginal cost for that tariff.

Long run marginal cost

It is a requirement under the Rules that our tariffs must be based on the long run marginal cost of servicing the customers assigned to each tariff. Long run marginal cost provides a measure of how our operating and capital expenditure will change (in the long run) in response to incremental changes in demand. The main driver of our network costs is meeting maximum demand. Setting tariffs that reflect a customer's maximum demand at times of system peak usage, based on long run marginal cost, will provide our customers with a cost reflective price signal that encourages efficient electricity use and will ensure those customers who drive our costs pay a fair share of those costs.

We base our long run marginal cost on the average incremental cost method. This approach uses information that is currently available for the revenue determination and planning processes (the same program of work underpins our calculations as discussed in our regulatory proposal). The approach is also consistent with the approach adopted by all other distribution networks and was approved by the AER in our 2017-19 TSS. It is generally considered to be well suited to situations where there is a relatively consistent profile of investment over time to service growth.

We aim to set our tariffs in a way that supports cost reflectivity and the Rules' requirement that tariffs be based on long run marginal cost and the recovery of our total efficient costs. Reaching these cost reflective targets involves a different approach for legacy tariffs compared to new ones.

- *Legacy tariffs* | Not all of our tariffs currently achieve our pricing objectives, in that they recover less than the cost of providing the service, which also means that the recovery of some of those costs will have been shifted to other tariffs. These tariffs are being transitioned to full cost reflectivity over multiple regulatory periods, in order to avoid price shocks for our customers. Each year we aim to incrementally transition our legacy tariffs closer to the target of full cost reflectivity and, noting the historical basis of many of TasNetworks' legacy tariffs, the AER has indicated its support for an approach to setting our legacy tariffs that involves greater use of residual cost recovery when compared with more cost reflective pricing structures.
- *New tariffs* | The new network tariffs introduced by TasNetworks since the commencement of the Rules' pricing principles have been designed to satisfy the Rules' requirements regarding cost reflectivity from the outset. To encourage customer uptake of our more cost reflective tariffs, however, these new tariffs recover relatively smaller shares of our residual costs than our less efficient legacy tariffs. This is a transitional approach that will be reviewed as the cost reflective tariffs become the dominant means of recovering the cost of providing and operating the network from our customers.

Appendix B: *Designing cost reflective tariffs* explains how we have estimated our long run marginal cost, the resulting estimates, and how we used these in designing our cost reflective tariffs.

Total Efficient Cost

It is a requirement under the Rules that the revenue expected to be recovered from each network tariff reflects the total efficient costs of serving the retail customers that are assigned to that tariff. TasNetworks' overall aim is to structure each element of our network tariffs so that we provide our customers with appropriate signals about how their usage impacts network costs, and that overall our network tariffs recover no more than our forecast efficient costs.

Appendix B: *Designing cost reflective tariffs* explains how we apportion TEC between network tariffs and how the TEC to be recovered by each network tariff is allocated to the different charging components that make up our tariffs. Appendix G: *TEC Methodology – The Application of the Total Efficient Cost (TEC) Model in the tariff setting process* also sets out TasNetworks' TEC methodology for the 2018-19 regulatory year.

Annual pricing proposal

Each year we submit an annual pricing proposal to the AER (for its approval) detailing a range of required information on our tariffs and tariff classes, and showing how we comply with the Rules and the amount of revenue we are allowed to recover from our customers. The submission dates for our pricing proposals applying to the period covered by the TSS for 2019 to 2024 are shown in the table below.

Table 2 Annual Pricing Proposal Submission Dates

Pricing year	2019-20	2020-21	2021-22	2022-23	2023-24
Pricing proposal lodged	21 May 2019	31 Mar 2020	31 Mar 2021	31 Mar 2022	31 Mar 2023

Our annual pricing proposals will explain how the movements in each of our tariffs between years are consistent with our Tariff Structure Statement. We will aim to set each tariff to be broadly consistent with the indicative pricing levels for that tariff set out in the Indicative Pricing Schedule provided in our TSS at Appendix B. Our pricing proposals will demonstrate how each proposed tariff is consistent with the Indicative Pricing Schedule, or explain any material differences.

Stakeholder engagement

Customers are central to everything we do at TasNetworks and our success is anchored to the prosperity and well-being of our customers. Our process for improving our pricing has involved us engaging extensively with end-use customers and their advocates, retailers and stakeholders to test their preferences and get their guidance. This section summarises how we have engaged with those stakeholders and how we have responded to the feedback we received. Appendix C: *Engaging customers in our pricing plan & tariff designs* provides more detail.

Our second TSS builds on our first TSS, which applies to the period 2017 to 2019, and the stakeholder engagement that underpinned its development. We are continuing the multi-period pricing plan established in that first TSS, and have consulted on the additional new areas we are targeting in this TSS period, including new tariffs for emerging customer types.

TasNetworks presently delivers electricity to almost 290,000 Tasmanian households, businesses and organisations, and services the customers of multiple electricity retailers. The figure below provides a high-level breakdown of our distribution customers.

Figure 11 Our distribution customers

We do not limit the definition of a customer to only those who consume the energy delivered by our network. Our customer base includes electricity retailers, customers connected to our network, as well as the wider Tasmanian community and their representatives, such as customer advocacy groups.

Retailers

As noted above, our customer base isn't restricted to end-users of the electricity we deliver over our distribution network, and includes electricity retailers. Currently, TasNetworks services the customers of five retailers in Tasmania. Despite the residential and lower end of the small business electricity market being opened to full retail competition in 2014, Aurora Energy remains the only retailer competing in those markets.

TasNetworks has sought to engage with all retailers on the subject of network tariff reform. However, given that – until February 2019 – the retailers in Tasmania other than Aurora Energy serviced larger commercial customers for who retail competition and cost reflective network prices have been in place for some time, not every retailer has taken up the offer. Aurora Energy has been, therefore, the main retail contributor to the development of our pricing reform plans since we began engaging with stakeholders on the subject in late 2014.

Aurora Energy has been offering a retail standing offer to residential customers which is based on our consumption based time of use network tariff (TAS93) since July 2016. We will continue to work with all electricity retailers to progress our pricing strategy and ensure that our new and adjusted network charges are incorporated into the retail tariffs offered to customers in the future.

While, for the overwhelming majority of residential and small business customers, cost reflective network tariffs will initially only be available on an opt-in basis via their retailer, subject to the level of advanced meter take-up in Tasmania, TasNetworks plans to begin billing retailers serving residential and small business customers on a cost reflective basis during the 2029-34 regulatory period. Whether those prices are passed on to the customer will then become a matter for the retailer to decide.

The AER previously indicated its support for this phased approach to network tariff reform, involving an initial customer-led transition to cost reflective network tariffs followed by assignment principles which support a faster pace of reform. And, as far as the new demand based time of use tariffs are concerned, TasNetworks will persevere with a customer led opt-in approach.

However, noting the AER's concerns about the pace of reform achieved in other parts of the NEM using an opt-in approach, from 1 July 2019 TasNetworks will begin applying a ToU consumption based tariff to new residential customers, residential customers that change their electrical installation and residential customers that replace an accumulation meter with an advanced meter, or have their accumulation meter replaced with an advanced meter by their retailer, an opt-out basis. And, as an outcome of the AER's final determination in relation to our TSS for 2019-24, the same approach will be applied to LV business customers.

Pricing Reform Working Group

We have a core group of highly engaged pricing stakeholders who have been with us through our pricing strategy journey and represent an informed group who readily provide valuable feedback. They continue to guide the planning and implementation of our tariff transition. We established the TasNetworks Tariff Reform Working Group in 2014 to provide advice on customer needs and issues for our pricing strategy. We then renamed and expanded the group in 2016 to include greater business customer representation, although the majority of original members including electricity retailers, customer advocacy groups, and independent energy advisors have been retained. The renamed TasNetworks *Pricing* Reform Working Group provides a valuable forum where members can contribute to the direction of our pricing plan, provide feedback and act as an advisory group on pricing issues, including tariff reform.

Throughout 2017 and 2018, this group met to:

- consider the preferred methodology for calculating a demand based time of use network tariff for low voltage customers;
- consider preferences in regard to the pace of tariff reform;
- consider options for incentivising a DER 'early adopter' tariff and other demand based time of use tariffs for low voltage customers;
- consider updated customer impact analysis and our draft 2019-24 TSS, based on indicative pricing information;
- provide feedback on our 2019-24 TSS; and
- hear about the early findings from our tariff trials (the emPOWERing You Trial), and feedback from the AER in its decision on our 2017-19 TSS.

The key customer feedback themes raised by our stakeholders include:

- it is important that we help the community transition to more cost reflective pricing;
- customers want TasNetworks to investigate innovative solutions to manage network resources and to invest in technology to get customers thinking about their usage; and

- there is an expectation that we continue to operate our business as efficiently as possible and drive good outcomes for customers today and into the future.

A detailed summary of feedback received is provided in the following table (Table 3), where we have set out the key issues raised by the PRWG, and other stakeholders, in relation to network tariff reform. The issues have been divided between the feedback received when we were developing our tariffs for the 2017-19 TSS period (and which is still pertinent to the coming regulatory period) and the views expressed during the development of the 2019-24 pricing reform plans which are a feature of the 2019-24 TSS. For each issue, the table explains how we have responded to the guidance of stakeholders or sought to address their concerns.

Table 3 Issues raised by our customers and our responses

Issues relating to the 2019-24 TSS period

Customer feedback	Our response
Customers told us that they don't believe tariff reform should be delayed due to the overall benefit of efficient price signals. But customer groups had different views on the pace of reform. The draft TSS submitted to the AER by TasNetworks in January 2018 included plans to continue offering cost reflective network tariffs on an opt-in basis. The AER and Consumer Challenge Panel provided feedback that TasNetworks should consider a faster pace of reform, noting that opt-in tariff assignment in other Australian electricity markets has yielded low take up rates for cost reflective network pricing. The AER asked TasNetworks to consider the use of opt-out tariff assignment, at least for new residential customers.	A number of business stakeholders have suggested that we increase the pace of tariff reform by targeting specific customer types to remove long standing cross subsidies. Some customer advocates have been more overtly critical of the time being taken to phase out some long standing cross subsidies between and within tariff classes, arguing that the realignment of tariffs should be accelerated. The alignment of the *Uncontrolled Low Voltage Heating* tariff (TAS41) with the *Residential Low Voltage General* (TAS31) tariff is a case in point. Currently, the difference between the two tariffs is substantial, as a result of discounted retail tariffs offered in relation to home heating over many years. Since submitting our draft TSS for the 2019-24 regulatory period to the AER, we have continued listening to the wide range of views expressed by our customers and other stakeholders with regard to the pace of reform. Our aim has always, and continues to be to implement tariff reform as quickly as can be practically achieved, we accept that experience in other parts of the NEM has shown that opt-in network tariff reform may deliver a much slower pace of change than is desirable, in terms of the long term interests of customers. Accordingly, in our revised TSS submitted to the AER in November 2018 we accepted the AER's recommendation that from 1 July 2019 we assign new residential customers, as well as residential customers that change their connection or have an advanced meter installed, to a ToU consumption based network tariff on an opt-out basis. This option was widely supported within the PRWG. It is also broadly consistent with recommendations made by the ACCC[9], which considered that steps should be taken to accelerate the take up of

[9] *Restoring electricity affordability and Australia's competitive advantage*, Australian Competition and Consumer Commission, 11 July 2018

Customer feedback	Our response
	cost reflective network pricing through the mandatory assignment of cost reflective network pricing on retailers for all of their customers that have metering capable of supporting cost reflective tariffs. It is noted, however, that the ACCC's preference was for the use of demand based tariffs as the most appropriate structure for mandatorily assigned network tariffs. Given the lack of research into the impact of tariff reform on small businesses in Tasmania and their capacity to respond to ToU price signals, the majority of PRWG members supported a continuation of TasNetworks' existing pricing strategy for small business customers, which involved maintaining an opt-in approach to more cost reflective network tariffs. In its final determination regarding TasNetworks' TSS for 2019-24, however, the AER directed TasNetworks to vary its implementation of the default assignment of residential customers to a time of use consumption based network tariff, by delaying the reassignment of affected customers to the new default tariff by 12 months from the date that their advanced meter is installed. The delay is intended by the AER to enable the collection of time of use metering data, which can be used to inform the customer's choice about the retail and, by association, network tariffs they want to be supplied under in the future. The same delayed tariff reassignment to a time of use consumption based network tariff which is to be applied to residential customers will also be applied to non-residential LV customers. On this basis, from 1 July 2019 new LV business connections, LV business customers that change or modify their connection, and LV business customers who have an advanced meter installed as a replacement for an existing meter will be transitioned to a time of use, consumption based network tariff 12 months after the installation of an advanced meter. Preliminary analysis undertaken by TasNetworks suggests that there may be opportunities for many small business customers to reduce their electricity costs through time of use network pricing. We will continue to work with the small business sector, stakeholders and business advocates to ensure that the small business community is aware of those opportunities and that individual customers affected by the transition to default time of use network pricing are aware of the change and understand what the change might mean for their business. We will continue to be mindful of the impact of pricing reform on all customers and take the customer impact principle into account when making changes to our existing network tariffs. Our overarching pricing strategy remains, however, to continue the gradual transition to cost reflective pricing and network tariff structures. Careful transition is needed to understand and manage customer impacts, particularly for vulnerable customers.

Customer feedback	Our response
Will demand based tariffs be too complicated for people to understand? A common theme amongst the customer and consumer groups we have consulted with was the concern that demand based tariffs would lead to an increase in complexity, and that customers will find it hard to choose between different tariffs.	We have been mindful of the need to strike a balance between tariffs which are cost reflective and tariffs which are easy for our customers to understand. We will continue to provide demand based time of use tariffs as a choice for small customers in the 2019-24 TSS period, through their retailer. In response to general feedback, we have not introduced the additional complexity of seasonal charging into our new demand based tariffs. When evaluating two alternative demand based tariff structures, one with the demand charge based on a customer's highest demand recorded during a billing period and the other with the demand charge based on the average of a customer's four highest demand periods during the billing period, the PRWG thought the second alternative fairer for customers and that the increase in fairness outweighed the associated increase in complexity. This is discussed further in this table in response to the question "How will demand based network tariffs be calculated?" Through our emPOWERing You Trial we are learning how best to explain demand based tariffs to customers. We are also developing tools to help our customers compare network tariffs and understand what a change to a demand based tariff might mean for them.
How will demand based network tariffs be calculated?	In the 2017-19 TSS period[10], we introduced demand based time of use tariffs as a choice for small customers, via their retailer. Retailers have started offering the new demand based charges to some business customers as a market offer although, at the time of writing, not yet to residential customers. Those demand based tariffs consist of a daily service charge and two demand charges – one demand charge applying to usage in peak periods and the other to off-peak periods. In the 2017-19 TSS period, demand is measured as an average over 30 minute intervals, with customers charged for the highest demand recorded over the course of their monthly billing period in both the peak and off-peak periods. During our consultation for the 2019-24 TSS, we revisited demand calculation methodology options with our PRWG. Specifically we sought feedback regarding whether customers perceived a charge for the single highest demand recorded over the course of their monthly billing period (in both the peak and off-peak periods) as equitable. In response to the feedback we received, we propose to change our maximum demand calculation method for the 2019-24 TSS. Instead of the peak and off-peak demand charges being based on the highest level of demand recorded in any 30 minute interval in peak or off-peak time of use

[10] More information about the tariff reform options that were canvassed with our customers in 2015 can be found in the Consultation Paper, *DEMAND BASED NETWORK TARIFFS – OFFERING A NEW CHOICE*, which is available from the Tariff Reform section on our website.

Customer feedback	Our response
	periods over the course of a monthly billing cycle, we propose to base the demand charges on an average of the four highest maximum demand levels recorded in peak and off peak time of use periods across each monthly billing period. For clarity, it should be noted that only one peak or off-peak demand reading from any given day can be used in the derivation of the four-way averages used to determine a customer's demand charges in peak and off-peak periods over the course of a month. This means, for example, that if a customer records their four highest maximum demand readings for a given month in four 30 minute intervals that occur on the same day, only one of those readings – the highest – will be factored in to the average maximum demand calculation for the month. As part of the implementation phase for the averaging of demand readings, we are currently working through the rules that will need to be applied to customers who, through disconnection or connection either very early or very late in a given month, are supplied for less than four days, meaning that their average maximum demand calculation for that month will have to be based on demand data from less than four intervals. While this adjustment in methodology will introduce an additional degree of complexity for customers, the change won broad support amongst members of the PRWG, who considered that it eliminated the potential for customers to pay higher demand based network charges in any given month because of a single, unusually high level of demand.
The success of tariff reform is reliant on 'buy-in' from the State Government and retailers.	Our customers have told us they expect us to engage with our owner, the State Government, as well as with electricity retailers, to ensure that more cost reflective network pricing is offered to Tasmanian customers in future regulatory periods. Electricity retailers, in particular, have an important role to play in supporting network pricing reform, by ensuring that cost reflective network pricing signals are preserved in the electricity prices seen by all customers, rather than being bundled up as part of the delivered cost of electricity. For the new network tariffs to achieve the objective of effectively signalling network costs, the price signal must be visible to customers. To that end, we will continue to: • participate in the monthly joint pricing meetings convened by the Office of the Tasmanian Economic Regulator (OTTER); and • provide quarterly updates to the State Government about the content of PRWG meetings. We will continue to engage with Government and retailers to advance network tariff reform in Tasmania, in the interests of all our customers.
We want TasNetworks to investigate innovative solutions to manage network resources and to invest in	Currently, we are undertaking various trials to help us learn how we can leverage technology to improve the customer experience and deliver increased value for all our customers.

Customer feedback	Our response
technology to get customers thinking about their usage.	Our emPOWERing You Trial is one example of us looking for innovative ways to address network constraints and issues. The emPOWERing You Trial involves collecting interval metering data (in 30 minute blocks) from 600 customers in the Bridgewater, Brighton, Lower Midlands and surrounding areas, which is telling us how much energy these customers are using and when they use it. By using our Trial app or web portal, participants can also see how and when they use electricity in their home, enabling them to make informed choices about their usage to suit their lifestyles and needs. And after gathering baseline interval data for 12 months, TasNetworks introduced demand-based time-of-use network pricing in order to gauge customers' willingness and ability to change their electricity use in response to the cost reflective price signal. We're using the interval metering data, as well as the lessons learned through the customers participating in the trial, to guide our network planning, as well as our pricing strategy. As part of a consortium involving Reposit Power and a number of universities, known as CONSORT, TasNetworks is also conducting a trial of solar panels and batteries in 40 homes on Bruny Island. The release of electricity from the batteries is being used to decrease the demands placed on the undersea power cable supplying Bruny Island and reduce the use of diesel generators on the island during peak season. Using advanced energy management software, participants in the trial are also able to optimise the use of the power their solar panels produce, by applying it to their own immediate use, storing it for later use or selling it back to the network. The trial is developing world first technology that allows the batteries of different customers to work together, acting in concert to benefit customers and the network in ways that wouldn't be possible with individual systems operating in isolation. The customers participating in the trial are also engaged to help solve the problem and are financially rewarded for their contribution. Both trials provide opportunities to investigate innovative approaches to managing our network and getting customers to think about their usage. We will continue throughout the period covered by this TSS to look at ways we can utilise technology to improve customer outcomes.

Longstanding issues relating to network tariff reform

Customer feedback	Our response
What impact will tariff reform have on vulnerable customers? Many of the customers and customer advocates with whom we've consulted about tariff reform wanted to be sure that vulnerable customers would not be disadvantaged as a result of network tariff reform or exposed to further financial hardship.	We consider the impact of pricing reform on all of our customers. Our strategy is to gradually transition to more cost reflective pricing over a period of time while avoiding significant changes in prices between years. This gives customers, including 'vulnerable' customers, an opportunity to understand and respond to changing price signals in order to reduce the potential impacts of reform on their electricity bill. Our TSS has been informed by our engagement with customers and retailers. As a result of the feedback received we will: • continue pursuing ongoing cost savings in order to put downward pressure on the delivered cost of electricity; • pay for the introductory discounts to the off-peak demand charges in our new tariffs to encourage take-up of the new demand based time of use tariffs, without recovering the cost from our other customers; and • continue to seek to influence a review of the State Government's concession framework to better support pricing reform.
Does cost reflective pricing mean that customers in different parts of the State will pay different prices? Our customers are aware that residential and small business customers interstate sometimes pay different electricity prices, depending on where they are. Recognising that the cost of supplying customers in different areas of Tasmania with electricity isn't going to be uniform, the question was asked whether introducing cost reflective pricing would put an end to uniform network charges in Tasmania.	The practice of applying the same price to a service, regardless of a customer's location, is known as 'postage stamp' pricing. An alternative to postage stamp pricing is locational pricing (also known as nodal pricing), which can involve, for example, customers in regional areas paying different prices to customers in urban areas, or customers in one population centre paying different prices to those in another. The Rules currently include a provision that requires us to follow any jurisdictional requirements for pricing. In Tasmania, the distribution network tariffs for all small customers of a particular class are required to be uniform, regardless of where in mainland Tasmania the customer is supplied with electricity. This applies to all customers in a given customer class that use less than 150 Megawatt hours per annum. Larger, high voltage customers, often pay network charges that to some degree reflect their location. This provides these customers with better price signals about true cost of supply.
Customers told us that they need more information about the impacts that a move to the new demand based time of use network tariffs would have on them.	We are conducting, or planning to conduct, a number of trials, such as the emPOWERing You Trial, to collect electricity consumption, demand and time of use data for a representative sample of Tasmanian residential customers. That data, plus the other information we gather as part of the trials, can be used to understand how customers respond to new pricing signals and inform the information we provide to customers about the possible impacts of a move to a more cost-reflective tariff. Refer to Appendix D: *Network charge comparisons* for more information about the impacts on customers of tariff change.

Customer feedback	Our response
Will customers be forced onto new, different tariffs? Many customers consider that the current electricity pricing arrangements serve them well, and will only want to switch to a demand or consumption based time of use network tariff once they're convinced that to do so will be to their advantage.	For some time, TasNetworks' plans for tariff reform have been built on a customer led transition to more cost reflective network tariffs, with customers making informed choices and voting with their feet for network tariffs that give them more scope to control their electricity costs and do things like capitalise on their investment in DER, such as solar panels. To a large degree, that is still the case. For example, the demand based tariffs we've introduced for residential and small business customers will continue to be offered in the 2019-24 regulatory period to customers as a choice (opt-in basis) through their electricity retailer. And even though we're gradually lifting the price of the dedicated home heating and hot water network tariff (TAS41) so that it's price will eventually be similar to the residential general power and light tariff (TAS31), this is a gradual process and we're not about to abolish such a widely used tariff and force customers onto an alternative. While TasNetworks' PRWG was particularly supportive of the proposal for maintaining our opt-in approach for demand based tariffs for the 2019-24 period, the members of the PRWG, like TasNetworks, have accepted the evidence provided by the AER that, in other parts of the NEM where distribution networks have relied on customers to opt-in to more cost reflective network tariffs, the take-up of those new tariffs has been very slow. Not because the tariffs don't offer benefits to customers, but because they are different from the products people are used to, and in many people's minds there tends to be a natural bias in favour of maintaining the status quo. Accordingly, we have accepted the AER's recommendation that from 1 July 2019 we assign new residential customers, as well as residential customers that change their connection or have an advanced meter installed, to a ToU consumption based network tariff on an opt-out basis. While this will become the default tariff for new and 'updated' residential customers during the 2019-24 regulatory period, customers will maintain the capacity to opt-out, via their retailer, by choosing a retail tariff that underpinned by a different network tariff. Additionally, in the 2019-24 regulatory period the assignment to a time of use consumption based network tariff as the default tariff will be applied to LV business customers as well as residential customers. For both categories of customer, assignment to the default tariff will not occur until 12 months after the event that triggers the process for each customer. In future regulatory periods we will engage with stakeholders and customers to evaluate accelerating the pace of pricing reform by progressing to the mandatory billing of retailers for all low voltage residential and small business customers on a cost reflective basis involving time of use price signals.

Table 4 Issues raised by stakeholders with the AER

On 31 January 2018, TasNetworks submitted a combined transmission and distribution regulatory proposal for the 2019-24 regulatory period to the AER for approval, accompanied by a TSS. On 28 March 2018, the AER released an Issues Paper requesting stakeholder feedback regarding aspects of our regulatory proposal for distribution services, as well as TasNetworks' TSS.

The AER received eight written submissions from third parties regarding TasNetworks' revenue and regulatory proposal. Table 4 sets out the key issues raised in those submissions in relation to network tariff reform and the pricing of network services more generally, along with a response to each issue from TasNetworks.

Matters raised by stakeholders in response to AER Issues Paper

Stakeholder feedback	Our response
Network tariff reform Aurora Energy opposed the transition to cost reflective network prices in Tasmania, claiming that it was unable to pass-through network price signals to customers as a result of the Tasmanian Government's commitment to capping Tasmanian residential electricity price increases at CPI until at least 2021. Aurora Energy contended that the move to cost reflective network prices simply shifts price risk to Aurora Energy, rather than sending a retail price signal to consumers. Aurora Energy's preferred means of managing demand on the network is to employ "non-pricing related methods for managing the demand constraints in the network."	TasNetworks acknowledges that a transition to cost reflective network prices could create risk for electricity retailers – but only if their retail tariffs do not reflect the underlying components which make up the delivered cost of the electricity they sell to their customers. The vast majority of Aurora Energy's residential and small business customers are currently supplied with electricity under 'standing offer' tariffs which are regulated by the Tasmanian Economic Regulator. Under TasNetworks' tariff reform plans, there will be no changes in the coming five year regulatory period to the structure of the flat consumption based network tariffs which apply to residential and small business customers on Aurora Energy's regulated tariffs. TasNetworks is not about to start charging customers for the delivery of their energy on a time of use basis, for example, when their current retail tariff applies the same pricing regardless of the time of day. This means that in the case of Aurora Energy's customers on standing offer tariffs, there is no prospect of a disconnect emerging between the basis on which TasNetworks bills Aurora Energy for those customers' use of the network and the basis on which Aurora Energy charges those customers. TasNetworks' tariff reform plan, particularly the transition to the mandatory application of cost reflective network pricing to all customers, has been scheduled with a view to providing retailers time to introduce new retail offerings that reflect the pricing signals built into TasNetworks' more cost reflective, time of use network tariffs, as well as time to transition their customers to those new retail products. Except for the new and modified/upgraded residential and LV business customers who have advanced meters installed from 1 July 2019 and are assigned to a ToU consumption based network tariff by default (and choose not to opt out), and the residential and small business customers who choose to opt in to a retail offer which incorporates time of use network pricing, TasNetworks does not plan to begin billing retailers serving residential and small business customers on a cost reflective basis more widely until the 2029-34 regulatory period.

Stakeholder feedback	Our response
	Whether those prices are passed on to customers will then become a matter for the retailer to decide. However, the AER has indicated its support for this phased approach to network tariff reform. Aurora Energy has previously demonstrated its capacity to pass-on different network pricing signals through new retail offers, including new standing offers that have been put through the regulatory process. For example, Aurora Energy has been offering a retail standing offer to residential customers which is based on our consumption based time of use network tariff (TAS93) since July 2016. Aurora Energy also introduced a new retail standing offer in July 2016 that incorporates TasNetworks' Business Low Voltage Time of Use network tariff (TAS94), which applies different charges to each kWh of electricity used by a business, depending on whether it's used in pre-determined peak, shoulder or off-peak periods. Since then around 4,500 small businesses have made the switch to the new tariff. Like any retailer, Aurora Energy is also free to introduce unregulated market offers in addition to its standing offer pricing which build on TasNetworks' demand based time of use network tariffs.
Metering charges Some submissions expressed concern about the proposed increase in metering capital charges over the five years covered by the 2019-24 regulatory period, as a result of the plan to applying accelerated depreciation to recover the capital cost of the existing fleet of type 6 meters. The CPP does not believe a strong case has been made for the accelerated depreciation of the legacy meter fleet or that the proposal is in the consumer interest. This view was echoed in the comments made by TasCOSS, which argued the proposal provides no clear benefit for customers. The TSBC expressed concern about the proposed increase in metering capital charges at a time of what it described as "high electricity prices". The TSBC argued the cost of any assets stranded by new technology or changed policies should be borne by shareholders.	TasNetworks received sometimes conflicting feedback from stakeholders about our proposed metering services approach. Some expressed concern about the short-term increase in metering charges that would have occurred in the 2019-24 regulatory period as a result of our plan to accelerate the depreciation of TasNetworks' metering RAB. These stakeholders thought that the increase in metering charges might present difficulties for people on low incomes who are already struggling with electricity prices and cost of living pressures. However, other stakeholders maintained that a short term increase in metering charges would be offset by the benefits to customers of advanced metering technology. We recognise that even relatively small increases in the delivered cost of electricity can have a significant impact - particularly for genuinely vulnerable customers. However, TasNetworks remained of the view that the accelerated recovery of metering capital costs offered a number of important benefits to customers, in that: • Customers would have paid less in metering charges in total over the 2019-24 regulatory period (around 10% less) under an accelerated depreciation scenario, even though on an NPV basis, TasNetworks would still have recovered the full cost of the meters currently in service • In the case of any type 6 accumulation meter that remained in use at 30 June 2024, there would have been no further capital charges. Thereafter, customers would have experienced an ongoing reduction in their metering charges, which would have reflected only the regulated service operating costs, until such time as their meter is replaced, through their retailer, with an advanced meter Our proposal to accelerate the recovery of the capital cost of our fleet of

Stakeholder feedback	Our response
Aurora Energy expressed its opposition to TasNetworks' proposal to accelerate the recovery of the cost of the existing meter fleet, contending that it was not economically justified. The AER did not accept our proposed approach to accelerate depreciation of our metering RAB.	Type 6 meters would also have meant that: • the vast majority of customers would not be required to pay two metering charges for an extended period of time; and • most of the customers that switch to advanced meters would not have been required to continue paying for meters that they were no longer using (post 2024). On balance, TasNetworks believed that the benefits to customers far outweighed a relatively small increase in capital metering charges (in monetary terms) over a short period of time. With the network charges applied to residential and small business customers by TasNetworks having decreased by nearly 20 per cent in 2017-18, plus and a further 2.9 per cent in 2018-19, TasNetworks does not agree that the delivered cost of electricity faced by small businesses is at a level that is either relatively high or so high that increasing metering capital charges would be burdensome for small businesses. At the time of writing, TasNetworks' network charges for small businesses, for example, were in real terms at the same level as they were in 2009-10. This means that in real terms, the network charges incurred by a typical small business customer (an average sized TAS22 customer) are 38 per cent lower in 2018-19 than they were in 2015-16, the year in which network charges were at their highest. The value of a regulatory asset base represents unrecovered past capital investments made by the current and past infrastructure owners. TasNetworks does not agree that it is inappropriate for the business to recover the capital cost of its soon-to-be superseded metering fleet from customers, and the use of accelerated depreciation is recognised as a legitimate means of compensating the owners of assets which are subject to regulatory stranding. TasNetworks does not accept the argument put forward by the TSBC that in a competitive market, the cost of assets stranded by new technology or changed policies are simply written off and absorbed by shareholders. Unregulated businesses which face the risk of market 'disruption', or a reduction in their capacity to recover capital costs in future market conditions, will look to bring forward the recovery of undepreciated assets. The existing regulatory framework for electricity networks, however, provides for a return of capital over the life of regulatory assets, and prevents networks from adjusting their pricing in response to the potential for future asset stranding. Networks are required to fund long-lived capital intensive physical assets that will supply both existing and future consumers over their service life. The regulatory framework allows these costs to be borne through time by beneficiaries of the services enabled by the assets, avoiding current consumers subsidising future consumers, or an unfair deferral of current costs on to future consumers. Current customers with type 6 meters will use

Stakeholder feedback	Our response
	those meters until such time as they are replaced, and it would be inappropriate to recover the cost of legacy meters from new customers (with advanced meters), or existing customers who have their meters replaced with advanced meters. While it may be appealing to some points of view to consider revisiting the regulatory compact in response to changes in circumstances or the electricity market over time, the expectation that TasNetworks should not recover the cost of a significant investment, prudently made, would undermine a key aspect of the regulatory framework. As has been noted, however, TasNetworks' proposal did not receive the support of a number of key customer advocates and was rejected by the AER. Without accelerating the depreciation of these meters, which in the coming regulatory periods will be replaced by advanced meters, it could take until at least 2034 before the capital cost of the meters is recovered from customers. This means that while customers who replace their Type 6 accumulation meter with an advanced meter before then will avoid paying the metering charge which recovers regulated service operating costs associated with the provision of a meter, they will continue to pay a capital metering charge – in addition to whatever metering charges are associated with their advanced meter. TasNetworks will, therefore, re-engage with customers over the coming regulatory period, with a view to putting forward a new proposal for the application of accelerated depreciation in the 2024-29 regulatory period which has the support of customers.. We are continuing to consult with Aurora Energy regarding its plans for the rollout of advanced meters in Tasmania.
Pace of reform The AER and CCP indicated that they consider the pace of network tariff reform proposed by TasNetworks to be slower than it should be. The CPP contended that the long-term interest of consumers would be better served by an accelerated reform program. TasCOSS did not support the alignment of TAS31 and TAS41 but argued that if any adjustment to the level of the discounted TAS41 is to be made, it should involve a gradual transition of up to 15 years. While supportive of TasNetworks'	We have listened, and will continue to listen to the full range of views expressed by stakeholders about the pace of tariff reform. While our intent may be to implement network tariff reform in Tasmania as quickly as possible, we are conscious that there are divergent opinions within the community about what constitutes an acceptable rate of change. TasNetworks' shareholders, for example, have expressed a clear preference for a slower pace of network tariff reform than that advocated by the AER, the CCP and others. TasNetworks is not alone amongst Australian distribution network operators in planning tariff reforms that span multiple regulatory control periods. Endeavour Energy in New South Wales, for example, plans to manage the transition to its new seasonal demand based pricing over a 10 year period. Many network assets have operating lives measured in decades and the capital expenditure savings likely to arise from the widespread application of cost reflective pricing will take time to flow through to consumers. We do not, therefore, consider that our objective of achieving full cost reflectivity by July 2029 is likely to significantly delay the realisation of those benefits.

Stakeholder feedback	Our response
approach to tariff reform, particularly the elimination of cross-subsidies and a move to demand based tariffs, the TSBC preferred a faster pace of reform.	We also note that many customers are likely to be on cost reflective network tariffs well before that time. Since submitting our initial Tariff Structure Statement to the AER in January 2018, and following the handing down of the AER's draft determination, TasNetworks has engaged with stakeholders and customers specifically on the matter of the pace of network tariff reform. The PRWG gave its approval to a faster pace of reform through the application of a ToU consumption based network tariff to new residential customers and residential customers who change their connections from 1 July 2019. More detail about this change in the approach to network tariff reform can be found elsewhere in this TSES. Despite the TSBC calling for a faster pace of tariff reform, the PRWG did not support applying a similar network tariff as the default to new or changed small business connections during the 2019-24 regulatory period. This was because the PRWG's decision regarding residential customers had been informed by analysis of the likely customer impacts of ToU customer network pricing based on interval metering data gathered through TasNetworks' emPOWERing You tariff trial – which involved only residential customers. The AER's final decision extends the application of a time of use consumption based network tariff as the default for new LV business premises and LV businesses that modify or upgrade their connection to the network, or have an advanced meter installed. Analysis undertaken by TasNetworks suggests that time of use network pricing will potentially provide many small business customers with an opportunity to reduce their electricity costs. We will continue to work with the PRWG, retailers and stakeholders like the TSBC to ensure that the LV business customers affected by this change to TasNetworks' tariff reforms plans understand the change and the implications it might have for their businesses.
Opt-in versus opt-out tariff assignment In its Issues Paper, the AER questioned whether an 'opt out' approach to network tariff reform, whereby retailers are charged a cost reflective network tariff by default, would be more appropriate than the opt-in approach proposed by TasNetworks. The AER indicated that while it was supportive of our intent and our reform ideas, the use of opt-in arrangements in other states and territories has resulted in low	TasNetworks originally proposed that during the 2019-24 regulatory period residential and small business customers would be able to access TasNetworks new demand-based time of use network tariffs, through their retailer, on an opt-in basis. In subsequent regulatory control periods we canvassed accelerating the pace of pricing reform by progressing to opt-out tariff assignment and passing on time of use price signals to retailers for all residential and small business customers. But initially, at least, our stated intention was to pursue a customer-led transition to the new tariffs. We understand why the AER sought stakeholders' views on this matter. Throughout the four-year engagement programme that has informed our 2019-24 TSS, TasNetworks has been open to debate about the merits of offering time of use network tariffs to residential and small business customers on an opt-out basis. However, we considered that more engagement and feedback would be needed from retailers, customers and their advocates before abandoning the opt-in approach that has been a

Stakeholder feedback	Our response
uptake of cost reflective tariffs. Aurora Energy has opposed the use of an 'opt-out' approach to the take-up of demand-based network tariffs (although made no comment on opt-out in relation to time of use consumption), arguing that constraints around regulated retail pricing in Tasmania prevent Aurora Energy from passing through new demand-based network tariffs to consumers. Aurora Energy's preferred means of managing demand on the network is to employ "non-pricing related methods for managing the demand constraints in the network." TREA indicated its support for the introduction of demand based tariffs on an opt-in basis for residential and small business customers.	feature of our stakeholder engagement about tariff reform for much of the past four years. TasNetworks' PRWG has been particularly supportive of an opt-in approach for demand based tariffs during the 2019-24 period, and the decision to offer the new DER tariffs on an opt-in, rather than opt-out, basis was driven by feedback from customers and explicitly tested with the PRWG. In its response to the AER Issues Paper, TREA also indicated its support for the introduction of demand based tariffs on an opt-in basis for residential and small business customers, as well as the implementation of the proposed DER tariff on an opt-in basis. However, since TasNetworks' lodged its revenue proposal and TSS in January 2018, the AER has advocated for a change to opt-out assignment to cost reflective network tariffs, at least for residential customers, from 1 July 2019. The AER cited low take up rates of cost reflective network tariffs interstate when opt-in tariff assignment had been used to drive network tariff reform in support of its proposal, and was invited as a guest to attend a PRWG meeting in July 2018 to share that evidence with the PRWG members and a number of invited guests, including representatives of the Office of the Tasmanian Economic Regulator. The PRWG accepted the evidence presented by the AER and agreed that TasNetworks should employ default assignment to a ToU consumption network tariff for select residential customers, including new residential connections, on an opt-out basis from 1 July 2019. Since then, the AER has sought to align the reform of network tariffs in Tasmania with the reforms occurring in other jurisdictions, and instructed TasNetworks to apply default but opt-out assignment to time of use consumption based network tariffs in the 2019-24 regulatory period for LV business customers, as well as residential customers. We note that Aurora Energy has previously opposed the use of an 'opt-out' approach (to the take-up of demand-based network tariffs), citing constraints around regulated retail pricing in Tasmania as preventing them from passing through new demand-based network tariffs to consumers. Aurora Energy has also indicated that it does not support a ToU consumption based network tariff being applied as the default to new and modified residential customers, even on an opt-out basis. TasNetworks' understanding is that the Annual Pricing Proposal Aurora Energy submits to the Tasmanian Economic Regulator provides a mechanism by which Aurora Energy may propose new regulated tariffs, and the regulatory framework applying to Aurora Energy does not prevent it from introducing new market offers.
Distributed Energy Resources TREA supported TasNetworks' proposed opt-in DER tariff but	TasNetworks expects that the growth in the uptake of DER technology is likely to continue, and the proposed DER tariff has a potentially important role in enabling TasNetworks to identify customers with DER and ensure we

Stakeholder feedback	Our response
considered the tariff based on demand based pricing for energy purchased by the consumer to be "conventional". An anonymous submission expressed concern that embedded generation customers receive a 'better deal' than customers without their own generation, and that TasNetworks' proposed network tariffs for customers with DER would create two classes of demand-side management: customers who can afford embedded generation and those who cannot.	have appropriate tariff arrangements in place in the future. As a result of identifying customers with DER, we can start learning how to best integrate their energy use, energy export and network support capabilities into our own network operation practices. This will help us tailor our services and network tariffs over time in order to ensure that DER is optimally integrated into the network. It may also mean that, as TasNetworks' develops a better understanding of the way in which customers use DER and the impacts that this has on the network, our DER tariffs may also evolve and become less "conventional", in terms of their recognition of the demands that DER places on the network as well as the support it can provide. For example, much more is understood about the impact that solar panels are having on the network, now that their use is becoming more widespread. But for DER technology like electric vehicles (**EV**s), we need more customers recharging electric vehicles (as well as discharging electricity from their vehicle's batteries for use in their home or small business) in order to understand the costs and benefits associated with EVs. Only then can we make informed decisions about the pricing signals which might be needed to encourage the charging of EVs in ways which minimise negative impacts on the network, or encourage/enable EV owners to provide services to the network that benefit other customers.
Proposed embedded network tariff The CCP Questioned the proposed network tariff for embedded networks, claiming to have identified a number of issues with its formulation and lack of consultation on this tariff. The CCP has recommended 'thorough' testing of the tariff for compliance (with NER 6.18.4) and further consultation on its structure before including it in the TSS.	In its initial Tariff Structure Statement for the 2019-24 regulatory period, TasNetworks proposed the introduction of two embedded network tariffs: one for embedded network operators connecting at low voltage and the other for embedded networks connecting to the distribution network at high voltage. The tariffs were to comprise a service charge, as well as peak and off-peak demand based charges, but no charge that reflected the consumption of electricity. The service charge was to reflect the number of downstream connections within the embedded network. In looking to introduce dedicated tariffs for embedded networks, TasNetworks' intention was to ensure that we could offer suitable tariffs that protected equity outcomes for all of our customers, while still offering embedded network owners and their customers the scope to reduce their network charges overall. It was considered that this would provide proponents of this alternative energy supply model with consistent, predictable price signals about the value of their network connection, and make it easier to weigh up the costs and benefits of setting up an embedded network, particularly given the responsibilities that this entails for the embedded network operator. However, the AER required TasNetworks to either amend the TSS to provide further justification of the proposed embedded networks tariffs, or remove the embedded network tariffs from the TSS. The Consumer Challenge Panel and AER also flagged concerns about the level of consultation that has

Stakeholder feedback	Our response
	occurred regarding the proposed embedded network tariffs. While the PRWG was consulted on the subject of an embedded network tariff, most of TasNetworks' engagement with the PRWG focussed on the changes being proposed that would impact on residential and small business customers. As no consultation was undertaken outside of the PRWG with regard to the concept and design of embedded network tariffs, it is accepted that more engagement would be required before introducing such a network tariff. Further, the CCP queried the ability of a specific tariff for embedded networks to comply with the National Electricity Rules (NER), specifically NER 6.18.4 which deals with assignment and re assignment of retail customers to tariff classes. NER 6.18.4 includes the requirement that retail customers with a similar connection and usage profile should be treated on an equal basis. The use of embedded networks has not been as widespread within Tasmania as it has been in other jurisdictions with the NEM and more data is needed in order to undertake detailed analysis of tariffs specifically designed for embedded network operators, data that is difficult to acquire given the paucity of embedded networks in Tasmania. While the inclusion of plans to introduce purpose-designed tariffs for embedded network operators in the 2019-24 regulatory period prompted inquiries with TasNetworks from potential embedded network operators, the proposed tariffs have been removed from the revised TSS with a view to reconsidering TasNetworks' approach to embedded networks for the 2024-29 regulatory control period. Embedded network operators will, therefore, continue to be treated consistently from a tariff assignment perspective with other customers that have the same or similar connection characteristics and load profiles.
Revenue and pricing Two submissions were critical of the revenue and associated pricing outcomes proposed by TasNetworks for the 2019-24 regulatory period. The TSBC dismissed the "useful reductions in transmission prices" as being of little importance to small businesses, on the basis that three quarters of the network use of system charges applied to small businesses are made up of distribution charges. The TSBC expressed concern that the proposed DUoS pricing for small	TasNetworks is committed to achieving the lowest sustainable prices for our customers. TasNetworks has already realised significant expenditure savings since we began operating in 2014 and, on average, our customers now receive higher network reliability and lower prices than they did previously. TasNetworks reduced its network prices in 2017-18 by almost 20 per cent compared to the preceding year, to well below pre-merger levels. At the time of writing, in real terms the network charges for small businesses were, for example, at the same level as they were in 2009-10. Further, the network charges incurred by a typical small business customer (an average sized TAS22 customer) are in real terms 38 per cent lower in 2018-19 than they were in 2015-16, the year in which network charges were at their highest. As noted by the AER in announcing its approval of our revenue proposal and Tariff Structure Statement for the 2017-19 regulatory period, the reduction in network costs foreshadowed in that two year regulatory period were expected to result in a saving of $133 on an average Tasmanian household's

Stakeholder feedback	Our response
business customers would translate into an increase in electricity prices for small businesses of 1.7 per cent. Aurora Energy noted that the estimated price movements for an average small customer under TasNetworks' regulatory proposal would still be above assumed inflation (average increases of 2.5 per cent per annum for small customers). Aurora Energy was of the view that TasNetworks should seek to achieve price increases no higher than assumed inflation, consistent with the Tasmanian Government policy to cap electricity price increases at CPI.	total annual electricity bill in 2017-19 if passed on to customers in full by their retailer. Distribution network tariffs (which represent a combination of transmission and distribution network costs) presently make up around 43 per cent of the typical Tasmanian residential and small business customer's electricity bill – down from around 60 per cent only a few years ago. This reflects the fact that network charges for typical distribution customers fell by almost 20 per cent in 2017-18 and a further 2.9 per cent in 2018-19, bringing network charges back to the same level, in real terms, as they were in 2009-10. Having delivered significant real price decreases in the current regulatory period, TasNetworks' objective in the 2019-24 regulatory period is to keep price increases to a minimum, thus preserving those real reductions in network prices whilst still maintaining a safe and reliable network. TasNetworks does not accept that the TSBC's claim that the decreases in our transmission revenues are of little value to small business (or to residential customers for that matter). As a customer of the transmission network, the distribution network's share of share of transmission network charges is around 55 per cent, with the rest borne by the small number of large industrial customers who are supplied at high voltages directly from the transmission network. With an average transmission price over the forthcoming regulatory period which is projected to be 21 per cent lower than in the current five year (transmission) regulatory period, the reduction in transmission costs will put perceptible downward pressure on the delivered cost of energy for small businesses, if those savings are passed on in full by retailers to their customers.
Unwinding of cross subsidies The TSBC supports TasNetworks' approach to tariff reform, specifically the elimination of cross-subsidies and a move to demand based tariffs. However, the TSBC expressed concern about the pace of tariff reform as it relates to the unwinding of long-standing cross subsidies between customer classes, opining that the "welcome reduction in distribution price cross-subsidies… seen in recent years will stall over the next five years". TasCOSS does not support the alignment of TAS31 and TAS41, arguing that there will be a	The TSBC view about the stalling of the unwinding of cross subsidies between its constituents and residential customers appears to be based on a misinterpretation of a chart appearing in TasNetworks' Regulatory Proposal, which shows an estimate of the average annual total network charges paid by a small business customer compared to a residential customer. The chart shows the difference between the network charges faced by typical small business and residential customers narrowing significantly in 2016-17 and 2017-18, with average network charges then projected to continue in parallel for both customers in the out years. The TSBC appear to have interpreted this as a chart of relative prices, and missed the fact that differences in consumption are driving the estimated cost differential in the years ahead. This is supported by the fact that the service charges and energy charges applying to the TAS22 and TAS31 network tariffs under which most small business and residential customers are supplied, respectively, are now virtually identical, as the following table taken from TasNetworks' 2018-19 *Network Tariff Application and Price Guide* shows.

Stakeholder feedback	Our response
significant adjustment for many low income households. TasCOSS argued that the current discounted TAS41 tariff is not merely a cross-subsidy, but a public interest arrangement. The CCP requested greater clarity on cross-subsidies and the pace of reform.	<table><tr><th></th><th>Service charge (c/day)</th><th>All Energy (c/kWh)</th></tr><tr><td>Business low voltage general (TAS22)</td><td>49.381</td><td>9.635</td></tr><tr><td>Residential low voltage general (TAS31)</td><td>49.663</td><td>9.726</td></tr></table> With regard to TasCOSS's concerns about the alignment of TAS31 and TAS41, TasNetworks is conscious of the fact that even small increases in the cost of living can have a significant impact on low income households. Plus, with Tasmania's colder climate and Tasmanians' greater reliance on electricity for heating, we recognise that electricity bills can represent a greater contributor to the cost of living for some households than might be the case in other parts of Australia. One of the reasons why TasNetworks is aligning the TAS31 and TAS41 network tariffs gradually, over a number of regulatory periods, is to avoid price shocks for customers on those tariffs, particularly low income and vulnerable customers. However, noting that TasNetworks is obligated by the State Government to apply the same prices to households throughout Tasmania, and the AER has previously rejected a residential social tariff for vulnerable customers proposed by SA Power Networks, the best way in which TasNetworks can support low income households is to minimise upward pressure on the delivered cost of electricity. On this front, TasNetworks has already made significant inroads. On 1 July 2017, electricity distribution network charges in Tasmania fell by around 20 per cent followed by a further 2.9 per cent in 2018-19. When the 2017-18 reductions were announced, the AER estimated that if the savings were passed on to customers through their retail electricity prices, they would result in a an average Tasmanian household saving $133 on their electricity bill per annum in the 2017-19 regulatory period. In the long term, aligning the TAS31 and TAS41 network tariffs has a role to play in minimising the upward pressure on electricity prices in general. The substantial discounting which has been applied to TAS41 since its inception was originally conceived as a means of stimulating demand for hydro-electrically generated electricity at times of the year when, if a use for the energy couldn't be found, water storages would spill and the potential energy that water could generate would go to waste. Unfortunately, the discount also sends a price signal that encourages the use of energy intensive hot water and home heating appliances at times of peak demand on the network (i.e. in the cool of the morning and the late afternoon/evening). This demand for electricity at peak times is what drives investment in the distribution network, and that investment translates into our network charges. In the longer term, therefore, it is in all customers' interests, including low

Stakeholder feedback	Our response
	income households, that we price the delivery of electricity to customers in a way that reflects the cost of delivering that energy and which doesn't encourage growth in peak demand that requires more to be spent on the capacity of the network. This is the main reason behind the decision to match TAS31 and TAS41. While TasNetworks is moving to align the two tariffs, that does not mean that discounted retail prices for electricity used for home heating and hot water services have to disappear. Network costs are only one component of retail electricity prices – albeit a significant one – and a retailer like Aurora Energy is free, if it wishes to do so, to continue discounting the price it builds into its retail tariffs to recover the cost of the energy it sells to customers for the purposes of home heating and hot water services. Ultimately, however, network prices and the provision of support for low income households are separate areas of public policy. Any assistance provided to customers in relation to their electricity costs is, therefore, the responsibility of Government social policy, whereas the prices we charge are subject to the constraints of economic regulation and principles like cost reflectivity and horizontal equity. More information about the unwinding of cross subsidies has been provided in this TSES.
Customer engagement Whilst welcoming TasNetworks' efforts in relation to customer engagement, the TSBC characterises TasNetworks' consumer engagement as being consultative and, to a lesser degree, involving, but not collaborative.	We established the TasNetworks PRWG in late 2014 to provide us with advice about our customers' needs and to act as an advisory group on pricing issues. The Group is made up of around twenty stakeholders comprising representatives of the community sector, businesses, consumer advocates and members of the electricity supply industry. Thus far, the PRWG has been provided with unprecedented access to information about TasNetworks' business and the options available for the reform of network tariffs. That effort has been recognised by the AER which, while noting that there is still room for improvement, commended TasNetworks for communicating with customers better than many other networks. TasNetworks engagement with the local government sector on public lighting prices was also acknowledged by the CCP, which has received "positive feedback on TasNetworks engagement despite ongoing disagreement around the allocation of significantly increased overheads to the public lighting service." TasNetworks consultation with stakeholders will not end with the AER's regulatory determination for the 2019-24 regulatory period, and we will continue actively engaging with the PRWG, external stakeholders and customers, just as we will continue refining and improving our consultative methods.
Public lighting Some stakeholders expressed	The final tariffs for the provision of public lighting services comprise a charge for the provision of a standard control service as well as charges for the

Stakeholder feedback	Our response
concern about the public lighting price increases associated with the proposed transition to full cost recovery in the coming regulatory period. They also sought to understand the drivers underpinning forecast cost increases. The CCP recommended that the AER reject the proposed increase in public lighting charges, on the basis that the price increases are being driven by an increased allocation of overheads to public lighting services which the CCP does not consider has been justified by TasNetworks. The Local Government Association of Tasmania (LGAT) also took the view that the increased allocation of overheads to public lighting services has not been justified by TasNetworks.	provision of an alternative control service. The delivery of electricity to public lights requires the use of the distribution network, which is a standard control service, while the provision, construction and maintenance of the lighting asset is classified by the AER as an alternative control service. In relation to public lighting charges, the first regulatory proposal submitted to the AER by TasNetworks' in January 2016 (for the 2017-19 regulatory period) largely reflected a continuation of the status quo. Since then, thorough analysis of the available asset and expenditure data by TasNetworks, as well as a review of the time and resources being expended on the delivery of public lighting services, has revealed that the public lighting prices currently on offer fall significantly short of full cost recovery. To be cost reflective, the prices charged for public lighting services need to increase significantly and the initial regulatory proposal and Tariff Structure Statement submitted to the AER for the 2019-24 regulatory period reflected this. Because a move to fully cost-reflective public lighting charges involves a material increase in those charges, a sudden transition would result in a step change in public lighting prices. Therefore, consistent with our strategy of sustainable and predictable pricing and our transitional approach to network tariff reform, TasNetworks proposed a smooth transition path for public lighting prices over a ten year period, with increases in public lighting charges occurring at a rate of CPI plus 2.5 per cent, to manage customer impacts. The proposed delay in the transition to full cost reflectivity would have resulted in a significant amount of revenue foregone during the transitional period. But as part of the transition to cost reflective public lighting charges, we also proposed a reduction in shareholder returns of approximately $12 million over the forthcoming regulatory period (in $2018-19 terms), meaning that the cost of the under-recovery of public lighting costs would not have been passed on to other customers. We engaged extensively with LGAT and Local Governments regarding the provision of public lighting, and TasNetworks' engagement with the local government sector on public lighting prices was acknowledged by the CCP, despite disagreement around the significantly increased allocation of overheads to public lighting services which was responsible for the proposed increase in prices. However, in its draft decision the AER rejected TasNetworks proposal to increase public lighting prices at a rate of CPI plus 2.5 per cent per annum. The AER accepted our labour rates and luminaire input costs, but did not accept our proposed overheads, concluding that our overheads should be capped at 25 per cent of direct costs. While we welcome the AER's acceptance of our labour rates and luminaire input costs, we do not accept the AER's benchmarking approach to setting an allowance for our overhead costs. One of the reasons for this is that

Stakeholder feedback	Our response
	TasNetworks classifies some costs as 'overheads' that other networks appear to classify as 'direct' costs, meaning that we appear to have higher overheads than some of our peers for a given level of total public lighting costs. Benchmarking overheads as a percentage of direct costs is also problematic because it focuses on overheads as a proportion of total costs and distracts from their level. It also loses sight of the fact that TasNetworks is a relatively low cost public light provider, in terms of the annual cost per light. In TasNetworks' revised Regulatory Proposal, we have provided further information to explain our overhead costs and the resulting public lighting charges. Nevertheless, we are conscious of the importance of addressing our customers' concerns regarding affordability. Therefore, consistent with our original Proposal, we are proposing to transition our public lighting prices to be fully cost reflective over a ten-year period, by implementing a gradual glide path for public lighting prices spanning the 2019-24 and 2024-29 regulatory periods. This will see, for example, (alternative control) public lighting charges for an LED14W light increase by about 15 per cent in 2019-20 and then at a rate of CPI plus about 1.7 per cent for the next four years. We consider that our revised public lighting charges address the concerns raised regarding the proposed increases in charges, while reasonably reflecting the efficient costs of providing these services.

Table 5 Issues raised by the AER in its draft decision

On 27 September 2018 the AER released its draft decisions on TasNetworks' electricity distribution and transmission determinations for the 2019-24 regulatory control period, including a draft decision on TasNetworks' TSS for the same regulatory control period.

In its draft decision the AER accepted a number of elements of TasNetworks' TSS but rejected others. While the AER was satisfied that in most significant respects the TSS submitted by TasNetworks contributed to compliance with distribution pricing principles and achievement of the network pricing objective, some aspects of the TSS were held to require amendment and further detail, meaning that the AER did not approve the TSS as a whole.

The following table sets out the key issues raised by the AER's draft decision in relation to network tariff reform and the pricing of network services, along with a response to each issue from TasNetworks.

Matters raised by AER draft decision

AER draft decision	Our response
Removal of cross subsidies The AER was satisfied that TasNetworks' proposed	TasNetworks has included additional explanatory information in this TSES to better demonstrate how the

AER draft decision	Our response
continuation of removing longstanding discounts between legacy tariffs is an appropriate part of the transition towards cost reflective network pricing in Tasmania. However, the AER considered TasNetworks should improve the transparency of its proposal. For example, the AER suggested that TasNetworks should provide forecasts of the change in the revenue to be recovered from certain network tariffs over the course of the 2019-24 regulatory period as a result of the continued unwinding of the longstanding discounts associated with some of those tariffs. The uncontrolled low voltage heating tariff (TAS41) was a case in point. The AER also proposed, as an alternative to progressively lifting the relative prices of the discounted tariffs, that TasNetworks should consider accelerating the unwinding of cross subsidies by providing price relief to the non-discounted tariffs.	continuing but gradual increases in discounted tariffs proposed over the 2019-24 regulatory period will contribute to a reduction in cross subsidies. In addition to gradually lifting the prices of historically discounted tariffs to reduce cross subsidies, TasNetworks will aim to reduce the prices of non-discounted tariffs to speed up the rebalancing process, as long as doing so does not shift the recovery of Total Efficient Cost (**TEC**) for particular tariffs or tariff classes in ways that create new cross subsidies. Consideration must also be given to the pricing relationships that exist between tariff classes, such as the residential and small business tariff classes, in order to avoiding distorting those relationships – which are part of TasNetworks' tariff strategy – through the use of discounting.
New demand based time of use tariffs for households and small businesses with Distributed Energy Resources The AER accepted TasNetworks' proposal to offer time of use demand tariffs to residential and small business customers on an opt-in basis to encourage customer uptake of distributed energy resources such as solar PV, batteries or energy management devices.	TasNetworks notes that the AER has previously rejected technology-targeted tariffs proposed by other distribution network operators, in part because the AER considers efficiency is better promoted through technology neutral approaches and well-designed cost reflective network tariffs that can apply to customers with and without DER. The AER approved TasNetworks proposed DER tariffs because we will be applying the same prices to the residential and small business demand tariffs that are available to all households and small businesses with appropriate (interval) metering, not just customers with DER.
The pace of tariff reform The AER was not satisfied that TasNetworks' tariff assignment policy for residential and small business customers, which relied on retailers 'opting-in' to discounted cost reflective network tariffs, will provide an adequate pace of reform. Therefore, the AER required TasNetworks to adopt an 'opt out' arrangement, whereby retailers face a cost reflective network tariff by default when a customer meets the trigger for tariff assignment or reassignment.	In the future directions section of the AER's final decision on TasNetworks' first TSS (which was for the 2017–19 regulatory period) the AER noted that transitioning to cost reflective pricing in Tasmania would take more than one regulatory control period. To provide guidance to TasNetworks for its 2019–24 tariff structure statement, the AER has previously identified that TasNetworks should, amongst other things, move from an opt-in approach to an opt-out approach to network tariff reform. In the lead up to the development of TasNetworks first TSS, as well as the TSS submitted to the AER in January

AER draft decision	Our response
	2018 for the 2019-24 regulatory period, customers told us that they don't believe tariff reform should be delayed, due to the overall benefits of efficient price signals. However, different customer groups and their advocates had divergent views on the pace of reform. TasNetworks' PRWG has previously been particularly supportive of an opt-in approach for demand based tariffs during the 2019-24 period, and the decision to offer the new DER tariffs on an opt-in, rather than opt-out, basis was driven by feedback from customers and explicitly tested with the PRWG. TREA had also indicated its support for the introduction of demand based tariffs on an opt-in basis for residential and small business customers, as well as implementation of the proposed DER tariff on an opt-in basis. As a result, the draft TSS submitted to the AER by TasNetworks in January 2018 for the 2019-24 regulatory included plans to continue offering cost reflective network tariffs to households and small businesses on an opt-in basis. After submitting our draft TSS for the 2019-24 regulatory period to the AER, and since the AER handed down its draft decision, we have continued listening to the range of views expressed by our customers and other stakeholders about the pace of network tariff reform in Tasmania. We specifically tested the AER's draft decision to require TasNetworks to change its approach to tariff reform from an opt-in to an opt-out approach. Having considered analysis of the potential impact of network tariff reform on a variety of typical households with different electricity consumption profiles, which was based on interval metering data gathered from TasNetworks' emPOWERing You trial, the PRWG accepted a shift to opt-out assignment to cost reflective network tariffs. The application of a time of use consumption based network tariff as the default for 'new and replacement' residential customers on an opt-out basis was widely supported within the PRWG. Accordingly, in our revised Tariff Structure Statement submitted to the AER in November 2018, we accepted the AER's requirement that from 1 July 2019 we assign new residential customers, as well as residential customers that change their connection or have an advanced meter installed, to a ToU consumption based

AER draft decision	Our response
	network tariff on an opt-out basis. However, given the lack of research into the impact of tariff reform on small businesses and their capacity to respond to ToU price signals, the majority of PRWG members supported a continuation of TasNetworks' existing pricing strategy for small business customers, which involves maintaining an opt-in approach to more cost reflective network tariffs. In line with that feedback, we did not propose the application of time of use consumption based network tariffs as the default for small businesses during the 2019-24 regulatory period as part of our revised TSS. However, in light of the AER's final determination, from 1 July 2019 TasNetworks will introduce delayed assignment to a time of use consumption based network tariff as the default for qualifying LV business customers. TasNetworks' long-term strategy for network tariff reform has always involved a transition to cost reflective time of use network pricing for all customers, including small businesses. Although the AER's decision will bring forward that transition for some small businesses, we believe that the default time of use, consumption based network tariff in question will provide many small businesses with the scope to better manage their electricity costs. During the 2019-24 regulatory period we will invest significant effort in understanding and communicating to the small business market the potential advantages of time of use network pricing, to help them make informed choices about their electricity supply. TasNetworks will persist with a customer led opt-in approach to the new demand based time of use tariffs that will be available to residential and small business customers in the 2019-24 regulatory period. One of the advantages of this plan is that it maintains a gradual approach to reform that also keeps pace with the installation of the advanced meters needed to facilitate ToU metering, whether on a consumption or demand basis. This approach is broadly consistent with recommendations made by the ACCC, which considered that the take up of cost reflective network pricing should be accelerated through the mandatory assignment of cost reflective network pricing on retailers for all of their customers that have metering capable of supporting cost

AER draft decision	Our response
	reflective tariffs. It is noted, however, that the ACCC's preference was for the use of demand based network tariffs as the most appropriate structure for mandatorily assigned network tariffs, and that the ACCC proposed mandatory tariff assignment, whereas TasNetworks will be applying a ToU consumption tariff as a default, with the customer being able to opt-out to another tariff.
Variation in trigger for opt-out assignment In response to TasNetworks' proposal to apply an 'opt out' rather than 'opt in' approach to network tariff reform, in order to accelerate the take up of cost-reflective network tariffs, the AER expressed a strong preference for a change in the way the 'trigger' for opt out network tariff assignment should apply. Specifically, the AER stated a preference for the application a delay in the case of "end of meter replacements", whereby customers whose meters fail would remain on their current network tariff(s) following replacement of the meter, and only be reassigned to the default ToU consumption based network tariff 12-months after the installation of an advanced meter.Following the AER's final decision on TasNetworks' TSS for the 2019-24 regulatory period, a 12 month delay in assigning residential customers to a default time of use consumption based network tariff will be applied not only to meter replacement customers, but to new residential connections, as well as residential customers who modify or upgrade their connection with the distribution network. In keeping with the AER's final decision, TasNetworks will also apply delayed assignment to a default time of use consumption based network tariff to LV business customers.	TasNetworks has consistently maintained that it does not believe that the delay proposed by the AER will deliver better outcomes for customers, and considers that introducing a delay for what is a very small subset of the customers to which opt out tariff assignment is intended to apply would give rise to inequitable customer outcomes, while also being unjustifiably costly and inefficient to implement. The AER has indicated that it wants the delay implemented in order to provide customers' retailers with 12 months' of interval metering data, to inform the customer's choice of retail tariff and, therefore, the underlying network tariff. In effect, the proposed delay is intended to inform the customer's decision whether to exercise the opt-out provision of the default assignment to a more cost reflective network tariff. The AER originally contended that customers who have an advanced meter installed as the replacement for a faulty accumulation meter have not had the new meter installed because of a decision taken by the customer, as would be the case for a customer who had elected to upgrade from a single to three-phase power supply, for example. In describing meter replacement customers as 'passive' the AER appears to have taken the position that these customers need the protection of the metering information that would be provided by the proposed 12-month delay in assigning them to a different, more cost reflective network tariff, before making a decision about their network tariff. In its draft decision the AER did not propose applying the delay to customers who actively make a decision to in some way change their electricity supply arrangements, for example, by connecting a new dwelling, installing solar panels or upgrading or modify an existing connection. Yet, none of these customers will have 12-months' of interval metering data available to them or their retailer at the time of their automatic assignment to a cost reflective network tariff. This suggested that if

AER draft decision	Our response
	the provision of information to inform opt-out decisions about tariff assignment was the AER's chief objective in proposing the delay in tariff assignment for replacement meter customers, then the delay should be applied consistently across all residential customers who have an advanced meter installed, regardless of the trigger for that change. In TasNetworks' view, this would, however, delay the take-up of cost reflective network pricing, and run counter to the AER's instruction to accelerate the pace of network tariff reform in Tasmania. A delay in assigning eligible customers to cost reflective network tariffs also risks delaying customers' from having access to the potential benefits of cost reflective network pricing, such as the greater control it affords over their energy bills by being able to vary time of use, rather than just consumption, and the scope for customers with DER to apply the energy they generate and/or store to home heating and hot water, rather than just their general power and light, which is currently the case. TasNetworks systems are also not able to manage the proposed 12-month delay in tariff reassignment and are unable to be modified in order to do so automatically, meaning that the process for applying delayed tariff reassignment to qualifying residential and LV business customers would have to be managed manually. In its revised Tariff Structure Statement, TasNetworks, therefore, proposed to depart from the AER's preferred solution, and proposed that it would assign residential customers who have a failed meter replaced with an advanced meter to a cost reflective network tariff, effective immediately from the installation of the new meter. Like the residential customers with new or modified connections who from 1 July 2019 would also be assigned to a ToU consumption network tariff as the default tariff, customers who have a failed meter replaced with an advanced meter would still be able to exercise their right to opt out of the network tariff, through their retailer. However, the AER has rejected that approach, and TasNetworks will now apply a time of use consumption based network tariff as the default for both residential and LV business customers, 12 months from the date of the installation of an advanced meter at the customer's

AER draft decision	Our response
	installation. The delay in tariff reassignment will apply to new residential and LV business connections, as well as modified or upgraded connections, as well as meter replacements.
Introductory discount for demand based time of use tariffs for residential and small business customers The AER supported the application of a discount to all demand based time of use small business and residential tariffs.	TasNetworks has proposed offering an introductory discount of the off-peak charges in the demand based time of use network tariffs on offer to residential and small business customers during the 2019-24 regulatory period, to further incentivise customers to switch to the new tariffs, through their retailer. With the goal of cost reflectivity in mind, the discounts will be offered on a transitional basis only, and will decline progressively over the course of the 2019-24 regulatory period, to the point that no discount will be offered from 1 July 2024. TasNetworks will fund the cost of the discount (revenue foregone) directly, meaning that the cost of offering the discounts will not be passed on to other customers. The level of the discount, the period it will apply for and the means by which it will be funded was supported by TasNetworks' PRWG and TasNetworks welcomes the AER's endorsement of the proposal.
Time of Use Charging windows The AER was satisfied that the peak demand charging windows of 7-10am and 4-9pm are likely to align with periods of network stress, and that they remain wide enough to discourage customers shifting load and creating new peaks at other times. The AER was also satisfied that TasNetworks' proposal to adopt an approach to its ToU tariff design for residential and small business customers which only has peak and off-peak (but not shoulder charging windows) is appropriate and agreed that doing so increases simplicity without comprising on cost reflectivity. However, the AER suggested that TasNetworks should consider seasonal based charging windows, particularly where there is a distinct seasonal aspect to peak demand. The AER argued that as a market with a distinct winter peak, customers would be better off in the long run with a lower "off peak" seasonal pricing in the warmer parts of the year and that uniform pricing year round means that winter	TasNetworks has been mindful of the need to strike a balance between tariffs which are both cost reflective and easy for our customers to understand. In response to general feedback from our customers, we have deliberately not introduced the additional complexity of seasonal charging into our new demand based tariffs. Although seasonality does have the potential to provide a greater degree of cost reflectivity to address particular network constraints, our customers have told us they do not support seasonal variations due to the potential impact of increased charges during the winter period and the simplicity of having no seasonal variation. While the use of seasonal pricing for residential and small business customers would improve cost reflectivity, at this early stage of the transition towards cost reflective network pricing in Tasmania, TasNetworks considers that a consistent year round pricing signal is likely to be better understood and followed by customers. It is going to take time for many customers in Tasmania to comprehend and adjust to concepts like time of use pricing and, further down the track, demand

AER draft decision	Our response
peaking customers are benefiting at the expense of summer peaking customers.	based pricing, and asking customers to adapt to seasonal pricing at the same time is likely to make the transition for customers more difficult, as they seek to take advantage of TasNetworks' new network tariffs.
New tariffs for embedded network operators The AER did not accept the justification provided in TasNetworks' TSS for offering two new network tariffs specific to embedded networks, one for embedded networks connecting at LV and the other for embedded networks connecting at HV. The AER required TasNetworks' TSS to either be amended to provide further justification for its embedded networks tariffs and to include more detail on its assignment process, or to remove the embedded network tariffs from the TSS. In doing so, the AER considered that TasNetworks (and other distributors) should continue to investigate whether specific embedded network tariffs are appropriate under the NER.	TasNetworks accepts the AER's position and has removed the plans to introduce tariffs for the operators of embedded networks in its revised TSS.
Long Run Marginal Cost The AER requested that TasNetworks' revised TSS describe more comprehensively how its long run marginal cost estimates translate into its indicative price schedule. The AER assessed that the Average Incremental Cost approach used by TasNetworks to calculate LRMC is fit for purpose, and that the forecast horizon of ten years is the minimum timeframe needed to capture the 'long run'. However, the AER the considered that TasNetworks' LRMC estimates included replacement capital expenditure (repex) projects or programs that would increase the capacity of the network, without being responsive to changes in demand. This is because they involve the replacement of assets based on condition and age, rather than in response to incremental use of the network (which is a requirement for any capex to meet the definition of 'marginal cost').	TasNetworks has included additional explanatory material in this TSES which explains the means by which we allocate TEC and LRMC to tariff classes and to individual tariffs. TasNetworks has also amended its estimates of LRMC as part of its revised proposal, to take into account the AER's direction regarding the inclusion of repex in the calculation of LRMC.
Tariff assignment policy The AER considered that TasNetworks' proposed TSS was not sufficiently clear regarding the policies and	TasNetworks has provided more information regarding its tariff assignment and reassignment policies and procedures in its revised TSS.

AER draft decision	Our response
procedures used to assign and reassign customers to tariffs. The AER observed that TasNetworks' TSS provided only a high level summary of the procedures by which it assigns customers to network tariffs, and relied on references to the documents TasNetworks submits as part of its Annual Pricing approval process for stakeholders who require more information. The AER requires this detail to be incorporated into the TSS.	
Individually Calculated Tariffs Given the complexity of some customers' connection arrangements, the AER was satisfied that, in certain circumstances, it is more cost reflective for these customers to be assigned to individually calculated network tariffs, rather than a highly averaged published tariff. While accepting that there are limitations on the transparency distributors can provide regarding the circumstances of particular customers as these can be commercially sensitive, the AER requested that, as part of its revised TSS, TasNetworks provide further detail on how it determines ITC tariffs. The AER considered that doing so would improve transparency and better inform customers with respect to their own circumstances.	TasNetworks has provided a more detailed explanation in this TSES of how it allocates transmission and distribution costs to individually calculated tariffs, and how those costs are translated into the specified demand charges, connection charges, energy charges and service charges that make up individually calculated tariffs.
TSS structure The AER considered that TasNetworks' TSS largely incorporated each of the elements required under the rules. However, the TSS submitted by TasNetworks in January 2018 relied on a single document which combined the NER requirements with broader explanatory material regarding TasNetworks' overall tariff strategy and reasoning. While not a requirement under the rules, the AER requested that TasNetworks adopt a two document approach to structuring its TSS as part of its revised proposal. The first document should only include the elements of the TSS listed in the NER with the second document containing TasNetworks' reasons for each of the proposed elements in the TSS.	TasNetworks notes that the format of the TSS it submitted to the AER in January 2018 for the 2019-24 regulatory period was essentially the same as the TSS which was approved by the AER nine months earlier (in April 2017) for the 2017-19 regulatory period. During the development of its TSS for the 2019-24 regulatory period, TasNetworks was not in receipt of the advice given to other distribution networks with regulatory determinations due in April 2019 that a two-part TSS would be required. But since the release of the AER's draft decision, TasNetworks has worked to comply with the AER's request and produced both a revised TSS and an accompanying TSES.

Matters raised by AER following its draft decision

Variation in trigger for opt-out assignment no. 2 On learning of TasNetworks' intention to accept the proposal in the AER's draft decision that, from 1 July 2019 onwards, TasNetworks should apply a ToU consumption based network tariff as the default for new and altered residential connections – with the exception of the 12-month delay proposed by the AER for customers who have faulty meters replaced with advanced meters – the AER put forward an alternative approach to TasNetworks. The AER considered that TasNetworks should apply an approach to tariff reform that was being proposed by the AER for other jurisdictions, such as New South Wales. This new approach involved the application of a 12-month delay to *all* new and modified residential customers before re-assigning them to a default ToU consumption based network tariff. Further, in the AER's final decision in relation to TasNetworks' Tariff Structure Statement for 2019-24, the AER has also directed that TasNetworks will apply the same delayed default tariff reassignment to LV business customers.	TasNetworks did not support this later proposal. TasNetworks contended that the success of network tariff reform will be maximised by enabling the design and pace of change to vary from network to network, so that outcomes reflect the engagement efforts of network businesses and the preferences, expectations and past experiences of their customers. A one-size fits all approach to reform risks impeding the transition to cost reflective network pricing in Tasmania which has been agreed to as a result of TasNetworks' extensive collaboration with its customers and their advocates. Conditions in the Tasmanian retail electricity market are markedly different from the conditions in other parts of the NEM. Tasmania is a winter peaking market. Tasmanian households use more electricity than their interstate counterparts do. Nearly 80 per cent of Tasmanian households use electricity as their primary source of home heating and/or hot water and, as a result, are supplied under multiple network tariffs, not just the single general power and light tariffs that are used in other parts of the NEM. And despite the Tasmanian electricity market having been open to full retail competition since July 2014, until February 2019 residential customers and most small business customers have not had a choice of retailer. All of these differences have informed the design of TasNetworks' network tariff reform plans and the ongoing dialogue between TasNetworks and its customers about those plans that commenced in 2014. TasNetworks proposed an efficient and simple opt-out approach to the adoption of time of use consumption based network charges for residential customers (not a demand based charge) that would deliver better and fairer outcomes for the majority of customers when compared to the flat consumption based tariffs of the past. Further, we expressed our concern that the AER's proposed 12 month delay based on New South Wales' experience ignored conditions in Tasmania including our existing business rules that allow us to accommodate customer issues that help them manage costs. Further, it was argued that the AER's proposed one-size-fits-all approach would prevent learning about tariff implementation through the use of different approaches by different networks and their customers, which would, at the least, delay the delivery of benefits from tariff

	reform. It is important that improved price signals from more cost reflective tariffs be injected into the market, whose participants can then choose how they respond to them. However, as per the AER's final decision, TasNetworks will apply a 12 month delay in tariff reassignment to all residential and LV business customers that meet the criteria for assignment to the default time of use consumption based network tariffs that will be applied from 1 July 2019.

Customer charge comparisons

Introducing cost reflective tariffs is in the best interests of all customers, because it can help reduce average tariffs for all customers in the longer term by lessening the need to upgrade our network to cater for growth in peak demand and extending the service lives of some of our assets, deferring their replacement. However, we recognise that introducing demand based time of use tariffs may represent a significant change for some of our customers, particularly residential customers. As such, we recognise our customers will require time to adapt their behaviour and implement solutions in response to demand based tariffs.

The Network Pricing Objective set out in the Rules requires that the network tariffs for all customer classes should reflect the costs of providing services to those customers. Our tariffs should only depart from these efficient levels to mitigate any sudden, adverse effects which moving to more cost reflective pricing might otherwise have on customers. This ability to deviate from cost reflective prices is referred to as the Customer Impact Principle, and is set out in the Rules. We consider the application of the Customer Impact Principle to be a particularly important element in ensuring successful tariff reform in Tasmania.

When developing our long term pricing plan, including the 2019-24 TSS and our first TSS for the period 2017-19, we considered the impacts of our proposed tariffs on our customers. This impact analysis has informed all aspects of our pricing plan design including: tariff structures, tariff levels, tariff assignment and the pace of tariff transition.

The analysis relating to our 2019-24 TSS period is summarised in Appendix D: *Network charge comparisons (Residential & Small Business)*. The network bill impacts and potential savings from switching to demand tariffs or better managing peak loads on existing tariffs are calculated based on a number of assumptions about what constitutes a typical customer[11]:

[11] The characteristics of the typical customers we've used to illustrate the potential impact of changes to our network tariffs are similar to, but not exactly the same as the typical customers used by OTTER to assess the impact on customers of changes in standing offer retail electricity prices or to compare Tasmanian and interstate standing offer electricity prices. This difference is as a result of our access to a larger data set.

- Residential customers are represented by a medium usage household supplied under the Residential low voltage general (TAS31) and Uncontrolled low voltage heating (TAS41) tariffs, with an annual combined consumption of 7,400 kWh and a peak demand of 4.5 kW. It has been assumed that 32 per cent of this customer's annual consumption occurs during the same peak times that apply to TAS93.
- Small Business Low Voltage customers are represented by a high usage small business supplied under the Business low voltage general tariff (TAS22), with an annual consumption of 33,900 kWh and a peak demand of 12.5 kW. It has been assumed that 57 per cent of this customer's annual consumption occurs during the same peak times that apply to TAS94.
- Large Business Low Voltage customers are represented by a medium usage large business supplied under the Business low voltage kVA demand tariff (TAS82), with an annual consumption of 321,700 kWh and an Anytime Maximum Demand (ATMD) of 84 kVA. It has been assumed that 54 per cent of this customer's annual consumption occurs during the same peak times that apply to TAS94.
- Large Business High Voltage customers are represented by a medium usage high voltage business supplied under the Business high voltage kVA specified demand tariff (TASSDM) with an annual consumption of 2,261 MWh and a Specified Demand of 590 KVA. It has been assumed that 29 per cent of this customer's annual consumption is assumed to occur during the same peak times that apply to TASSDM.
- Irrigation customers are represented by an average usage irrigator supplied under the Irrigation low voltage time of use tariff (TAS75) with an annual consumption of 44,900 kWh. It has been assumed that 5 per cent of this customer's annual consumption occurs during the same peak times that apply to TAS75.

The analysis also considers the discounted off-peak demand charges for Residential and Small Business demand tariffs assigned to time of use demand based network tariffs outlined in Section B.3 *Designing our new tariffs*.

Table 6 How our prices will affect our customers

Customer types and actions	Network tariff impacts during 2019-24 TSS period for total network charge ($ nominal)
Customers who remain on their current network tariff(s) and don't change their consumption of electricity	
Residential	Network charges will increase, on average, by $23 each year.
Small Business Low Voltage	Network charges will increase, on average, by $105 each year.
Large Business Low Voltage	Network charges will increase, on average, by $796 each year.
Large Business High Voltage	Network charges will increase, on average, by

Customer types and actions	Network tariff impacts during 2019-24 TSS period for total network charge ($ nominal)
	$1,299 each year.
Irrigators	Network charges will increase, on average, by $113 each year.
Customers who choose to try a consumption based ToU network tariff	
Residential	Average savings of $16 per year without behaviour changes and additional average savings of $33 per year when shifting 10 per cent Peak consumption to Off-Peak periods.
Small Business Low Voltage	Average savings of $757 per year without behaviour changes and additional average savings of $157 per year when shifting 10 per cent Peak consumption to Shoulder and Off-Peak periods.
Customers who choose to try a ToU demand based tariff	
Residential	Average savings of $61 per year without behaviour changes and additional average savings of $44 per year when reducing Peak demand by 10 per cent.
Small Business Low Voltage	Average savings of $229 per year without behaviour changes and additional average savings of $261 per year when reducing Peak demand by 10 per cent.
Large Business Low Voltage	No savings without behaviour changes and average savings of $1,210 per year when reducing Peak demand by 10 per cent.
Customers who choose to better manage their peak use on their existing tariff(s)	
Large Business Low Voltage	Average savings of $1,148 per year when reducing Anytime Maximum Demand (ATMD) by 10 per cent.
Large Business High Voltage	Average savings of $584 per year when shifting 10 per cent Peak consumption to Shoulder and Off-Peak periods and additional average savings of $4,500 per year when reducing Specified Demand by 10 per cent.
Irrigators	Average savings of $142 per year when shifting 10 per cent Peak consumption to Shoulder and Off-Peak periods.

As we transition to more cost reflective pricing we will continue to assess the impacts of our tariffs on different customer groups and ensure that we adhere to the requirements of the Customer Impact Principle.

Distribution network customer, tariff and revenue breakdown

Distribution network revenues by tariff component

In line with the provisions of the Rules, we are reforming our Distribution Pricing Strategy to gradually transition to more cost reflective pricing by changing our distribution network tariffs. The following charts show the mix of tariff components used to recover the contribution made by each tariff class towards the cost of the distribution network, as forecast at the start and end of the 2019-24 period.

The differences between the different network tariff classes, in terms of the type of network charges used to recover the cost of the network, largely reflect the fact that, for residential customers the application of demand based network charges and ToU pricing is in its infancy, whereas demand charges and ToU consumption based charges have long been a feature of the network charges applied to commercial customers – although the demand charges haven't always reflected time of use.

In the coming regulatory period we are looking to accelerate the take-up of ToU consumption based network tariffs by residential customers, through the use of opt-out, default assignment to a ToU consumption based network tariff for a range of residential customers, including new residential connections. Aurora Energy has also announced plans to transition the residential customers that are users of Aurora Energy's pre-payment metering product to its new pay as you go product, called Aurora Pay As You Go Plus (Aurora PAYG+), which will be underpinned by TasNetworks' TAS93 time of use consumption based network tariff. Depending on the number of customers that opt-out of the new product, the changeover to the new product will potentially add around 20,000 residential customers to the 4,000 customers who, at the time of writing, are already assigned to TAS93.

We have introduced a number of demand based ToU tariffs for residential and small business customers and are encouraging customers to take up demand based tariffs, through their retailer, by offering discounts on off-peak demand charges during the course of the 2019-24 regulatory period.

We are, therefore, forecasting an increase in the take-up of ToU consumption network tariffs amongst residential customers, along with a smaller increase in the number of residential customers on demand based network tariffs. Whereas Aurora Energy already offer regulated tariffs to residential customers which incorporate the TAS93 ToU consumption based network tariff, the uptake of demand based relies on retailers incorporating our demand based ToU network tariffs in the retail tariffs on offer to households and small businesses. If that occurs, we would expect that the proportion of residential customers' network costs recovered through demand charges will gradually increase in the future, as will the percentage recovered from small business customers.

Figure 12 Tariff components by tariff class for 2019-20

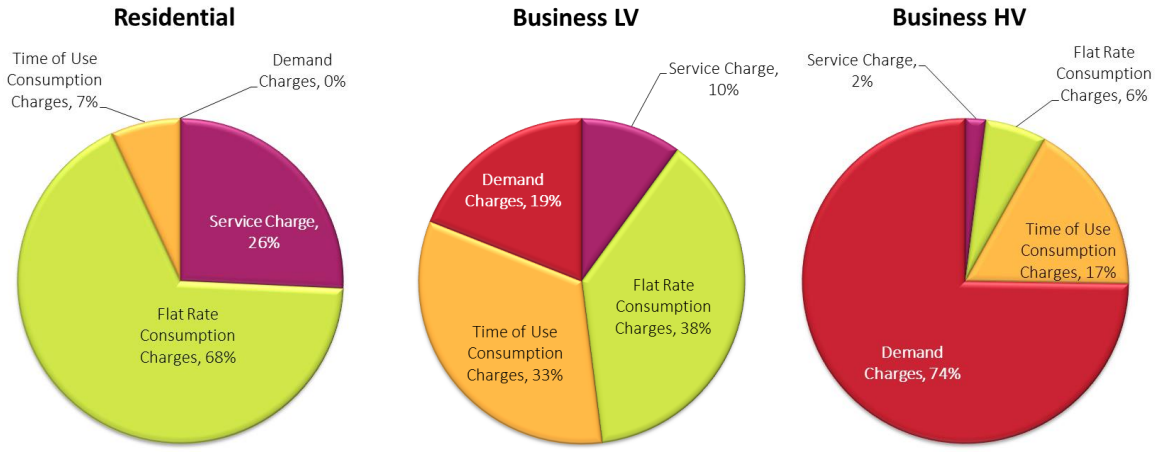
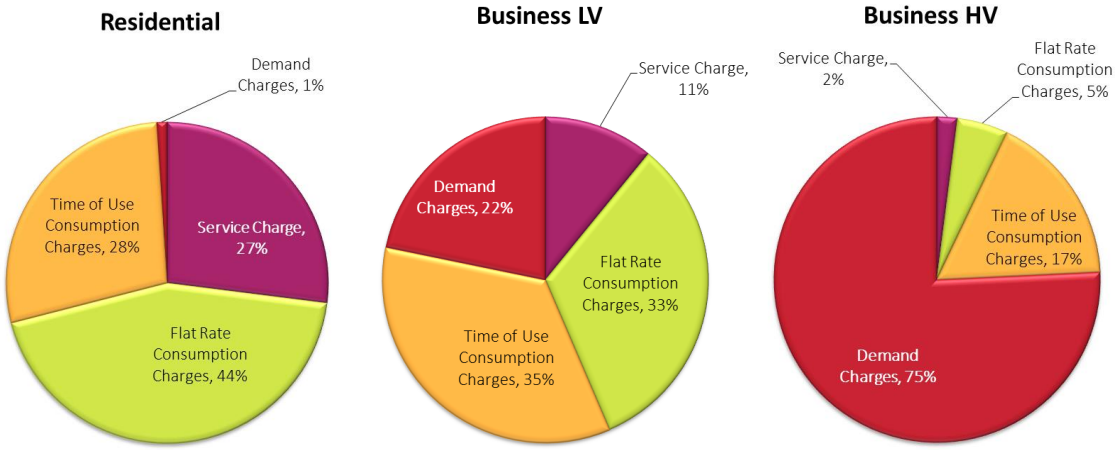
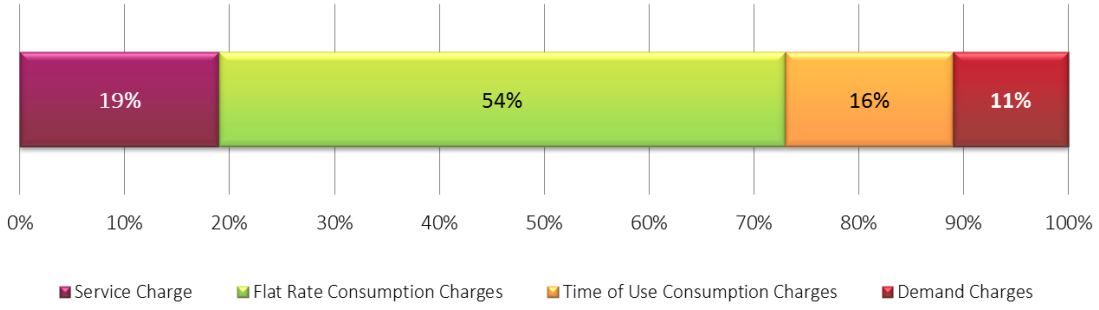


Figure 13 Tariff components by tariff class for 2023-24



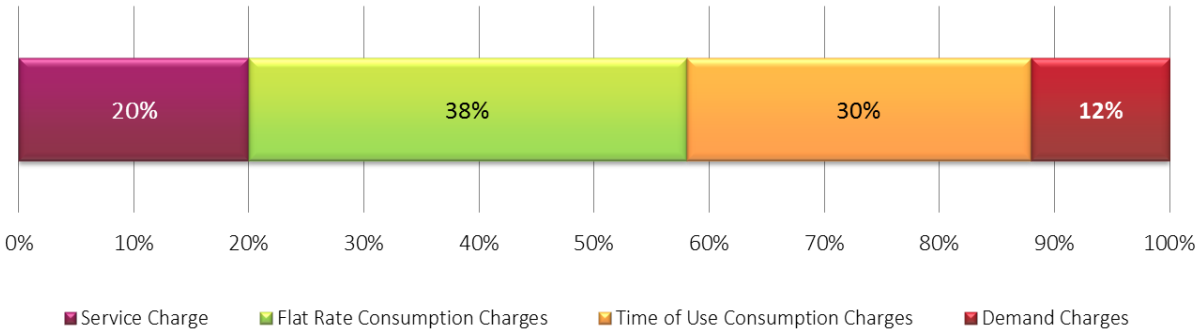
The figure below breaks down the extent to which the different types of tariff components are expected to recover the cost of providing and operating the distribution network in 2019-20, across all tariff classes.

Figure 14 Revenue recovery from all our customers by tariff component for 2019-20



Over time, as shown in the figure below, we expect the amount of revenue to be recovered via demand based charges to increase as more customers opt in to demand based tariffs, and as the pricing reform transition continues. This includes the long-term transition to more demand-based network charging to retailers.

Figure 15 Revenue recovery from all our customers by tariff component for 2023-24



5 Assignment to network tariff classes

Customers are assigned to at least one of the following tariff classes:

- high voltage (HV);
- irrigation;
- large low voltage (LV);
- small low voltage (LV);
- residential;
- uncontrolled energy;
- controlled energy;
- unmetered;
- street lighting; and
- individual tariff calculation (ITC).

Because we have multiple tariff classes, and multiple tariffs within each tariff class, we must have a series of eligibility criteria that determine which tariffs apply to a given type of customer or from which range of tariffs they may choose (through their retailer). The following sections set out the policies and procedures that we adhere to in assigning customers to tariff classes for both standard control and alternative control services.

Assignment of existing customers to tariff classes

A customer will be taken to be assigned to the tariff class to which we were charging that customer immediately prior to 1 July of any given regulatory year if they:

- were our customer prior to 1 July that year; and
- continue to be our customer as at 1 July.

Assignment of new customers to a tariff class

If we become aware that a business, organisation or person is to become our customer, then we determine the tariff class to which the new customer will be assigned by considering one or more of the following factors:

- the forecast/expected nature and extent of the customer's usage, or the typical usage by customers in the same customer class;
- the nature of the customer's connection to the network; and
- whether remotely read interval metering or other similar advanced metering technology has been installed at the customer's premises.

In addition to the above requirements, when assigning a customer to a tariff class we ensure that:

- customers with similar connection and usage profiles are treated equally; and
- customers who have micro embedded generation facilities are not treated any more or less favourably than customers with similar load profiles without such facilities.

Assigning a network tariff to a new connection

The process for assigning a network tariff to a new connection is usually instigated by the receipt of a transaction from the metering provider appointed by the customer's retailer to install the customer's meter. That transaction will detail the new meters and registers for the new National Metering Identifier (NMI) assigned to the connection, along with the customer's requested network tariff(s).

For each NMI TasNetworks validates the customer's eligibility for assignment to the requested tariff(s) against the following set of attributes:

- connection type (high or low voltage)
- metering type (basic, interval or unmetered)
- nominated connection purpose (residential, business, irrigation etc.)

In the case of a high voltage business customer that either the TAS15 or TASSDM network tariff has been nominated, TasNetworks also takes into account the expected maximum demand of the connection when assessing the customer's eligibility to be assigned to the requested network tariff.

If the customer is found not to be eligible for the network tariff nominated by the metering provider, TasNetworks will assign the customer to the alternative tariff deemed the most appropriate based on the above criteria, potentially in consultation with the customer or their retailer.

Reassignment of existing customers to another tariff class

From time to time, TasNetworks may need to reassign an existing customer to a different network tariff class. We may reassign a customer to another tariff class if the existing customer's load characteristics or connection characteristics (or both) change such that it is no longer appropriate for that customer to be assigned to their current tariff class. Should a customer no longer have the same, or materially similar, load or connection characteristics as other customers in the customer's existing tariff class, we may also reassign that customer to another tariff class. In cases where a tariff class is abolished, we will notify the affected customers of this and reassign them to a new tariff class.

Reassigning an existing customer to a different network tariff

As part of the ongoing process of network tariff reform, it may also be necessary for TasNetworks to reassign customers to a different network tariff(s). As noted elsewhere in this TSES and our TSS for the 2019 –2024 regulatory period, select residential and LV business customers will be reassigned by default to a different network tariff 12 months after a qualifying trigger event has occurred. The default assignment applies to new and 'replacement' residential and LV business customers that:

- move into newly connected premises from 1 July 2019;
- upgrade their connection to the distribution network from 1 July 2019 (e.g. by changing from a single phase to multi-phase power supply);

- modify their connection to the distribution network from 1 July 2019 (e.g. through the installation of solar panels); or
- have their existing accumulation meter replaced with an advanced meter (e.g. when the existing meter reaches the end of its service life or fails).

Under the AER's direction, however, the default assignment of these customers to a time of use consumption based network tariff will be delayed by 12 months from the 'trigger' date (e.g. installation of the meter). The delay is intended to enable the collection of time of use metering data, which can be used to inform the customer's choice about the retail and, by association, network tariffs they want to be supplied under in the future.

In the case of a new dwelling or business premises, the delay process means that the network tariffs initially requested by the customer's retailer will apply to that customer for 12 months, at which point TasNetworks will reassign the customer's installation to the relevant default tariff.

In the case of a customer that upgrades their connection, modifies their connection or has their meter replaced, the network tariffs applying to the customer's installation before the change will continue to apply for another 12 months after the change, at which point TasNetworks will then reassign the customer's installation to the relevant default tariff.

Once assigned to the applicable default network tariff, that tariff will continue to apply unless the customer for the installation in question elects to opt-out, through their retailer, to a different network tariff.

Affected customers may also choose to exercise their choice of network tariff before the 12 month delay period ends, which means that the automatic reassignment to the default tariff would not be processed. Similarly, customers who are initially assigned to what is the default tariff for that sort of customer, such as the occupant of a new home who elects to be supplied under a time of use tariff at the outset, will also not be subject to the default assignment process after 12 months have elapsed.

The default time of use consumption based network tariffs to be applied to residential and LV business during the 2019-24 regulatory period are, respectively, the Residential low voltage time of use network tariff (TAS93) and the Business low voltage time of use network tariff (TAS94).

While the default tariffs applying in the above circumstances are time of use consumption based tariffs, customers who choose to be assigned to a time of use demand based network tariff at any point in the 12 month delay period after a trigger event for tariff assignment by default will not be reassigned to the default consumption based alternative. This is also the case for LV business customers who, through their retailer, opt-in to an alternative time of use consumption tariff during the delay period.

At the end of the 12 month delay period applying to each installation, TasNetworks will commence charging the customer's retailer for the customer's use of the network using a ToU consumption network tariff. It will then be up to the retailer as to whether they choose to pass those time of use network pricing signals on to the customer via their retail billing process.

Once assigned to a time of use consumption network tariff, for a customer to be assigned to a different network tariff, they will have to opt for a retail tariff through their retailer that incorporates a different network tariff, such as a ToU demand tariff, if that's what they prefer.

In addition to customers who would otherwise qualify for automatic assignment to a default time of use consumption network tariff but who are initially assigned or opt-in to cost reflective network tariffs before the 12 month delay period has elapsed, there are a number of circumstances in which the default application of a time of use consumption tariff will not be carried out. These include:

- customers occupying premises that are supplied under a Pay As You Go network tariff; and
- customer installations that are already assigned to controlled load tariffs.

Lastly, TasNetworks' billing systems do not track changes in the customer associated with each National Metering Identifier (NMI) over time. This means that the delayed application of a time of use consumption tariff as the default residential and small business network tariff will be effected on a per installation or NMI basis. Therefore, a change in the retail customer associated with an installation which is subject to a 12 month delayed default tariff assignment will not cause the delay period to be reset or extended, or reassignment to the default network tariff to be deferred.

Any customer moving into a property part way through a 12 month delay before reassignment to a default network tariff will only remain on the network tariffs currently assigned to that installation for the balance of the 12 month delay period, unless they choose to opt-in to another network tariff(s) before the tariff reassignment is to take place.

Customers may also seek a network tariff reassignment. To do so, they must:

(a) be eligible for tariff reassignment;

(b) provide TasNetworks with advance written notification of their request to change the network tariff; and

(c) pay any applicable tariff alteration fee.[12]

Except in the case of customers with a separate connection agreement with TasNetworks, tariff reassignment requests must be made through the customer's retailer, in which case the retailer notifies TasNetworks via a Service Order Request.

In the case of customers with a separate connection agreement with TasNetworks, the customer's retailer will usually provide only energy-related commercial services, including billing, meaning that the customer will advise TasNetworks directly of their preferred network tariff, rather than their retailer.

Tariff reassignments are not made retrospectively.

Requests for tariff reassignment are evaluated using the same eligibility criteria used to assess network tariffs requested for new connections.

[12] TasNetworks' fee-based services tariffs for tariff alterations are discussed in TasNetworks' *Ancillary Services – Fee Based Services Application and Price Guide*.

The impact of tariff assignment and reassignment on customers

The assignment or reassignment of a residential or small business customer to a particular network tariff does not necessarily translate to a change in the retail electricity tariff applying to that customer. This is because, rather than billing customers directly, TasNetworks – like network operators elsewhere in Australia – charges electricity retailers for their customers' access to and use of the network.

The assignment or reassignment of a customer to a network tariff determines what we charge retailers when we bill them for their customers' connections and the delivery of electricity. The tariff component and prices which most customers see on their bills, however, reflect how their retailer packages its input costs for particular customers, including energy costs, the cost of providing retail services – and network charges.

Reassigning a customer to different network tariff may not, therefore, change the retail tariff applying to the customer, unless the retailer offers a retail tariff underpinned by that network tariff which it can apply to the customer. This is one of the reasons that we are working closely with retailers to encourage them to base some of their retail tariffs for residential and small business customers on our newer time of use consumption and demand based network tariffs. This will ensure that our more cost reflective network price signals actually reach end users.

For example, Aurora Energy has been offering retail standing offers to residential and small business customers since July 2016 which are based on our consumption based time of use network tariffs (TAS93 and TAS94 respectively), and since then, 4,000 residential customers and 5,000 small businesses have made the switch to these two retail tariffs. This means that there are now 9,000 low voltage customers on more cost reflective network pricing than there were two years ago.

Previously, customers who were reassigned to another network tariff were required to remain on the 'new' tariff for a minimum of 12 months, unless otherwise agreed with TasNetworks. This requirement will no longer apply from 1 July 2019, except in the case of high voltage customers, who must still – unless otherwise agreed with TasNetworks – remain on their network tariff of choice for a minimum of 12 months after reassignment. This condition prevents customers from taking advantage of seasonal variations in both their load profile and network tariffs by changing network tariffs in order to avoid contributing towards the cost of the network in a way that reflects their usage over a full 12-month cycle.

Objections to proposed assignments and reassignments

Working in conjunction with a customer's retailer, we will notify customers in writing of the tariff class to which they have been assigned or reassigned, prior to the assignment or reassignment occurring. Any notification will inform the customer that they may request further information from us and that they may object to the proposed assignment or reassignment.

If we receive a request for further information about a tariff assignment or reassignment from a customer, then we will provide such information unless we consider the requested information is confidential.

The notices we provide to customers about tariff assignments or reassignments will:

- include a copy of our internal procedures for reviewing objections and a link to where they can find such information on our website;
- inform the customer that if an objection is not resolved to their satisfaction then they are entitled to escalate the matter to the Energy Ombudsman Tasmania; and
- advise the customer that if their objection is not resolved to their satisfaction after escalating the matter to the Energy Ombudsman Tasmania, then they are entitled to seek a decision by the AER via the dispute resolution process available under Part 10 of the National Electricity Law.

If a customer makes an objection to us about a proposed tariff assignment or reassignment, we will conduct a reassessment of the customer's circumstances against the criteria used to assign customers to a tariff class (see above), and notify the customer in writing of our decision and the reasons for that decision.

Assessing and reviewing the basis on which a customer is charged

There are three ways a customer can be assigned to a tariff which are explained below:

1. The customer is initially assigned to a tariff based on the nature of their use, connection and metering characteristics.
2. We may initiate a reassignment if a customer's nature of use, connection or metering characteristics change.
3. A customer's retailer can request a change in tariff. The trigger for such a request is often a customer requesting a change to their retail tariff (e.g. the customer requests a change to a demand based time of use retail tariff).

TasNetworks initiated reassignment

We review the assignment of customers to our tariff classes as part of the annual process of developing tariffs for regulatory approval. We have set procedures and criteria[13] to determine when it may be appropriate for a customer to be reassigned to a different tariff or tariff class, or where the basis of the customer's demand charges should be amended. This change is usually the result of changes in the customer's energy consumption, expected maximum demand or connection characteristics. These procedures ensure the customer's underlying tariff is appropriate to their assumed usage or load profile.

Retailer initiated reassignment

In addition to this annual review process, customers (or a customer's retailer) can request that we review and change a tariff in the event of variation to the customer's usage or load profile. Provided we agree to a change in tariff, this change can take effect during a regulatory year. We use the procedures and criteria discussed above to determine if it is appropriate to change the tariff assigned to a customer.

[13] See our Network tariff application and price guide

The charging parameters within our tariffs do not alter as the customer's usage or load profile varies. Should a customer's usage or load profile vary, the customer may either manage their usage in response to the price signals inherent in the tariff, or request to be reassigned to an alternative tariff where applicable.

This provides an effective system for assessing and reviewing the basis on which a customer is charged.

For some classes of customer, the installation of an advanced meter or a change in a customer's connection at the instigation of a retailer can also trigger the assignment of a customer to a particular network tariff, independent of the retail offer the customer is supplied under.

Assignment process

The assignment processes are also discussed in the *Network Tariff Application and Price Guide*; *Metering Services Application and Price Guide*; *Public Lighting Application and Price Guide*; and *Ancillary Services Application and Price Guide*.

These guides are updated annually to reflect any changes to our tariffs and charges approved by the AER through the annual pricing proposal process, and are available on our website at:

http://www.tasnetworks.com.au/our-network/network-revenue-pricing/distribution-fees-and-tariffs

6 Tariff classes, structures and charging parameters for alternative control services

What are alternative control services?

The term 'alternative control services' refers to services where the costs – and the associated benefits from the service – can be directly attributed to a particular customer (for example, where a customer requests a service). For these services, instead of setting a revenue cap, the AER caps the prices that can be charged or sets the input costs that can be used by TasNetworks to quote jobs. TasNetworks' alternative control services include regulated metering services for small customers[14], ancillary services (quoted services and fee based services), and public lighting.

Further information regarding our Alternative Control Service offerings is provided in our *Alternative Control Service Descriptions Paper (TN094)*, which was appended as an attachment to our Regulatory Proposal submitted to the AER in January 2018.

Tariff classes

Our tariff classes for alternative control services reflect the nature of the services provided, with similar services being grouped together. This approach is economically efficient, in that the tariffs reflect the cost of the services and the characteristics of the customer using the service do not impact the cost of the service. The table below defines each of our tariff classes for alternative control services, which are consistent with those approved by the AER for our 2017-19 TSS.

Table 7 Tariff classes for alternative control services

Tariff class	Definition
Metering	Metering services are those services provided with respect to the provision, installation and maintenance of standard meters installed prior to December 2017 and the associated services provided to retail customers. This includes the metering services provided to small customers (using type 6 and type 7 meters) in our role as metering provider and meter data provider.
Public lighting	Public lighting services are those services for: • the provision, construction and maintenance of our public lighting assets; and • the maintenance of public lighting assets owned by customers (contract lighting). This includes the provision, construction and maintenance of new and/or emerging public lighting technology services.

[14] Type 6 and 7 meters

Tariff class	Definition
Ancillary services - Fee based services *These services include for example, basic connection services*	Fee based services are provided for the benefit of a single customer rather than uniformly supplied to all customers. These services are provided at the request of a third party and are typically initiated by way of a service request received from a retailer.
Ancillary services - Quoted services *Includes for example, asset movements at a customer's request*	Quoted (non-standard) services are those services where the nature and scope of the service is specific to individual customer's needs, and varies from customer to customer. Consequently, the cost of providing the services cannot be estimated without first knowing the customer's specific requirements. It is not possible, therefore, to set a generic total fixed fee in advance for these services. Requests for quoted services may be received from a customer or from a retailer on behalf of a customer.

Further information on the tariffs and charges for each of these tariff classes is provided in the following sections.

Metering, public lighting, and ancillary services

Our approach to setting the tariffs for the 2019-24 regulatory period is consistent across metering, public lighting, and ancillary services – fee based services and quoted services.

Metering services overview

Metering services are provided by TasNetworks to all customers with Type 6 metering installations and form a component of the charges we levy. The charges for metering service are split between a capital charge which recovers the cost of our regulated metering fleet and a non-capital charge, which covers the cost of reading the meter and collecting the metering data.

The AER has determined that the provision of metering services will be classified in accordance with the type of meter and the functionality that it provides, and has assigned these meters into different meter classes.

Since 1 December 2017, the nature of TasNetworks' involvement in the provision of meters for residential and small business customers has changed. The change is a result of alterations made by the AEMC to the regulatory framework applying to metering services.

As a result of those changes, from 1 December 2017 each customer's retailer is responsible (through their chosen Metering Co-ordinator) for providing and maintaining advanced meters on a new and replacement basis. TasNetworks will continue to support the existing fleet of Type 6 meters during the 2019-24 TSS period, but will not be involved with the provision or reading of newly installed advanced meters.

With all new meters supplied to residential and small business customers now being advanced meters supplied by their retailer, TasNetworks' existing fleet of Type 6 accumulation meters will prematurely reach the end of their life due to technical obsolescence as a result of regulatory change. While it may take 2 – 3 regulatory periods before most customers in Tasmania have advanced meters, many existing meters are expected to be retired in the coming regulatory period, exposing TasNetworks to asset stranding risk.

The use of accelerated depreciation has merit in the case of specific assets that prematurely reach the end of their life due to technical obsolescence or regulatory asset stranding. On that basis, TasNetworks' initial regulatory proposal for the 2019-24 regulatory period proposed to fully recoup its unrecovered regulated metering capital costs by June 2024, in order to more closely align the recovery of that cost with the forecast use of those meters. This was to be achieved by applying an accelerated rate of depreciation when deriving the capital charges for metering services. This would not have impacted on non-capital metering charges.

While this would have increased metering capital charges during the period of accelerated depreciation, customers would have faced no metering capital charges for any Type 6 accumulation meters remaining in use at the end of the 2019-24 regulatory period. In this way, the costs of our existing metering assets would have been recovered over a period that more closely reflects their shortened economic life.

TasNetworks proposal did not, however, receive the support of a number of key customer advocates, which was a prerequisite of the AER viewing such an approach favourably. Some stakeholders even opposed the recovery of the cost of the meters at all, even though TasNetworks' supplied the meters as a result of its obligation to supply and there is no suggestion that the current meters represent over-investment on the part of TasNetworks or its predecessors.

The rejection of TasNetworks' proposal to accelerate the depreciation of its fleet of accumulation meters means that the capital cost of those meters will now continue to be recovered from customers until at least 2034, on the basis of the pre-existing depreciation schedule for metering assets. This means that, while customers who replace their Type 6 accumulation meter with an advanced meter before then will avoid paying the metering charge which recovers the operating costs associated with the now retired meter, they will continue to pay a capital metering charge for the meter that has been retired until at least 2034 – in addition to whatever metering charges their retailer applies to their advanced meter. TasNetworks is still of the view that there are benefits for customers and TasNetworks in accelerating the recovery of the capital cost of the Type 6 meters which will be superseded by advanced meters in the coming regulatory periods. TasNetworks intends, therefore, to re-engage with its customers over the coming regulatory period, with a view to putting forward a new proposal for the application of accelerated depreciation in the 2024-29 regulatory period which has the support of customers.

The metering tariffs we are proposing to offer our customers and the indicative charges are set out in the Indicative Pricing Schedule in Appendix B (*Indicative Prices for 2019 – 2024*) of TasNetworks' TSS for the 2019-24 regulatory period.

Public lighting services overview

Only the alternative control service component of public lighting tariffs is discussed in this section. This is because the final tariff for the provision of public lighting services comprises a charge for the provision of a standard control service as well as an alternative control service. The delivery of electricity to public lights requires the use of the distribution network, which is a standard control service, while the provision, construction and maintenance of the lighting asset is classified by the AER as an alternative control service.

The term "Public lighting services" applies to:

- the provision, construction, and maintenance of our public lighting assets; and
- the maintenance of public lighting assets owned by customers (contract lighting).

This includes the provision, construction, and maintenance of new/emerging public lighting technology.

Public lighting services exclude:

- the alteration and relocation of public lighting assets, which are provided on an ancillary service basis (i.e. as a quoted service); and
- the installation of contract lights, which is undertaken as an ancillary service (quoted service).

The provision of public lighting services will be categorised according to the type of lighting fixture that is provided and whether we own that light.

Those lights that are owned by us are referred to as public lighting, while lights that are owned by the customer are referred to as contract lighting.

Since commencing operations in July 2014, TasNetworks' public lighting service arrangements and pricing have largely been a continuation of agreements and charges that were previously offered by Aurora Energy in its capacity as a DNSP. At the time of writing we are in our fifth year of operations and, as such, our level of understanding of the costs associated with the provision of all services, including public lighting, has matured.

TasNetworks' first regulatory proposal, for the 2017-19 regulatory period, was submitted to the AER in January 2016, and largely reflected a continuation of the status quo in relation to public lighting. Since then, thorough analysis of the available asset and expenditure data by TasNetworks, as well as a review of the time and resources being expended by TasNetworks on the delivery of public lighting services, has revealed that the public lighting prices currently on offer fall significantly short of full cost recovery. Accordingly, to be cost reflective, the prices charged for public lighting services need to increase significantly.

Introducing a significant step change in prices would, however, be inconsistent with our strategy of providing predictable and sustainable prices for our customers. With this in mind, in its initial regulatory proposal for the 2019-24 regulatory period, TasNetworks proposed a gradual glide path for public lighting prices spanning the 2019-24 and 2024-29 regulatory periods, to transition public lighting to fully cost reflective pricing. TasNetworks' proposal was to increase public lighting prices over a ten year period at a rate of CPI plus 2.5 per cent.

The proposed delay in the transition to full cost reflectivity would have resulted in a significant amount of revenue foregone during the transitional period. But as part of the transition to cost reflective public lighting charges, we also proposed a reduction in shareholder returns of approximately $12 million over the forthcoming regulatory period (in $2018-19 terms), meaning that the (diminishing) under-recovery of public lighting costs by TasNetworks would not have been passed on to other customers.

The main driver of the under-recovery of public lighting costs identified by TasNetworks is the under-allocation of overheads to public lighting services. However, the application of a greater share of overheads to public lighting and the resultant price increases put forward in our initial regulatory proposal, gradual as they were, was not supported by a number of stakeholders.

In its draft decision the AER rejected TasNetworks' proposal to increase public lighting prices at a rate of CPI plus 2.5 per cent per annum, driven by concerns about the allocation of overheads proposed by TasNetworks, which would have been significantly higher than the level of overheads applied to public lighting in regulatory determinations for other distribution networks. There was also an expectation that the level of overheads applied to public lighting, which is a capital intensive service, could be expected to be lower than the level of overheads allocated to other alternative control services, such as fee based services. The AER did, however, accept our labour rates and luminaire input costs.

The AER's draft decision reduced TasNetworks' recovery of public lighting costs to a level slightly above the current period (2017-19), but well below our proposed price-path for the 2019-24 regulatory period.

While we welcome the AER's acceptance of our labour rates and luminaire input costs, we do not accept the AER's benchmarking approach to setting an allowance for our overhead costs. One of the reasons for this is that TasNetworks classifies some costs as 'overheads' that other networks appear to classify as 'direct' costs, meaning that we seem to have higher overheads than some of our peers for a given level of total public lighting costs. Benchmarking overheads as a percentage of direct costs is also problematic because it focuses on overheads as a proportion of total costs and distracts from their level. It also loses sight of the fact that TasNetworks is a relatively low cost public light provider, in terms of the annual cost per light.

In TasNetworks' revised Regulatory Proposal, we have provided further information to explain our overhead costs and the resulting public lighting charges. Nevertheless, we are conscious of the importance of addressing our customers' concerns regarding affordability.

Therefore, consistent with our original Proposal, we are proposing to transition our public lighting prices to be fully cost reflective over a ten-year period, by implementing a gradual glide path for public lighting prices spanning the 2019-24 and 2024-29 regulatory periods. This approach will see, for example, (alternative control) public lighting charges for an LED14W light increase by about 15 per cent in 2019-20 and then at a rate of CPI plus about 1.7 per cent in each of the next four years.

We consider that our revised public lighting charges address the concerns raised regarding the increases in charges that were initially put forward by TasNetworks, while reasonably reflecting the efficient costs of providing these services.

The public lighting services we are proposing to offer our customers and indicative charges are set out in the Indicative Pricing Schedule in Appendix B of the 2019-24 TSS.

Ancillary services – Fee based services overview

These services are provided upon request and are typically initiated by way of a service request from a retailer. The fee-based services we propose to provide in the forthcoming regulatory period include but are not limited to:

- energisation;
- de-energisation;
- re-energisation;
- meter testing;
- basic connections;
- supply abolishment – removal of meters and service connection; and
- other miscellaneous services.

In the forthcoming regulatory period, the Power of Choice metering reforms mean that meter alterations and renewable energy connections will no longer be offered as a service.

We are proposing to include under connection services an additional service for providing temporary disconnection and reconnection in response to a retailer's request for an outage. The following additional services will also appear as 'miscellaneous services', to reflect the AER's updated Framework and Approach paper[15]:

- creation of National Metering Identifier (NMI);
- statutory right – access prevented;
- network tariff change (back office);
- emergency maintenance contestable meters;
- meter recovery and disposal; and
- the fitment of 'tiger tails'.

A full description of our fee-based services is provided in the *Alternative Control Services Descriptors Paper (TN094)* and indicative charges are set out in the Indicative Pricing Schedule in Appendix B of the 2019-24 TSS.

[15] AER, Framework and approach, TasNetworks electricity transmission and distribution, Regulatory control period commencing 1 July 2019, July 2017.

Tariff development process

Metering, public lighting, and ancillary services' price caps are calculated for each year of the regulatory period using the price control mechanism formula approved by the AER for our 2019-24 revenue determination. The formula which the AER approved for our 2017-19 TSS and which we are proposing to retain is as follows:

$$\bar{p}_t^i = \bar{p}_{t-1}^i \times (1 + CPI_t) \times (1 - X_t^i) + A_t^i$$

Table 8 details the price cap parameters that apply when calculating the tariffs.

Table 8 Price cap calculation methodology

Component	Comment
$\bar{p}_t^i$	The cap on the price of service i in year t
p_t^i	The price of service i in year t. The initial value is to be decided in the determination
$\bar{p}_{t-1}^i$	The cap on the price of service i in year t-1
t	The regulatory year
ΔCPI_t	The annual percentage change in the ABS consumer price index (CPI) for All Groups, Weighted average of Eight Capital Cities from the December quarter in year t-2 to the December quarter in year t-1.
X_t^i	The X-factor for service i in year t
A_t^i	The sum of any adjustments for service I in year t

This means prices move from year to year by indexing the previous year's prices by inflation and other adjustments including the X-factor.

Indicative prices for alternative control services

Indicative prices for the 2019-24 regulatory period have been calculated using the price cap formula above for each year. Indicative prices for metering, public lighting and fee based services' tariffs for 2019-24 are set out in the Indicative Pricing Schedule in Appendix B of TasNetworks' 2019-24 TSS.

The Indicative Pricing Schedule is revised and submitted with the Pricing Proposal each year.

Tariff structures and parameters

The following table details the tariff structures for metering services, public lighting and ancillary services - fee based services.

Table 9 Tariff structures for alternative control services

Service	Recovery
Metering services	Recovered through a daily capital charge and operating charge, reflective of the nature of the costs which are fixed for each customer (that is, the customer has little ability to act to mitigate the cost).
Public lighting	Recovered through a fixed daily charge, reflecting the fixed nature of the costs of providing, replacing and maintaining these assets.
Ancillary services – fee based services	Recovered through a fixed charge, charged on the basis of service provision. This is cost reflective as the costs of these type of jobs can be easily assigned to the customer for which they are being provided, and the cost per job is reasonably homogenous.

Ancillary services – Quoted services

Requests for quoted (non-standard) services may be received from a customer or retailer on behalf of a customer. These services cannot be costed in advance with a reasonable degree of certainty.

We provide a range of non-standard services on a quoted basis including, but not limited to:

- removal or relocation of our assets at a customer's or third party request;
- services that are provided at a higher standard than the standard service, due to a customer's request for us to do so;
- services that are provided through a non-standard process at a customer's request (for example, where more frequent meter reading is required);
- networks safety services;
- customer vegetation defect works;
- connection application services (other than those provided as ancillary services - fee based services);
- design work for a new connection;
- access permits, oversight and facilitation;
- notices of arrangement;
- network related property services;
- planned Interruption – customer requested; and
- provision of training to third parties for network related access.

Charging arrangements for quoted services

The price caps for providing quoted services are built up based on standard cost inputs into the particular service, that is, labour time and rates, materials, contractors and other costs, with overheads apportioned to the work. This cost build up reflects the steps required to set prices for the diverse range of activities provided under quoted services, and is reflected in the following formula we propose to apply:

Price = Labour + Contractor Services + Materials + Margin

The following table details the price cap parameters that apply when calculating the tariffs.

Table 10 Price cap calculation methodology

Component	Comment
Labour	Consists of all labour costs directly incurred in the provision of the service which may include labour on-cost, fleet on-costs and overhead. Labour is escalated annually by the formula provided below.
Contractor services	Reflects all costs associated with the use of external labour including overheads and any direct costs incurred. The contracted services charge applies the rates under existing contractual arrangements. Direct costs incurred are passed on to the customer.
Materials	Reflects the cost of materials directly incurred in the provision of the service, material storage and logistics on-costs and overheads.
Margin	Margin is an amount equal to 5.86 per cent[16] of the total costs of labour, contractor services and materials.

We also calculate price caps for the labour rates applying to quoted services in accordance with a formula given by the AER:

$(1+ \Delta CPI_t)(1 - X^i_t)$

The following table provides details of the labour rate cap calculations that have been used to prepare quoted services tariffs.

Table 11 Price cap on labour rate

Component	Comment
ΔCPI	The annual percentage change in the ABS CPI All Groups, Weighted Average of Eight Capital Cities from the December quarter in year t-2 to the December quarter in year t-1.
X^i_t	The X-factor for service I in year t.

[16] Aligned with our proposed distribution Rate of Return

This means prices move from year to year by indexing the previous year's component prices for inflation and for the X-factor.

Indicative prices for quoted services

The labour rates used in determining quoted services are set out in the Indicative Pricing Schedule in Appendix B of the TSS for 2019-24. The labour rates and the formula for application of quoted services are the only element that is regulated. Other costs are passed through to customers at cost, and a margin is added to the total cost of the service delivery. The inclusion of a margin is consistent with the principle of competitive neutrality, which is that publicly owned businesses should not enjoy a competitive advantage simply because they are publicly owned.

While many of our quoted services are not currently subject to competition, this situation may change over time. The inclusion of a modest margin will assist in promoting the development of competition and ensure fair pricing across all our services.

This approach has been taken because we are unable to provide a full range of indicative prices for quoted services, as by their nature these services are dependent on a customer's specific requirements and cost inputs may vary significantly. It is not feasible, therefore, to set a generic total fixed fee in advance for these services.

7 Further information

Supporting documents

We have published the PRWG materials and consultation documents as part of the development of this Tariff Structure Statement. These documents, which are available on our website, include:

- Consultation paper – Demand based network tariffs – offering a new choice (September 2015)
- Consultation paper – Improving the way we price our network services (October 2015)
- Network Planning Workshop Minutes (November 2016)
- TasNetworks Pricing Reform Working Group Presentation and Minutes (April 2017)
- Indicative Tariffs and Customer Charge Impacts 2019-24, Pricing Reform Working Group Presentation and Minutes (August 2017)
- TasNetworks Pricing Reform Working Group Presentation and Minutes (November 2017)
- TasNetworks Pricing Reform Working Group Presentation and Minutes (July 2018)

Application and Price Guides

Each annual Pricing Proposal is supported by a range of guides designed to help external parties, particularly customers and retailers, to understand the development and application of charges for the services we provide. Specifically, the following supports our annual Pricing Proposals:

- Network Tariff Application and Price Guide;
- Metering Services Application and Price Guide;
- Public Lighting Application and Price Guide; and
- Ancillary Services Application and Price Guide.

The guides are updated annually to reflect any changes to our tariffs, including changes to our processes for assigning customers to tariffs.

Contact details

If you are uncertain about the network pricing process or the pricing arrangements that may be applicable to your circumstances you are encouraged to contact us at:

Leader Regulation
PO Box 606
Moonah TAS 7009
E-mail: revenue.reset@tasnetworks.com.au

Appendix A: Network tariffs for 2019-24

The table below provides a description of the existing and new tariffs.

Table A1: Network tariffs for Standard Control Services

<table>
<tr><th>Network Tariff class</th><th>Network Tariff</th><th>Description</th></tr>
<tr><td>High Voltage</td><td>Business High Voltage kVA Specified Demand (TASSDM)</td><td>
This network tariff is for installations taking supply at high voltage, with an expected any time maximum demand (ATMD) of less than 2 megaVolt-Amperes (MVA). There are no restrictions on the use of the supply (i.e. the supply may be used for general power, heating, water heating, etc.).

The customer must supply their own transformers and switchgear for installations connected on this network tariff.

No later than two months prior to the commencement of each financial year, customers on this network tariff are required to reach an agreement on the level of specified demand which will apply to their electrical installation. Once agreed, this value is used in the calculation of demand charges for the following financial year.

This network tariff may not be used in conjunction with any other network tariff offering.

This network tariff structure includes seasonal consumption (kWh) time of use charging components, periods as shown below.
<table>
<tr><th>Time periods</th><th>Summer
(1 Oct – 31 Mar)</th><th>Winter
(1 Apr – 30 Sep)</th></tr>
<tr><td>Week Day (07:00 – 22:00)
(Monday – Friday)</td><td>Shoulder</td><td>Peak</td></tr>
<tr><td>Weekend Day (07:00 – 22:00)
(Saturday and Sunday)</td><td>Off-peak</td><td>Shoulder</td></tr>
<tr><td>Any Day (22:00 – 24:00)
(Monday – Sunday)</td><td>Off-peak</td><td>Off-peak</td></tr>
<tr><td>Any Day (0:00 – 07:00)
(Monday – Sunday)</td><td>Off-peak</td><td>Off-peak</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Network Tariff class</th><th>Network Tariff</th><th>Description</th></tr>
<tr><td></td><td>Business High Voltage kVA Specified Demand >2MVA
(TAS15)</td><td>
This network tariff applies to customers with an ATMD in excess of 2.0 MVA that are supplied directly from our distribution network with none of our assets beyond the connection point.
The customer must supply its own transformers and switchgear for HV installations connected on this network tariff.
No later than two months prior to the commencement of a financial year, customers on this network tariff are required to reach an agreement about the “Specified Demand” for their electrical installation. Once agreed this value is used in the calculation of network use of system charges for the following financial year.
A site connected to our distribution network with this network tariff is not eligible for any other network tariff.
This network tariff structure includes seasonal consumption (kWh) time of use charging components, periods as shown below.
<table>
<tr><th>Time periods</th><th>Summer
(1 Oct – 31 Mar)</th><th>Winter
(1 Apr – 30 Sep)</th></tr>
<tr><td>Week Day (07:00 – 22:00)
(Monday – Friday)</td><td>Shoulder</td><td>Peak</td></tr>
<tr><td>Weekend Day (07:00 – 22:00)
(Saturday and Sunday)</td><td>Off-peak</td><td>Shoulder</td></tr>
<tr><td>Any Day (22:00 – 24:00)
(Monday – Sunday)</td><td>Off-peak</td><td>Off-peak</td></tr>
<tr><td>Any Day (0:00 – 07:00)
(Monday – Sunday)</td><td>Off-peak</td><td>Off-peak</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Network Tariff class</th><th>Network Tariff</th><th>Description</th></tr>
<tr><td>Irrigation</td><td>Irrigation Low Voltage Time of Use (TAS75)</td><td>This low voltage network tariff is for primary producers' business installations that are used primarily for the irrigation of crops (including pasture) and classified as ANZSIC class 01.

This network tariff may not be used in conjunction with any other network tariff.

This network tariff structure includes seasonal consumption (kWh) time of use charging components, periods as shown below.

<table>
<tr><th>Time periods</th><th>Summer
(1 Oct – 31 Mar)</th><th>Winter
(1 Apr – 30 Sep)</th></tr>
<tr><td>Week Day (07:00 – 22:00)
(Monday – Friday)</td><td>Shoulder</td><td>Peak</td></tr>
<tr><td>Weekend Day (07:00 – 22:00)
(Saturday and Sunday)</td><td>Off-peak</td><td>Shoulder</td></tr>
<tr><td>Any Day (22:00 – 24:00)
(Monday – Sunday)</td><td>Off-peak</td><td>Off-peak</td></tr>
<tr><td>Any Day (0:00 – 07:00)
(Monday – Sunday)</td><td>Off-peak</td><td>Off-peak</td></tr>
</table></td></tr>
<tr><td>Large Low Voltage</td><td>Business Low Voltage kVA Demand (TAS82)</td><td>This network tariff is for installations taking low voltage multi-phase supply that are not used wholly or principally as private residential dwellings. There are no restrictions on the use of the supply (i.e. the supply may be used for general power, heating, water heating, etc.).

This network tariff may not be used in conjunction with any other network tariff.</td></tr>
</table>

<table>
<tr><th>Network Tariff class</th><th>Network Tariff</th><th>Description</th></tr>
<tr><td></td><td>Large Low Voltage Commercial Time of Use Demand (TAS89)</td><td>This network tariff is for installations taking low voltage multi-phase supply that are not that are not used wholly or principally as private residential dwellings. There are no restrictions on the use of the supply (i.e. the supply may be used for general power, heating, water heating, etc.).

This network tariff may not be used in conjunction with any other network tariff.

This network tariff structure includes demand based (kW) time of use charging components, periods as shown below.

<table><tr><th>Time periods</th><th>Tariff rate</th></tr><tr><td>Week day (07:00 – 10:00) (Monday – Friday)</td><td>Peak</td></tr><tr><td>Week day (10:00 – 16:00) (Monday – Friday)</td><td>Off-peak</td></tr><tr><td>Week day (16:00 – 21:00) (Monday – Friday)</td><td>Peak</td></tr><tr><td>Week day (21:00 – 07:00) (Monday – Friday)</td><td>Off-peak</td></tr><tr><td>Weekend day (00:00 – 24:00) (Saturday – Sunday)</td><td>Off-peak</td></tr></table></td></tr>
<tr><td>Small Low Voltage</td><td>Low Voltage Commercial Time of Use Demand (TAS88)</td><td>This network tariff is for low voltage installations that are not used either wholly or principally as private residential dwellings. There are no restrictions on the use of the supply (i.e. the supply may be used for general power, heating, water heating, etc.). This network tariff may not be used in conjunction with any other network tariff.

This network tariff structure includes demand based (kW) time of use charging components, periods as shown below.

<table><tr><th>Time periods</th><th>Tariff rate</th></tr><tr><td>Week day (07:00 – 10:00) (Monday – Friday)</td><td>Peak</td></tr><tr><td>Week day (10:00 – 16:00) (Monday – Friday)</td><td>Off-peak</td></tr><tr><td>Week day (16:00 – 21:00) (Monday – Friday)</td><td>Peak</td></tr><tr><td>Week day (21:00 – 07:00) (Monday – Friday)</td><td>Off-peak</td></tr><tr><td>Weekend day (00:00 – 24:00) (Saturday – Sunday)</td><td>Off-peak</td></tr></table></td></tr>
</table>

<table>
<tr><th>Network Tariff class</th><th>Network Tariff</th><th>Description</th></tr>
<tr><td></td><td>Business Low Voltage Distributed Energy Resources (TAS98)</td><td>This network tariff is for low voltage installations that are not used either wholly or principally as Private Residential Dwellings, where electricity storage, generation and/or electricity management devices – collectively referred to as “distributed energy resources” (DER) have been deployed behind the meter. There are no restrictions on the use of the supply (i.e. the supply may be used for general power, heating, water heating, etc.). This network tariff may not be used in conjunction with any other network tariff however is eligible to be used in conjunction with import or feed-in-tariffs.

This network tariff structure includes demand based (kW) time of use charging components, as shown below.

<table><tr><th>Time periods</th><th>Tariff rate</th></tr><tr><td>Week day (07:00 – 10:00) (Monday – Friday)</td><td>Peak</td></tr><tr><td>Week day (10:00 – 16:00) (Monday – Friday)</td><td>Off-peak</td></tr><tr><td>Week day (16:00 – 21:00) (Monday – Friday)</td><td>Peak</td></tr><tr><td>Week day (21:00 – 07:00) (Monday – Friday)</td><td>Off-peak</td></tr><tr><td>Weekend day (00:00 – 24:00) (Saturday – Sunday)</td><td>Off-peak</td></tr></table></td></tr>
<tr><td></td><td>Business Low Voltage General (TAS22)</td><td>This network tariff is for low voltage installations located on premises that are not used either wholly or principally as Private Residential Dwellings.

There are no restrictions on the use of the supply (i.e. the supply may be used for general power, heating, water heating, etc.).

This network tariff may also be used in conjunction with the following additional network tariffs:

• TAS41 – uncontrolled low voltage heating;
• TAS61 – controlled low voltage energy – off-peak with afternoon boost; and
• TAS63 – controlled low voltage energy – night period only.</td></tr>
</table>

<table>
<tr><th>Network Tariff class</th><th>Network Tariff</th><th>Description</th></tr>
<tr><td></td><td>Business Low Voltage Nursing Homes (TAS34)</td><td>This network tariff applies to low voltage installations that are registered as aged care facilities. There are no restrictions on the use of the supply (i.e. the supply may be used for general power, heating, water heating, etc.).

This network tariff was made obsolete by TasNetworks' predecessor Aurora Energy, in its capacity as Tasmania's former distribution network operator, and has not been available to new customers since at least 2012-13.

This tariff will be abolished from 1 July 2019.</td></tr>
<tr><td></td><td>General Network – Business, Curtilage (TASCURT)</td><td>This network tariff applies to low voltage rural installations which have a single connection point but require more than one meter due to site layout.

The single connection point must supply an installation qualifying for, and being supplied under network tariff, Business Low Voltage General (TAS22).

This network tariff was made obsolete by TasNetworks' predecessor Aurora Energy, in its capacity as Tasmania's former distribution network operator, and has not been available to new customers since at least 2012-13.

This tariff will be abolished from 1 July 2019.</td></tr>
<tr><td></td><td>Business Low Voltage Time of Use (TAS94)</td><td>This network tariff is available for low voltage installations that are not Private Residential Dwellings.

There are no restrictions on the use of the supply (i.e. the supply may be used for general power, heating, storage water heating, etc.).

This network tariff may be used in conjunction with the network tariff TAS63 – controlled low voltage energy – night period only.

This network tariff structure includes consumption (kWh) time of use charging components, periods as shown below.
<table>
<tr><th>Time periods</th><th>Tariff rate</th></tr>
<tr><td>Week Day (07:00 – 22:00)
(Monday – Friday)</td><td>Peak</td></tr>
<tr><td>Weekend Day (07:00 – 22:00)
(Saturday and Sunday)</td><td>Shoulder</td></tr>
<tr><td>Any Day (22:00 – 24:00)
(Monday – Sunday)</td><td>Off-peak</td></tr>
<tr><td>Any Day (0:00 – 07:00)
(Monday – Sunday)</td><td>Off-peak</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Network Tariff class</th><th>Network Tariff</th><th>Description</th></tr>
<tr><td>Residential</td><td>Residential Time of Use Demand (TAS87)</td><td>This network tariff is for low voltage installations that are premises used wholly or principally as Private Residential Dwellings. There are no restrictions on the use of the supply (i.e. the supply may be used for general power, heating, storage water heating, etc.). Farm outbuildings may be connected on this network tariff provided that the connection is through the meters of the farm residence.

This network tariff may not be used in conjunction with any other network tariff, however is eligible to be used in conjunction with import or feed-in-tariffs.

This network tariff structure includes demand based (kW) time of use charging components, periods as shown below.

<table>
<tr><th>Time periods</th><th>Tariff rate</th></tr>
<tr><td>Week day (07:00 – 10:00) (Monday – Friday)</td><td>Peak</td></tr>
<tr><td>Week day (10:00 – 16:00) (Monday – Friday)</td><td>Off-peak</td></tr>
<tr><td>Week day (16:00 – 21:00) (Monday – Friday)</td><td>Peak</td></tr>
<tr><td>Week day (21:00 – 07:00) (Monday – Friday)</td><td>Off-peak</td></tr>
<tr><td>Weekend day (00:00 – 24:00) (Saturday – Sunday)</td><td>Off-peak</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Network Tariff class</th><th>Network Tariff</th><th>Description</th></tr>
<tr><td></td><td>Residential Low Voltage Distributed Energy Resources (TAS97)</td><td>This network tariff is for low voltage installations that are premises used wholly or principally as Private Residential Dwellings where electricity storage, generation or electricity management devices – collectively referred to as “distributed energy resources” (DER) – have been deployed behind the meter. There are no restrictions on the use of the supply (i.e. the supply may be used for general power, heating, water heating, etc.). Farm outbuildings may be connected on this network tariff provided that the connection is through the meters of the farm residence.

This network tariff may not be used in conjunction with any other network tariff, however is eligible to be used in conjunction with import or feed-in-tariffs.

This network tariff structure includes demand based (kW) time of use charging components, periods as shown below.
<table>
<tr><th>Time periods</th><th>Tariff rate</th></tr>
<tr><td>Week day (07:00 – 10:00) (Monday – Friday)</td><td>Peak</td></tr>
<tr><td>Week day (10:00 – 16:00) (Monday – Friday)</td><td>Off-peak</td></tr>
<tr><td>Week day (16:00 – 21:00) (Monday – Friday)</td><td>Peak</td></tr>
<tr><td>Week day (21:00 – 07:00) (Monday – Friday)</td><td>Off-peak</td></tr>
<tr><td>Weekend day (00:00 – 24:00) (Saturday – Sunday)</td><td>Off-peak</td></tr>
</table>
</td></tr>
<tr><td></td><td>Residential Low Voltage General (TAS31)</td><td>This network tariff is for low voltage installations located at premises that are used wholly or principally as Private Residential Dwellings. There are no restrictions on the use of the supply (i.e. the supply may be used for general power, heating, water heating, etc.).

Farm outbuildings may be connected on this network tariff provided that the connection is through the meters of the farm residence.

This network tariff may also be used in conjunction with the following additional network tariffs:
• TAS41 – Uncontrolled low voltage heating;
• TAS61 – Controlled low voltage energy – off-peak with afternoon boost; and
• TAS63 – Controlled low voltage energy – night period only.</td></tr>
</table>

<table>
<tr><th>Network Tariff class</th><th>Network Tariff</th><th>Description</th></tr>
<tr><td></td><td>Residential Low Voltage PAYG (TAS101)</td><td>This network tariff applies to low voltage installations at premises which are used wholly or principally as Private Residential Dwellings and were supplied in accordance with a prepayment metering product prior to 1 July 2013. There are no restrictions on the use of the supply (i.e. the supply may be used for general power, heating, water heating, etc.).

This network tariff may not be used in conjunction with any other network tariff.

This network tariff is obsolete and no longer available to new customers.</td></tr>
<tr><td></td><td>Residential Low Voltage PAYG Time of Use (TAS92)</td><td>This network tariff is for low voltage installations at premises which are used wholly or principally as Private Residential Dwellings and were supplied in accordance with Aurora Energy’s Pay As You Go (PAYG) prepayment metering product prior to 1 July 2013. There are no restrictions on the use of the supply (i.e. the supply may be used for general power, heating, storage water heating, etc.).

This network tariff may not be used in conjunction with any other network tariff.

This network tariff structure includes consumption (kWh) time of use charging components, periods as shown below.
<table>
<tr><th>Time periods</th><th>Tariff rate</th></tr>
<tr><td>Week day (07:00 – 10:00) (Monday – Friday)</td><td>Peak</td></tr>
<tr><td>Week day (10:00 – 16:00) (Monday – Friday)</td><td>Off-peak</td></tr>
<tr><td>Week day (16:00 – 21:00) (Monday – Friday)</td><td>Peak</td></tr>
<tr><td>Week day (21:00 – 07:00) (Monday – Friday)</td><td>Off-peak</td></tr>
<tr><td>Weekend day (00:00 – 24:00) (Saturday – Sunday)</td><td>Off-peak</td></tr>
</table>
This network tariff is obsolete and no longer available to new customers.</td></tr>
</table>

<table>
<tr><th>Network Tariff class</th><th>Network Tariff</th><th>Description</th></tr>
<tr><td></td><td>Residential Low Voltage Time of Use (TAS93)</td><td>This network tariff is available for low voltage installations that are premises used wholly or principally as Private Residential Dwellings. There are no restrictions on the use of the supply (i.e. the supply may be used for general power, heating, storage water heating, etc.).

Farm outbuildings may be connected on this tariff provided that the connection is through the meters for the farm residence.

This network tariff may also be used in conjunction with the network tariff TAS63 – controlled low voltage energy – night period only[17]

This network tariff structure includes consumption (kWh) time of use charging components, periods as shown below.
<table>
<tr><th>Time periods</th><th>Tariff rate</th></tr>
<tr><td>Week day (07:00 – 10:00) (Monday – Friday)</td><td>Peak</td></tr>
<tr><td>Week day (10:00 – 16:00) (Monday – Friday)</td><td>Off-peak</td></tr>
<tr><td>Week day (16:00 – 21:00) (Monday – Friday)</td><td>Peak</td></tr>
<tr><td>Week day (21:00 – 07:00) (Monday – Friday)</td><td>Off-peak</td></tr>
<tr><td>Weekend day (00:00 – 24:00) (Saturday – Sunday)</td><td>Off-peak</td></tr>
</table></td></tr>
<tr><td>Uncontrolled Energy</td><td>Uncontrolled Low Voltage Heating (TAS41)</td><td>This network tariff is for low voltage installations.

It is not available on a stand-alone basis and must be used in conjunction with the following network tariffs;
• Residential Low Voltage General (TAS31)
• Business Low Voltage General (TAS22)

In installations that are located on premises that are used wholly or principally as Private Residential Dwellings, this network tariff is for water heating and/or residential space heating and/or domestic indoor pool heating only.

In installations that are not located at Private Residential Dwellings, this network tariff is for water heating only.</td></tr>
<tr><td>Controlled Energy</td><td>Controlled Low Voltage Energy – Off-Peak with afternoon boost (TAS61)</td><td>This network tariff is for low voltage installations.

It is not available on a stand-alone basis and must be used in conjunction with one of the following network tariffs;
• Residential Low Voltage General (TAS31)
• Residential low voltage time of use (TAS93);</td></tr>
</table>

[17] A customer with combination network tariffs TAS93 and TAS63 is able to access an import tariff linked to the TAS93 circuit only.

Network Tariff class	Network Tariff	Description
		• Business Low Voltage General (TAS22) • Business low voltage time of use (TAS94) In the case of installations that are Private Residential Dwellings and have a current connection on network tariff Residential Low Voltage General (TAS31), this network tariff may be used for: • water heating and/or residential space heating and/or other "wired in" appliances we approve; and/or • heating swimming pools, including those that incorporate a spa, but not separate spas from which the water goes to waste after use. In installations that are not Private Residential Dwellings but which have a current connection on the tariff Business Low Voltage General (TAS22) network tariff, this network tariff may be used for: • water heating and/or space heating and/or other "wired in" appliances we approve. This network tariff is a time of use tariff. For installations connected on this network tariff, energy will be available daily for: • at least nine hours between 20:00 hours and 07:00 hours the following day; and • a further two hours between 13:00 hours and 16:30 hours. TasNetworks will choose the actual times during the periods that the energy will be available. This network tariff is obsolete and no longer available to new customers.

Network Tariff class	Network Tariff	Description
	Controlled Low Voltage Energy – Night period only (TAS63)	This network tariff is available for low voltage installations only. It is not available on a stand-alone basis and must be used in conjunction with the following network tariffs; • Residential Low Voltage General (TAS31) • Residential Low Voltage Time of Use (TAS93) • Residential Low Voltage PAYG Time of Use (TAS92) • Business Low Voltage General (TAS22) • Business Low Voltage Time of Use (TAS94) In the case of installations that are Private Residential Dwellings, this network tariff may be used for: • water heating and/or residential space heating and/or other circuits we approve; and • heating swimming pools, including those that incorporate a spa, but not separate spas from which the water goes to waste after use. In installations that are not Private Residential Dwellings, this network tariff: • is for water heating and/or space heating and/or other circuits we approve. This network tariff is a time of use tariff. Energy to installations connected on this network tariff will only be available between 22:00 hours and 07:00 hours the following day.
Unmetered	Unmetered Supply Low Voltage General (TASUMS)	This network tariff is intended to be applied to small, low voltage, low demand installations with a relatively constant load profile, such as: • illuminated street signs; • public telephone kiosks; • electric fences; • two-way radio transmitters; • fixed steady wattage installations; • traffic lights; or • level crossings. For an installation to be supplied under this network tariff, the electrical devices being supplied must be permanently connected. For the avoidance of doubt, an installation containing a general purpose outlet does not qualify for this network tariff. This network tariff may not be used in conjunction with any other network tariff.

Network Tariff class	Network Tariff	Description
Streetlights	Unmetered Supply Low Voltage Public Lighting (TASUMSSL)	This low voltage network tariff is for the provision of public lighting services and is available to councils, road authorities and other customers wishing to install contract lighting. The street lighting tariff rate is based on a "use of system charge" and charged on a per lamp wattage rate. This network tariff charge is an additional charge to charges we publish for the provision of public lighting services. This network tariff does not include charges for the installation and/or replacement of lamps. Costs for the installation and/or replacement of lamps are recovered through additional charges which are included in our public lighting services tariffs. This network tariff may not be used in conjunction with any other network tariff.
Individual Tariff Calculation	Individual Tariff Calculation (TASCUS)	Individual Tariff Calculation network tariffs will typically apply to customers with an electrical demand in excess of 2.0 MVA or where a customer's circumstances in a pricing zone identifies the average shared network charge to be meaningless or distorted. Individually calculated customer network charges are determined by modelling the connection point requirements as requested by the customer or their agents. Individual Tariff Calculation prices are based on actual transmission use of system charges for the relevant transmission connection point (preserving the pricing signals within the transmission charges), plus charges associated with the actual shared distribution network utilised for the electricity supply, along with connection charges based on the actual connection assets employed. This provides the greatest cost reflectivity for this type of customer and is feasible since the number of such customers is relatively small. Terms and conditions for these customers are contained within individually negotiated connection agreements.

Appendix B: Designing cost reflective tariffs

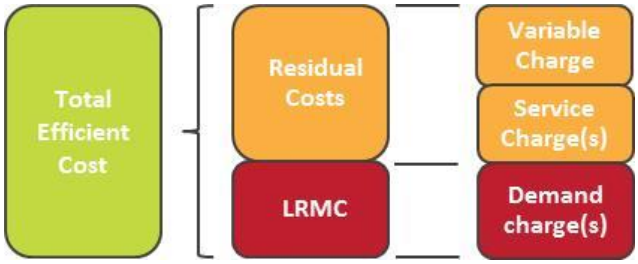
Our network tariffs are set each year so as to achieve our pricing objectives, like cost reflectivity, whilst taking into account forecasts of customer numbers, consumption and demand relating to each network tariff.

B.1 Targeting cost reflective tariffs

We determine the target network tariff components by:

- estimating the total efficient cost ($) for each tariff;
- estimating the long run marginal cost ($/kVA or $/kW) for each tariff;
- determining the required long run marginal cost revenues ($) for each tariff;
- calculating the residual costs ($), this being the difference between the total efficient cost and long run marginal cost revenues for each tariff; and
- allocating the residual costs in a manner which seeks to minimise distortions to the long run marginal cost signals. Residual costs are allocated between service charges and variable charge/s, with allocation dependent on the characteristics of the tariff. In the case of demand based time of use tariffs, for example, most of the residual costs are recovered via service charges and off-peak demand charges.

The following diagram illustrates the relationship between TEC, LRMC and Residual Costs for each network tariff and the general basis on which they are allocated against the different components that make up our tariffs.



Note: For tariffs without a demand based charge, the residual cost is equal to the TEC for that tariff.

Our tariffs are designed to meet full cost reflectivity and the Rules' requirement that tariffs be based on long run marginal cost and the recovery of our total efficient costs. However, getting there involves a different approach for legacy tariffs compared to new tariffs.

- *Legacy tariffs* | The older network tariffs which have been in use since long before TasNetworks commenced operations in 2014 exhibit varying degrees of cost reflectivity. While these tariffs are being transitioned towards full cost reflectivity, the transition is being managed gradually across multiple regulatory periods, in order to avoid price shocks for our customers. Each year we aim to incrementally transition our legacy tariffs closer to the target of full cost reflectivity.

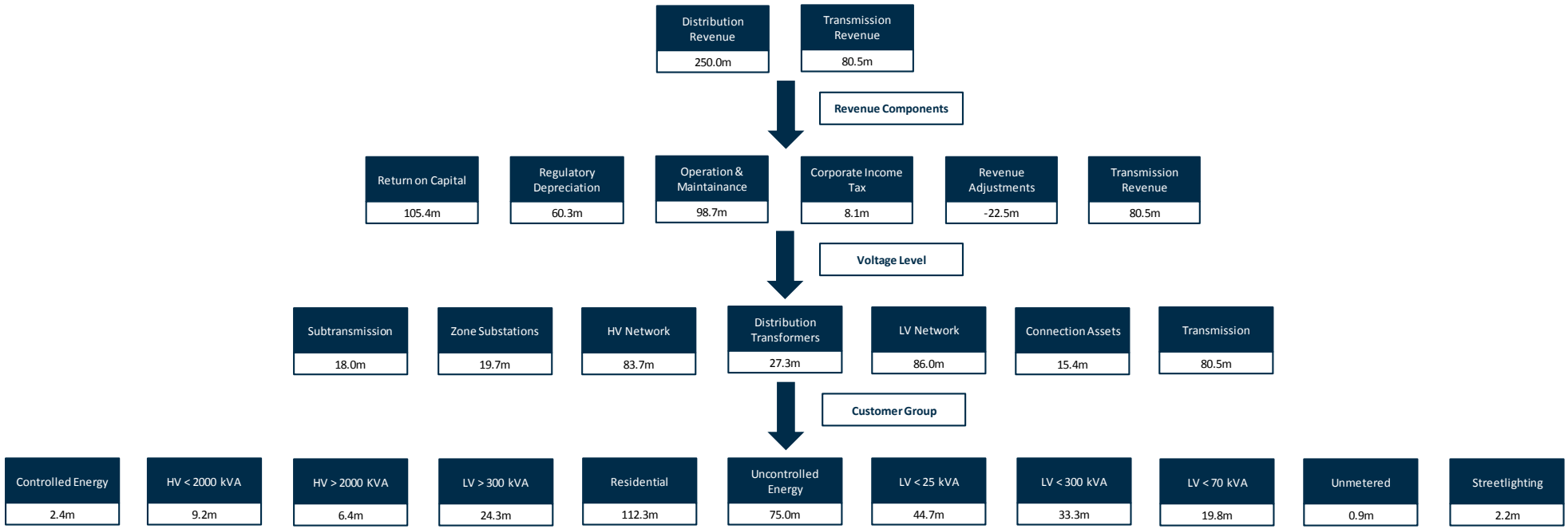
- *New tariffs* | Any new network tariffs introduced by TasNetworks since the commencement of the National Electricity Rules' requirements have been designed to have a high degree of cost reflectivity from the outset. Overall, to encourage customer uptake of our more cost reflective tariffs, these new tariffs recover relatively smaller shares of our residual costs than our less efficient legacy tariffs. This is a transitional approach that will be reviewed as the cost reflective tariffs become the dominant means of revenue recovery for TasNetworks.

The checks and balances that we apply in our tariff setting process include ensuring that:

- the overall forecast revenue in a given year, when summed across the network tariff classes, is not more than the revenue allowance approved by the AER for that year, after allowing for any under-or over-recoveries in prior years, adjustments for actual inflation and pass-through costs, such as the Electrical Safety Levy which TasNetworks is required to pay to fund the electrical safety inspection service provided by WorkSafe Tasmania.
- we have considered and managed annual bill impacts on our customers, and that the annual percentage changes in the revenue to be recovered from tariffs classes are within the side constraints approved by the AER;
- the revenue for each tariff class lies between the stand alone and avoidable costs for that tariff class;
- the revenue for each tariff is at, or moving towards, recovery of the total efficient cost for that tariff; and
- where applicable, the peak demand component of the tariff is set at a level to recover the long run marginal cost for that tariff.

This process is demonstrated in the figure below (Figure 16), which shows the anticipated revenue flows and customer recovery for the 2019-20 year.

Figure 16 2019-20 Revenue allocation from total revenue to customer group



B.2 Calculating what cost reflectivity looks like

We determine the costs to be recovered from a tariff class, and design the charging parameters within a tariff, in order to reflect the long-term costs of providing services to our customers, while also providing effective price signals to our customers about the impact that their use of electricity has on the cost of providing the network. Our network tariffs and charging parameters are designed to recover amounts from network tariff classes which are reflective of the costs of providing services to these customers. Our network tariffs will also send pricing signals to customers about the cost of their use of the network through the selection of appropriate charging parameters.

Changes to the National Electricity Rules require us to apply a new, more cost reflective approach to setting our network tariffs and other regulated charges, rather than rely on the flat consumption based charges that have been used for years. Those changes require TasNetworks to base its network tariffs on Total Efficient Cost and Long Run Marginal Cost.

We design our network tariffs to contain a combination of charging parameters in order to reflect LRMC and TEC, whilst recovering our total allowable revenue. Network tariffs may include:

- a specified demand charge that may take into account the long term demand peak and provide effective pricing signals to customers of excessive load at peak time;
- an anytime demand charge which is used to take into account short term peaks in demand; or
- time of use demand charges that take into account the long term demand peak.

In this way we are able to offer network prices which are lower at times when there is more spare capacity (at a network level), because an increase in demand is unlikely to lead to additional investment. Conversely, we can also apply higher prices at times when greater demand for electricity may require future investment in additional network capacity. The setting of the time periods applying to our network tariffs is discussed elsewhere in this TSES, but as a general principle, our ToU periods have been set with reference to system load profiles for the electricity network as a whole, rather than the load profiles of specific tariff classes or specific feeders.

In the long term, our aim is that our network tariffs be fully cost reflective and meet the NER requirement that tariffs be based on LRMC and TEC. Not all our tariffs currently meet these targets and those that do not are being transitioned over time in a manner which avoids price shocks for our customers.

Each year we aim to transition the component charges for each tariff closer to meeting the NER's requirements compared to the previous year. However, in doing so we must also ensure compliance with side constraint restrictions, consider forecast consumption and demand by tariff, as well as the relationship between tariffs within our entire tariff suite. This means that the movement towards cost reflectivity (and TEC recovery) is not necessarily always a smooth transition and in some instances, certain tariff classes may vary from year to year in terms of TEC recovery.

Setting demand charges with reference to LRMC

In all cases, the demand charge component of a network tariff is based on the long run marginal cost calculated for that tariff. We address the requirement for network tariffs to reflect the additional cost of meeting demand at times of greatest utilisation of the network by basing our estimate of the long run marginal cost on the forecast augmentation and relevant replacement capital expenditure. This expenditure represents the investment in capacity required to meet the peak demand, and in updating our LRMC estimates we include a proportion of asset Replacement Expenditure (Repex).

To the extent feasible, we have set the demand component of our network charges at, or approaching, the long run marginal cost for the relevant tariff class. In the development of our LRMC estimates we do not develop separate investment and growth streams for each tariff class directly, instead opting to disaggregate data to enable LRMC to be determined at the tariff level.

The cost components of the estimates have been developed utilising ten-year Program of Work forecasts, which include those projects that are related to augmentation of the network as well as a proportion of forecast Repex (and associated incremental Opex).

We then use an allocation (a *reasonable cost* allocation methodology) to allocate those costs to tariff classes and then to individual tariffs.

Our derived LRMC values do not take into account tariff diversity factors. We account for diversity when developing the price of any demand based tariff component. The following process is followed to calculate a price for the tariff charge parameter by which the LRMC is signalled:

1. determine the LRMC at a tariff level;
2. calculate the contribution of the customers on that tariff towards network peak demand;
3. determine the total amount to be recovered from the tariff with respect to the LRMC signal, which is the LRMC value multiplied by contribution of the tariff to system peak (taking into account diversity across tariffs); and
4. divide the revenue in the previous step by the forecast quantity of the tariff charge parameter (accounting for diversity within the tariff) to determine price.

Diversity is accounted for as part of the tariff development process. Where a tariff has a high level of diversity associated with it, as is the case with tariffs assigned to residential customers, the forecast demand to be billed will be higher and the overall price will be reduced relative to the LRMC signal by a greater amount than for a tariff assigned to customers with a lower level of diversity.

We currently have limited data on which to base our diversity factors, which means that we may be underestimating the level of residential diversity. We will analyse this further in light of the data provided from the emPOWERing You Trial, which concludes its data acquisition phase in early 2019.

Our current estimates of long run marginal cost

As noted above, it is a requirement that each of our tariffs be based on the long run marginal cost of providing our service. Long run marginal cost provides a measure of how our operating and capital expenditure will change (in the long run) in response to incremental changes in demand. Setting network tariffs based on long run marginal cost will provide our customers with a cost reflective signal that encourages efficient electricity usage.

We base our long run marginal cost on the average incremental cost method. This approach utilises information that is currently available for the revenue determination and planning processes (the same program of work underpins our calculations as discussed in our regulatory proposal). This approach is consistent with the approach adopted by other distribution networks and is generally considered to be well suited to situations where there is a consistent profile of investment over time to service growth in demand. The approach taken by TasNetworks was also approved by the AER for our 2017-19 TSS.

The long run marginal cost for each network tariff class has been calculated using a forward looking, average incremental cost approach, using the following formula:

$$LRMC = \frac{Present\ Value\ (new\ network\ capacity + marginal\ operating\ costs)}{Present\ Value\ (additional\ demand\ served)}$$

Where:

- New network capacity is the forecast capital expenditure that we categorise as capital expenditure related to demand driven augmentation and replacements.
- Marginal operating costs is the additional operating expenditure attributable to the incremental capital expenditure.
- Additional demand served is the forecast incremental demand that can be served as a result of the above capital expenditure.
- The present value has been determined for ten year forecasts for the incremental capital expenditure, operating expenditure and demand, using the regulated weighted average cost of capital as the discount rate.

The table below sets out the estimated long run marginal cost for each network tariff as at 2019-20. We estimate this will increase by inflation in each year over the TSS period.

Table B1: Estimated long run marginal costs (by tariff)

Tariff class	Network tariff	Long run marginal cost ($/kW)
		2019-20
High Voltage	Business High Voltage kVA Specified Demand (TASSDM)	$89
	Business High Voltage kVA Specified Demand >2MVA (TAS15)	$104
Individual Tariff Calculation	Individual Tariff Calculation (TASCUS)	$104
Irrigation	Irrigation Low Voltage Time of Use (TAS75)	$111
Large Low Voltage	Business Low Voltage kVA Demand (TAS82)	$80
	Large Low Voltage Commercial Time of Use Demand (TAS89)	$80
Small Low Voltage	Low Voltage Commercial Time of Use Demand (TAS88)	$107
	Business Low Voltage Distributed Energy Resources (TAS98)	$107
	Business Low Voltage General (TAS22)	$134

Tariff class	Network tariff	Long run marginal cost ($/kW)
		2019-20
	Business Low Voltage Time of Use (TAS94)	$107
Residential	Residential Time of Use Demand Tariff (TAS87)	$140
	Residential Low Voltage Distributed Energy Resources (TAS97)	$140
	Residential Low Voltage General (TAS31)	$140
	Residential Low Voltage PAYG (TAS101)	$140
	Residential Low Voltage PAYG Time of Use (TAS92)	$140
	Residential Low Voltage Time of Use (TAS93)	$140
Uncontrolled Energy	Uncontrolled Low Voltage Heating (TAS41)	$97
Controlled Energy	Controlled Low Voltage Energy – Off-peak with afternoon boost (TAS61)	$105
	Controlled Low Voltage Energy – Night period only (TAS63)	$105
Unmetered	Unmetered Supply Low Voltage General (TASUMS)	$137
Street Lighting	Unmetered Supply Low Voltage Public Lighting (TASUMSSL)	$137

AER feedback on our approach

The AER has approved our approach to calculating long run marginal cost. The AER also gave feedback to all networks in the following specific areas, which we have responded to below.

Demand measurement periods | The AER had some concern that networks' approaches to setting demand measurement periods (and associated charges) was ignoring the fact that not all customer's peaks occur coincident with the system peak.

> *'It is not an individual customer's peak demand that drives network costs, but the extent to which that customer's peak demand contributes towards network congestion and the network's co-incident demand. However, the network's co-incident demand may not be on the same day as an individual customer's highest demand. … We encourage distributors to collect data during this first tariff structure statement period that demonstrates the extent to which customers' peak demand typically occurs at the same time as the network also experiences its peak demand.'* [18]

TasNetworks' approach to setting demand charges for its peak demand charging windows already deals with the issue the AER has identified. The load and diversity factors that we use to allocate LRMC to the demand charges ensure we are designing our cost reflective LRMC demand charge signals to account for the contribution of customers on each demand tariff to the coincident system peak that drives our prices. Step 3 of our approach (above) explains this.

[18] AER, Attachment 19 – Tariff structure statement | TasNetworks distribution final determination, April 2017, p34.

Long run marginal cost calculation method | The AER supported networks having the flexibility to calculate and apply long run marginal cost in the way that best suits the characteristics of their networks and customers. It also encouraged consideration of refinements or alternative methods where demand was decreasing, and the inclusion of certain replacement expenditures in addition to augmentation expenditure.

> *'In addition to refining the specification of the method for estimating long run marginal cost, we encourage distributors to continue refining the way they apply these methods. We expect distributors to utilise inputs that better represent long run marginal cost. In particular we consider long run marginal cost estimates should incorporate certain types of replacement capital expenditure, and associated operating expenditure, in addition to augmentation expenditure (and associated operating expenditure).'*[19]

TasNetworks notes that our existing approach to calculating long run marginal cost—the average incremental cost approach—has been applied using both augmentation and relevant replacement capital and operating expenditures.

Total Efficient Cost methodology

The application of TEC to the tariff setting process and the allocation of distribution costs (including the transmission costs allocated to the distribution network) to individual network tariffs broadly consists of three steps:

1. TasNetworks' AER approved revenues are allocated to different voltage levels and regions. The revenue is allocated on the basis of a particular allocation driver, such as asset type, asset valuations and/or the operational and maintenance costs attributable to the voltage level and region in question;
2. The revenue allocated to voltage levels is then apportioned between Customer Groups, using a combination of demand and the number of connections within each group as the allocator;
3. The revenue allocated to each customer group is allocated between Tariff Groups, using a combination of demand, consumption and connection numbers.

To split the TEC allocated to a Tariff Group between the tariffs within that group, the following methodology is used.

- If a Tariff Group contains only one tariff, the TEC of that network tariff equals the TEC allocated to the Tariff Group.
- If a Tariff Group contains two or more tariffs, the TEC of that Tariff Group is allocated between those tariffs based on forecasts of consumption and customer numbers.

The following table outlines the relationship between Tariff Groups and individual network tariffs.

[19] AER, Attachment 19 – Tariff structure statement | TasNetworks distribution final determination, April 2017, p66.

Table B2: Tariff Group Mapping

Tariff Group	Network Tariff
Street Lights	Unmetered supply low voltage public lighting (TASUMSSL)
Residential Light & Power Single Rate	Residential low voltage general (TAS31) Residential low voltage time of use demand (TAS87) Residential low voltage distributed energy resource (TAS97)
Residential Time of Use	Residential low voltage pay as you go (TAS101) Residential low voltage time of use (TAS93)
Commercial Light & Power Single Rate	Business low voltage general (TAS22)
Commercial Time of Use	Business low voltage time of use (TAS94), Low voltage commercial time of use demand (TAS88) Business low voltage distributed energy resource (TAS98)
Controlled Energy	Controlled low voltage energy – off-peak with afternoon boost (TAS61) Controlled low voltage energy – night period only (TAS63)
Uncontrolled Energy	Uncontrolled low voltage heating (TAS41)
LV Metered Demand Tariff	Business low voltage kVA demand (TAS82) Large low voltage commercial time of use demand (TAS89)
Irrigation	Irrigation low voltage time of use (TAS75)
HV Metered Demand Tariff	Business high voltage kVA specified demand (TASSDM)
HV Negotiated Tariff	Business high voltage kVA specified demand (> 2 MVA) (TAS15) Individual tariff calculation (TASCUS)
Unmetered	Unmetered supply low voltage general (TASUMS)

TasNetworks calculates TEC at a tariff level. TasNetworks does not calculate TEC at a tariff parameter level (i.e. for the individual charging parameters of a tariff).

The general methodology by which TasNetworks allocates the TEC allocated to individual tariffs to the component charges that make up those tariffs is as follows:

- the revenue related to the recovery of LRMC for each tariff is applied to the demand based component of the tariff, where applicable (i.e. where tariff has a demand component);
- the residual cost for that tariff is determined by subtracting the LRMC revenue associated with the tariff from the TEC allocated to that tariff;
- the service charge component is determined based on a proportion of residual cost; and
- the remaining residual cost is applied to usage related tariff components, such as a consumption based charge.

The final allocation to each tariff component and resulting pricing also involves a series of checks to ensure that:

- the sum of the revenue which is forecast to be recovered from our network tariffs in any given year is not more than the revenue allowance approved by the AER, after allowing for any under- or over-recoveries in prior years, adjustments for actual inflation and pass-throughs;
- the annual percentage changes in the individual network tariffs are within the side constraints approved by the AER;
- the revenue for each network tariff class lies between the stand alone and avoidable costs for that tariff class; the revenue for each network tariff class is at, or moving towards, recovery of the total efficient cost for that tariff class; and
- the demand component of the network tariff is at, or moving towards, recovery of the long run marginal cost for that tariff class.

The TEC methodology applied by TasNetworks utilises derived demand for all connections, with the allocation methodology being applied consistently regardless of metering installation type – noting that Tasmania's residential and small business metering fleet predominantly comprises Type 6 accumulation meters.

The overall aim is to structure each element of our network tariffs so that we provide our customers with appropriate signals about how their usage impacts network costs, and that overall revenues recover our forecast efficient costs.

Allocating 'overs and unders' account balance to individual tariffs

In developing the price path included in TasNetworks TSS a zero balance has been maintained in both the TOuS and DUoS unders and over accounts. That is, we have assumed full revenue recovery in each year of the 2019-24 regulatory control period, as well as the years immediately prior.

TasNetworks' pricing proposals, which are submitted annually to the AER, outline the unders and overs account balances for both TOuS and DUoS. Final TEC allocations are based on the net revenue amount, which includes the revenue adjustments from the unders and overs account balances.

Allocating transmission costs to individually calculated tariffs

The transmission costs allocated to customers on individually calculated tariffs preserve transmission pricing signals through the direct pass-through of transmission specific charges (as at the connection point). In this regard ITC customers are treated in the same way as customers on the TAS15 Business high voltage kVA specified demand (>2MVA) tariff, with the nodal charges for the transmission node identifier (TNI) the ITC customer is connected to being applied.

Allocating distribution costs to location-specific individually calculated tariffs

Distribution costs are allocated to location-specific individually calculated tariffs in a manner consistent with TasNetworks' TEC methodology. For the purpose of TEC allocation, TasNetworks considers all individual tariff calculation tariffs as a single tariff. TEC costs are allocated to the network tariffs that make up the *HV Negotiated Tariff* tariff group on the basis of forecast consumption. The network tariffs in question are:

- Business high voltage kVA specified demand (> 2 MVA) (TAS15), and
- the Individually calculated tariffs

ITC Specified Daily Demand Charges

This charging component of an ITC is based on the portion of the distribution grid assets that the customer utilises as part of their connection (i.e. the relevant HV feeder line). These assets are the inputs for the customer Post Tax Revenue Model (PTRM), which also uses the Weighted Average Cost of Capital (WACC) and Consumer Price Index (CPI) parameters as the distribution determination. The outputs (revenue) from the PTRM are apportioned against the customer's specified demand to derive a c/kVA/day rate to recover the appropriate revenue.

ITC Daily demand Connection Charge

This ITC tariff component is based on the portion of the connection assets that the customer utilises as part of their connection (incl. transformer, underground cables). Along with the WACC and CPI variables used for the distribution determination, these assets are used to inform the customer PTRM. The outputs (revenue) from the PTRM are apportioned against the customer's specified demand to derive a c/kVA/day rate in order to recover the appropriate revenue.

ITC Energy Charge

The energy charge applying to ITC customers is a volumetric, consumption based charge which is used to recover the common services costs that are applicable to each customer. As for the distribution determination more generally, the common services revenue to be recovered from ITC customers is allocated on the basis of the total expected consumption across all customers. The amount attributable to ITC customers is apportioned between those customers based on load after the amount to be recovered through the service charge.

ITC Service Charge

With the exception of one ITC customer, the service charge applied to ITC customers is the same as the service charge applied to customers on the TAS15 Business high voltage kVA specified demand (>2MVA) tariff. In the case of the ITC customer that is an exception to this rule, the service charge component of their tariff is used for the recovery of the common service costs, as the customer in question does not pay an energy charge.

AER feedback on our approach

The AER has provided feedback to all networks about looking to refine the approach to setting time of use windows. As part of this feedback, the AER has asked TasNetworks to consider time of use pricing windows that include the element of seasonality. Although seasonality does have the potential to provide a greater degree of cost reflectivity to address particular network constraints, our approach is informed by feedback received from our customers. Our customers have told us they do not support seasonal variations due to the potential impact of increased charges during the winter period and supported the simplicity of having no seasonal variation.

As part of its determination for the 2017-19 regulatory period, the AER approved our approach to targeting cost reflective tariffs over multiple TSS periods, and having regard to the customer impact principle in the Rules when doing so. For example, regarding our approach to legacy tariffs, it stated:

> *'TasNetworks stated it will realign the uncontrolled load tariff with the residential low voltage general network tariff by the end of the 2024–29 regulatory control period. However, it will seek to rebalance the tariffs more quickly where revenue determinations and price impacts allow. We approve of this approach by TasNetworks.*
>
> *We also note the controlled and uncontrolled load tariffs are not available to customers on the time of use consumption and demand tariffs. We would expect this practice to continue for future regulatory control periods.'*[20]

We have retained this approach in our 2019-24 TSS.

The AER also requested that as our cost reflective tariff implementation continues, we:

1. Collect and monitor data on whether alternative tariff designs can further enhance cost reflective tariff signals for certain customer types;
2. Provide an update on the timeframe and progression of our legacy tariff rebalancing to gradually remove cross subsidies; and
3. Consider, with the benefit of further experience, whether 'a more targeted approach for low voltage customers may be more reliable than the use of a 'one size' fits all approach to demand tariffs'.[21]

Our 2019-24 TSS addresses all three elements of this feedback:

1. A key focus of this TSS period is gaining advanced meter data to continue to refine our tariff offerings. The new tariffs proposed in the 2019-24 TSS for early adopters of DER technologies have been informed by the data we obtained in our emPOWERing You Trial;
2. Section 1 (Strategy objectives and phasing) of this TSES shows the progression of our gradual tariff rebalancing. By 2024 we expect a significant proportion of our customers will be on cost reflective tariffs, and that we will be over half way through our gradual rebalancing of legacy tariffs; and

[20] AER, Attachment 19 – Tariff structure statement | TasNetworks distribution final determination, April 2017, p40.

[21] Ibid, p.47.

3. Our new targeted incentives tariffs for residential and small business early adopters of DER, as well as our new embedded networks tariff, reflect a greater targeting of our demand tariff approach. Within the 2019-24 TSS period we are looking to target specific customer types who have unique connection, usage and future cost risk consequences for our network and the costs all our customers could bear in the future without fit-for-purpose targeting.

B.3 Designing our new tariffs

DER tariff design

We have designed our DER tariffs to meet the following objectives:

- Allow DER customers to benefit from their investment
- Ensure DER customers help lower rather than increase network costs in future, supporting lower bills for all customers
- The tariff is simple and capable of being understood by DER investors who we seek to encourage to opt-in to the tariff
- The tariffs are compliant with the Rules.

We tested these design principles with our PRWG in April 2017, as well as the proposal to offer the new DER tariffs on an opt-in rather than opt-out basis, which was driven by feedback from customers.

To achieve these objectives, we propose our DER tariff be based on the equivalent new time of use demand tariff introduced during the 2017-19 TSS, and modified to ensure that the average DER customer will benefit from choosing this tariff. This approach means a discount in terms of residual revenue recovery is applied to ensure that, on average, customers will realise a decrease in network charges relative to our equivalent default tariff for that tariff class. The figure below illustrates this design.

Figure 17 Demand tariff components and DER tariff design

Long run marginal cost demand charge | We have set the peak demand charge to reflect the same LRMC estimates of $107 and $140 per KW that we used in setting our time of use demand tariffs.

Residual costs | We propose to implement our discounting incentive through the off-peak charge and kept the service charge the same as the equivalent time of use demand tariffs. Compared to the option of discounting the service charge, we consider the off-peak demand discounting sends a better signal for customers to manage how they use our network and save network costs through load shifting into the off-peak period. We discussed various options for the level of discounting, the length of time this temporary discounting applies for and the funding of the discount with our PRWG, as explained in Appendix D.

Customer impacts | Using the average load profile of a customer from our emPOWERing You Trial with photovoltaic solar panels, we modelled indicative charge impacts for these customers compared to our default tariff for their tariff class. This analysis shows that these customers can potentially save $105 per annum by choosing these tariffs that facilitate effective use of DER technology to manage demand.

Appendix C: Engaging customers in our pricing plan & tariff designs

Our engagement in developing our second TSS has built upon feedback from and lessons we learned in our 2017-19 TSS.

AER feedback | Our 2017-19 TSS engagement received positive feedback from the AER, who noted that our engagement approach was transparent and thorough. Our proposal outlined the stakeholders we engaged with, the feedback we received and how that shaped our proposal.

That said, the AER did flag limited customer impact analysis and data included within our proposal, while acknowledging that customer impact analysis was provided to stakeholders throughout our engagement process and in our revised TSS in response to its draft decision. We were encouraged to include such analysis in future TSS submissions.

The customer impact analysis developed to underpin the 2017-19 TSS was created with sample data, due to the lack of advanced meters and, therefore, metering data relating to anything other than customers' cumulative energy consumption. The AER noted that this approach was appropriate while encouraging the use of actual data when it became available. With the roll-out of advanced metering for residential and small business customers in Tasmania only commencing in December 2017, the availability of actual data remains limited compared to other markets within the NEM. However, TasNetworks has been able to work around this through the use of interval metering data acquired as part of the emPOWERing You tariff trial, a feature of which has been the off-market installation of advanced meters in approximately 600 residential properties in southern Tasmania.

2019-24 engagement approach | Our engagement approach for TasNetworks' 2019-24 TSS has been similar to the approach previously utilised, with refinement for the above feedback. We have relied on our PRWG, our Customer Council and targeted end customer workshops to represent the voice of our customers when contemplating the development of our pricing plan and new tariffs.

2019-24 TSS and customer impact analysis | Customer impact analysis used during the consultation process is included in this TSES, to help ensure access to this information for all interested parties, not just those stakeholders who were included in our consultation process. We have sought to improve our customer impact analysis by drawing on data from our emPOWERing You Trial.

Pricing reform working group (PRWG) | Our engagement with our PRWG is summarised in the table below, including commentary on the TSS matters we consulted on and the form of engagement – using the IAP2 spectrum.[22] We also informed our Customer Council of our pricing strategy and sought feedback on a limited number of strategy elements.

[22] IAP2's Public Participation Spectrum is designed to assist with the selection of the level of participation that defines the public's role in any community engagement program. It is cited in the AER's customer engagement guideline as good practice, and is available at: https://www.iap2.org.au/About-Us/About-IAP2-Australasia-/Spectrum.

PRWG engagement and outcomes

Meeting	Agenda	Form of engagement	Engagement outcomes
27 April 2017 Engage on 2019-24 TSS planning and test DER preferences	2019-24 reform prioritisation and plan: • Outline context considerations • Explain customer group prioritisation; continuing current focus on gradual implementation, and now supporting targeted DER tariffs to ensure DER customers can benefit from their investment, and this investment also supports lower costs for existing customers over time • Engage on DER tariff design principles and options for pricing at marginal cost • Outline current trials and plans for future trials	Inform about continued application of existing reform transition and prioritisation for next Engage on new reform to target DER and incentives to increase demand based tariff take-up	• Majority of PRWG members are suportive of new network tariffs specifically targetting DER customers and discounted to incentivise take-up. • The majority of PRWG members are supportive of discounted demand based time of use tariffs to encourage small customers to move to more cost reflective tariffs. • Recovering the discounted costs from other customers needs to be carefully considered and customer impact should be limited.
2 August 2017 Share indicative prices	The purpose of the meeting was to: • Update PRWG members on our future expenditure plans and revenue implications • Consult with PRWG members on our Distribution Pricing Strategy for the 2019-2024 regulatory period, including 2019-24 draft price outcomes and illustrative customer impact analysis • Provide an opportunity for PRWG members to better understand Aurora Energy's Retail Pricing Strategy • Inform PRWG members of preliminary learnings from our emPOWERing You Trial and seek feedback on the impacy of a changing energy market and how this may impact developed customer groupings or clusters	Consult on the indicative price path and associated customer impact analysis Inform on incentive approach for new DER and demand based tariffs incentives	• PRWG members provided feedback on our distribution pricing strategy, for detail on feedback received refer **Tariff Reform** • PRWG members are interested in learning more about customer segmentation or clusters as well as network charge comparisons for each group (further information provided as part of the Nov PRWG meeting).
23 November 2017 Share draft TSS	The purpose of the meeting was to: • Outline of our pricing reform plans as they will be set out in the Tariff Structure Statement for the 2019-24 regulatory period. And	Inform members of our draft TSS and reflect on engagement input from members. Inform members of our	• PRWG members provided feedback about the over-arching pricing reform plans set out in our

Meeting	Agenda	Form of engagement	Engagement outcomes
overview and alternative control services prices	discuss whether it reflects their engagement input. • Inform members of our indicative alternative control services prices for 2019-24 regulatory period, this includes metering, public lighting and some connection services. • Provide Aurora Energy the opportunity to update members regarding the Power of Choice metering reforms.	indicative alternative control prices	*draft* TSS for the 2019-24 regulatory period. • PRWG members requested more information about Tasnetworks' responses to feedback previously provided by the PRWG and other stakeholders.
20 July 2018 Refine TasNetworks' pricing strategy prior to release of the AER's draft decision at the end of September 2018, taking into account preliminary feedback from the AER.	The purpose of the meeting was to: • test customer and stakeholder views on a possible change to TasNetworks' pricing strategy; specifically a change from an opt-in approach to tariff reform to one of applying cost reflective network tariffs to retailers from 1 July 2019 for all new residential customers, residential customers that change their connection or who have an advanced meter installed, on an opt-out basis; • provide members with an opportunity to understand the AER's perspective on cost reflective pricing and the national context for network tariff reform; and • provide members with an opportunity to hear from Aurora Energy about their plans for cost reflective retail pricing and the roll out of advanced meters.	Inform members and invited guests of the difference in the uptake of more cost reflective network pricing in other parts of the NEM chieved using opt-in and opt-out approaches. Present analysis of the likely financial impact on residential customers of a switch from flat consumption based network tariffs to ToU consumption network tariffs for a range of typical residential customers, based on interval metering data obtained from TasNetworks' emPOWERing You trial.	• The PRWG agreed that TasNetworks should employ default assignment to a ToU consumption network tariff for select residential customers, including new residential connections, on an opt-out basis from 1 July 2019.

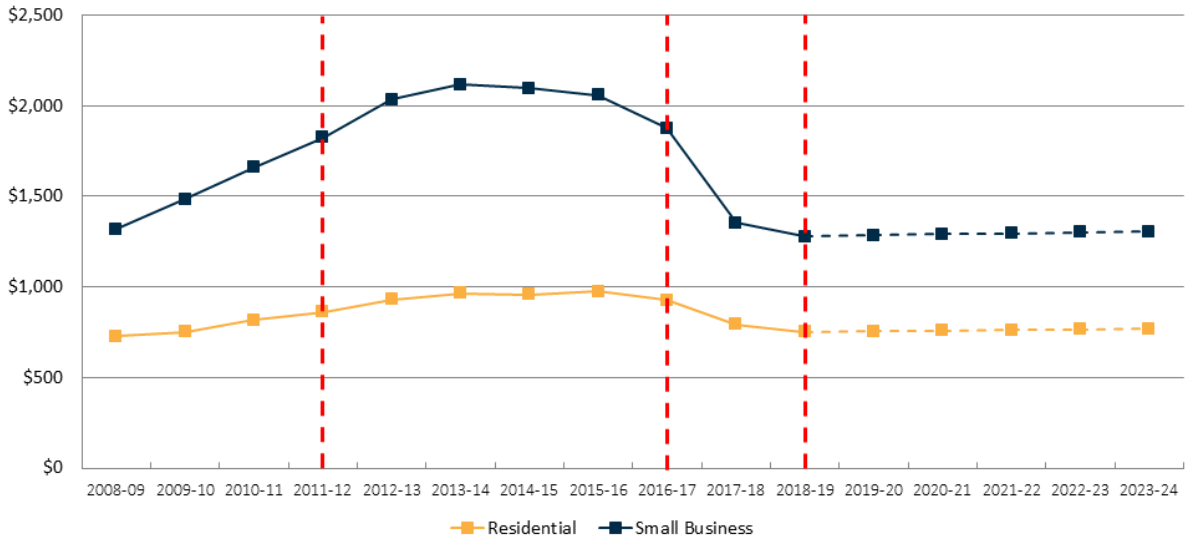
Appendix D: Network charge comparisons (Residential & Small Business)

Future price paths

Our expenditure plans as outlined in our Regulatory Proposal ensure modest increases for our distribution customers in the form of network charges of the 2019-24 TSS period. Having delivered significant real price decreases in the 2017-19 regulatory period, TasNetworks' objective in the 2019-24 regulatory period is to keep price increases to a minimum, thus preserving those real reductions in network prices whilst still maintaining a safe and reliable network.

Consistent with our strategy of sustainable and predictable pricing, our proposal results in most customers' network charges increasing only slightly above CPI and in real terms remaining well below pre-merger levels. The chart below shows the historic and forecast price path for the average residential and small business customer.

Figure 18 Indicative average annual network charge (June 2019 $)



Comparing apples with oranges

Until now, comparing the impact on customers of changes in the cost of electricity, or comparing the delivered cost of electricity under different tariffs, was a relatively straightforward exercise. For most residential and small business customers it involved taking the amount of electricity consumed by the customer during a given period and multiplying it by a per unit price (kWh). To this figure would be added any fixed, usually daily, service charges and metering charges incurred over the same period.

Aligning with our pricing strategy of a gradual transition to cost reflective pricing, we want to help customers understand what their charges may look like if they take up new tariffs. For customers who, through their retailer, switch to – or are thinking about switching to – one of our new time of use network tariffs (whether demand and consumption based time of use tariffs), this means factors other than the consumption of electricity need to be taken into account.

Under these network tariffs, the way a customer uses electricity becomes a key factor in determining how much they pay for their use of the network, rather than just how much electricity they use. Under time of use network pricing, *when* electricity is used by a customer impacts on the network charges they incur (which we bill to their retailer). And in the case of the new demand based tariffs, peaks in customers' usage of electricity (peak demand) at different times of the day throughout the billing period determine the variable component of their network charges, not the amount of power actually used.

This means that the 'typical customer' analysis of electricity charges done in the past is not directly comparable with the results that take into account ToU consumption or ToU demand.

Therefore, in this TSES we've presented network charge comparisons for residential and small business customers which show how their network charges might change over the coming regulatory period if they stay on their current network tariffs, and comparisons of the network charges they might expect to incur on their current network tariffs compared to the charges they might incur if they switched to either a demand or consumption based time of use tariff.

Am I an apple or an orange?

The overwhelming majority of residential and small business customers are currently supplied under flat consumption based network tariffs. So, the charge comparison for *Consumption tariff customers* will show them what to expect over the coming five year regulatory period in terms of changes in the network charges that contribute to the bill they get from their electricity retailer. In undertaking that comparison, it has been assumed that there is no change in the customer's circumstances (such as changes to their electricity supply like the addition of solar panels) or changes in the customers' electricity consumption. This has been done in order to isolate and clearly show the impact that any changes in the price of our network tariffs might have on customer's network costs.

For customers considering a change to a newer consumption or demand based time of use network tariff (via their retailer), it's the *Time of use* customer charge comparisons that will be the most informative. The following time of use customer charge comparisons also provide insights that most customers can't currently undertake for themselves. The reason that they can't do the comparisons themselves is that the meters in place at most homes and small businesses are accumulation meters that only record how much electricity is used over time, rather than interval meters that measure and record not only how much power is used, but when it's used (in 30 minute intervals).

Residential customers

Consumption tariff customers

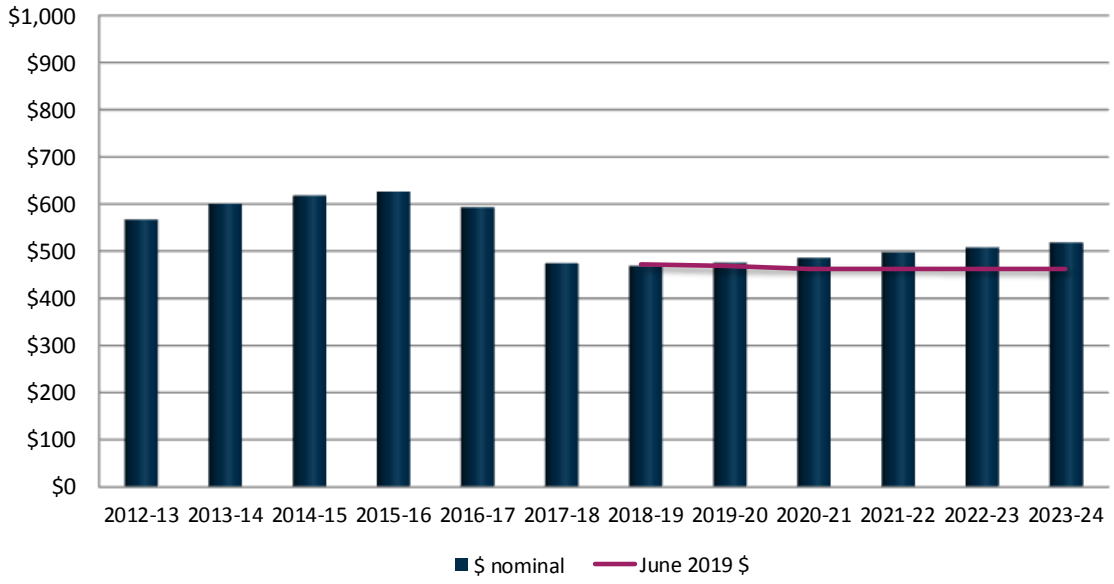
For residential customers, the standard connection to our electricity network involves a metered supply for the purpose of providing general power and light. By default, this service is currently assigned to the *Residential low voltage general* network tariff (TAS31) and the cost of that service recovered through a daily service charge and a per unit (kWh) charge for electricity delivered to the home from the network. Most residential customers are supplied under the TAS31 network tariff – although a small but growing number of customers are switching to our consumption based time of use tariff (TAS93), which became available as part of a retail standing offer in July 2016.

General power and light only

Just under 5 per cent of residential customers are assigned solely to the TAS31[23] network tariff and the following chart projects the annual network costs for these customers over the course of the 2019-24 TSS period. The projections are built on indicative prices for the daily service charge and per unit consumption charge (kWh) that make up the TAS31 tariff. The projections are based on a medium usage TAS31 only customer, using around 3,000 kWh of electricity per annum. For customers using more or less energy, the rate of change in their annual network costs may differ from the example presented below. However, the direction of that change is likely to be the same.

Figure 19 shows that for a medium usage residential customer on only the TAS31 network tariff, in real terms the substantial reduction in network charges that occurred in 2017-18 should be preserved during the 2019-24 regulatory period.

Figure 19 Annual residential customer network charges (general power & light only)



General power and light plus hot water and/or home heating

In addition to their standard connection to the network, most residential customers in Tasmania have a second metered 'supply'. In the vast majority of cases this second meter is assigned to the *Uncontrolled low voltage heating* network tariff (TAS41) used to provide energy for hot water systems and/or home heating. Around 77 per cent of residential customers are currently[24] supplied under a combination of TAS31 and TAS41.

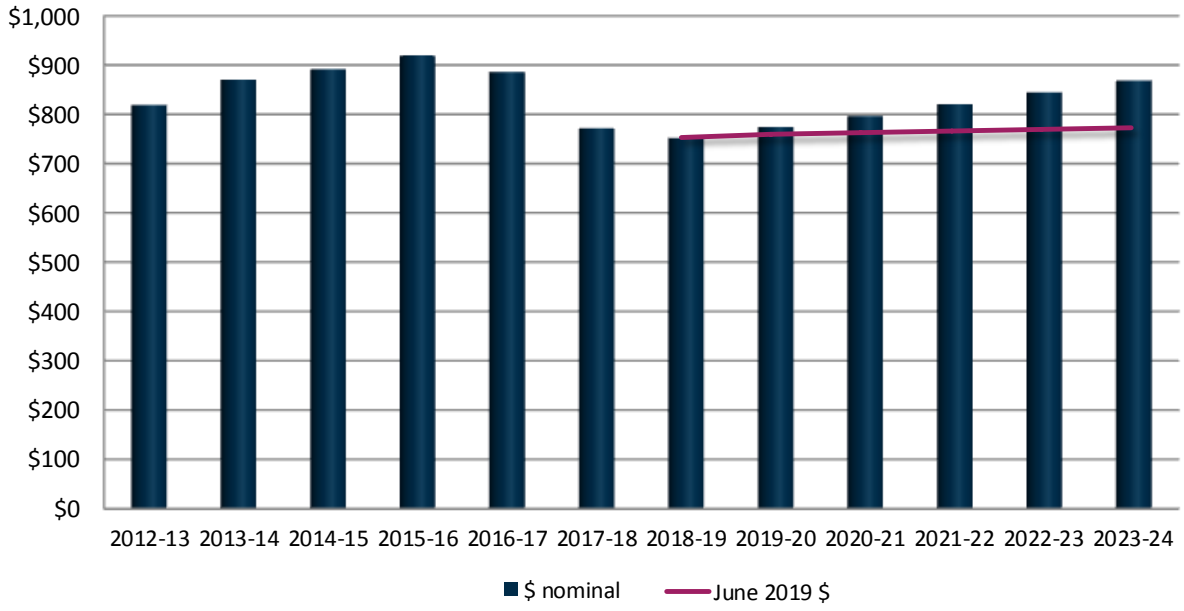
[23] As at June 2018

[24] As at June 2018

The following chart projects the annual network costs likely to be borne by a residential customer on the TAS31/TAS41 combination of network tariffs during the 2019-24 TSS period. The comparison of annual network charges has been based on a medium consumption customer using around 7,400 kWh of electricity a year, and assumes that 45 per cent of the electricity used by the household is used for general power and light, and 55 per cent is used for home heating and/or hot water. It is also assumed that the same amount of electricity is used by the customer each year.

For customers who use more or less energy, or have a different ratio of energy used for heating and hot water as opposed to general power and lighting, the impact of price changes on their network costs may differ in terms of the rate of change, although the underlying trend in network costs is likely to be similar.

Figure 20 Annual network charges for a typical residential customer (inc. home water/home heating)

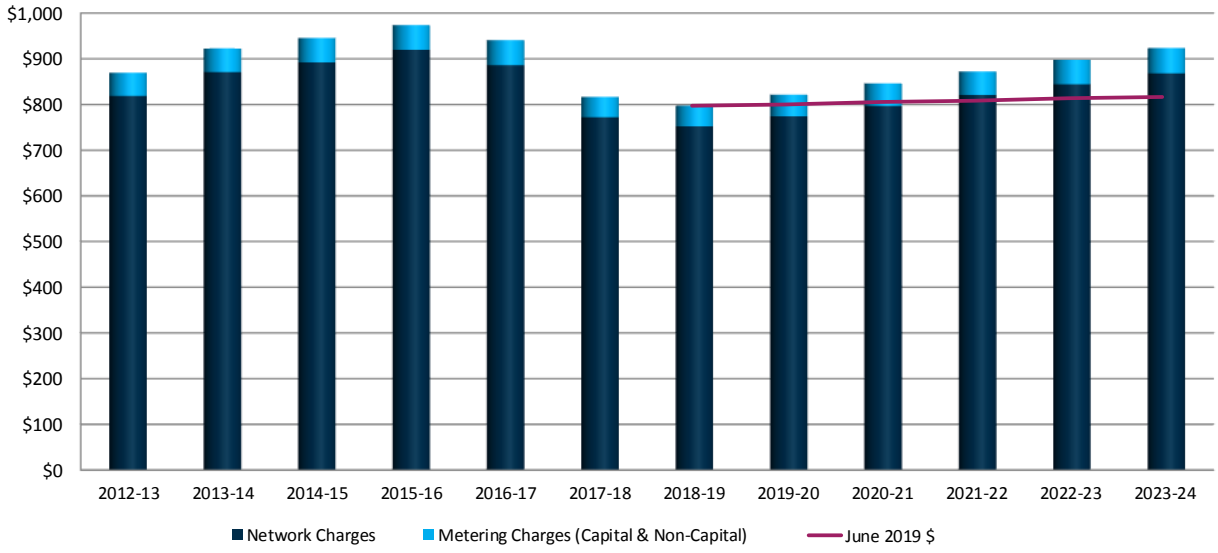


The above chart reflects the forecast network charges that would apply to the delivery of electricity via the shared network. It doesn't include alternative control metering charges, which don't vary with energy usage and don't make up part of our annual standard control revenue allowance, as metering is classified by the AER as an alternative control service.

The chart suggests that for a medium usage residential customer who is currently supplied under both the TAS31 and TAS41 network tariffs, the substantial decrease in their network charges which occurred in 2017-18 should be largely preserved, in real terms, across the 2019-24 regulatory period. This is despite the small increases in network charges which are forecast to occur year on year, because those increases are expected, on average, to be only slightly above CPI. As a result, in real terms network charges are expected to remain well below pre-merger levels.

The following chart has been included to provide residential customers – our biggest tariff class – with an additional charge comparison for the TAS31 and TAS41 tariff combination that also takes into account metering charges.

Figure 21 Annual network and metering charges for a typical residential customer ($nominal)



Residential time of use

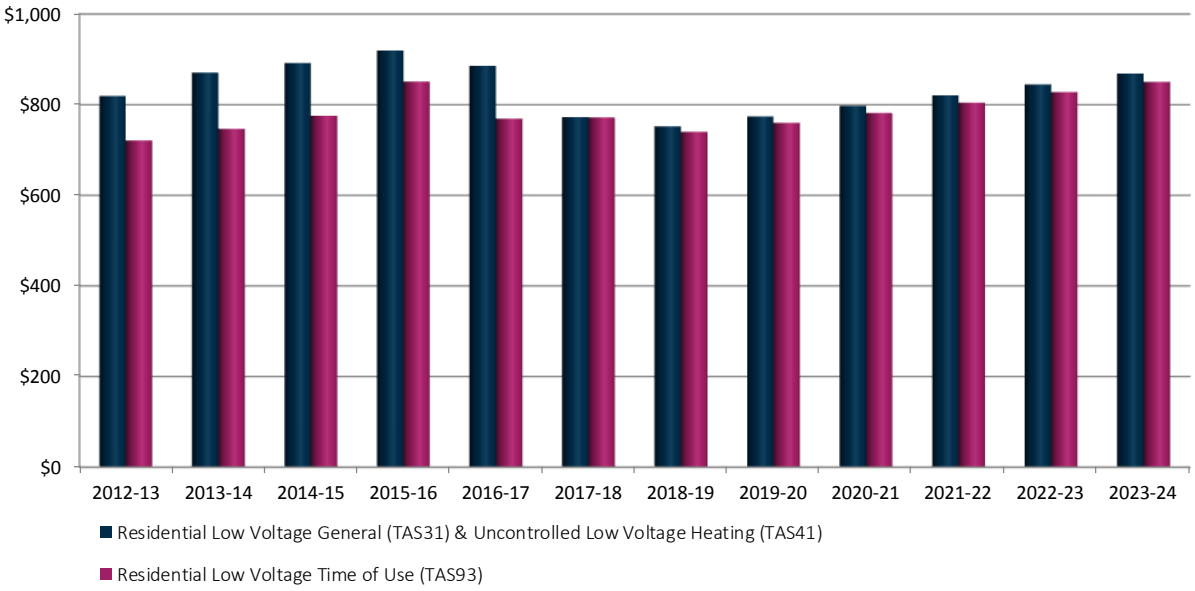
There is another *consumption based* tariff available to residential customers through their retailer, which distinguishes between the time of day that electricity is consumed and applies reduced network charges to each unit of power used in off-peak periods. The peak and off-peak periods for our Residential time of use network tariffs (TAS93) customers are the same as for our new demand tariffs, including weekends, which are deemed to be off-peak in their entirety.

TAS93 only recently became available as part of a retail standing offer in July 2016 (it has been available as a network tariff offer for some time), and already there are around 4,000 customers[25] who have made the switch to the new tariff. That might be less than two per cent of residential customers, but for customers who want to simplify their electricity supply arrangements and exercise greater control over their network charges without necessarily reducing their consumption of electricity, TAS93 may be a better option than their existing tariff(s).

The following chart forecasts the likely changes in network costs over the coming TSS period for a residential customer on the TAS93 network tariff (without any other complementary network tariffs) using around 7,400kWh per annum. It has been assumed that 32 per cent of this customer's annual consumption occurs during peak times. The figure below does not allow for any change in the usage of electricity that might occur as a result of customer responsiveness to time of use price signals. Estimated network charges for the same customer using the combination of TAS31 and TAS41 are shown for comparison.

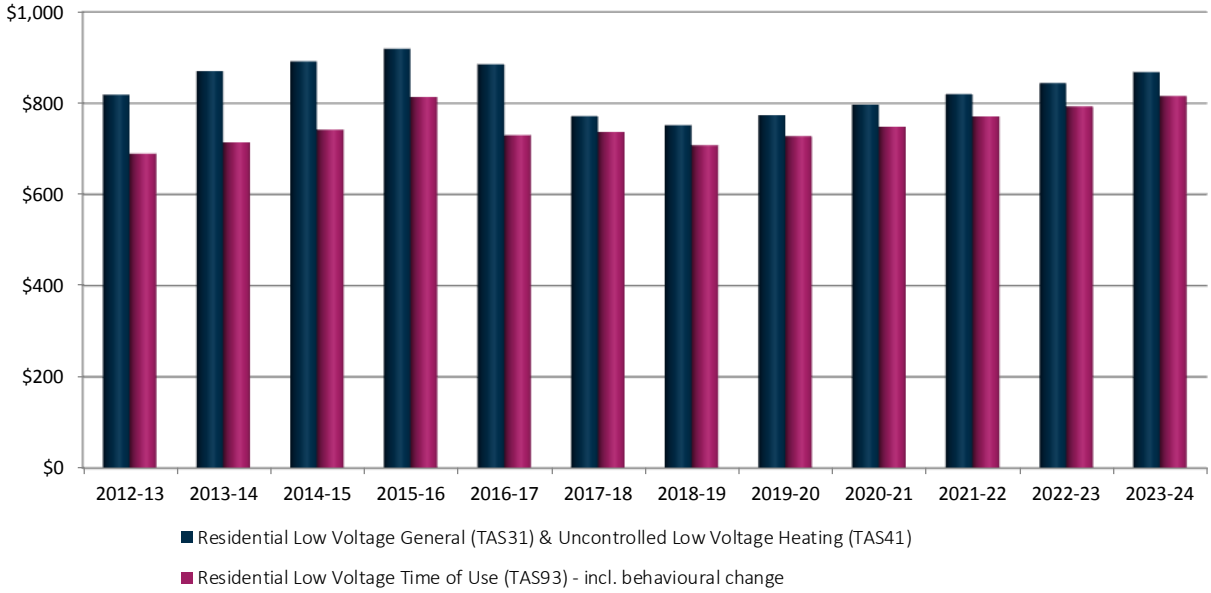
[25] As at June 2018

Figure 22 Annual network charges for a medium usage residential customer on TAS93 ($nominal)



The graph above shows that for a medium usage customer like this, even without any change in their use of electricity to take advantage of the cheaper network charges applying in off-peak times, TAS93 potentially reduces network charges compared to the current flat consumption based tariffs. If we overlay a 10 per cent consumption shift from peak to off-peak periods, the figure below shows a higher potential benefit for customers.

Figure 23 Annual network charges for a medium usage residential customer on TAS93, assuming behavioural change ($nominal)



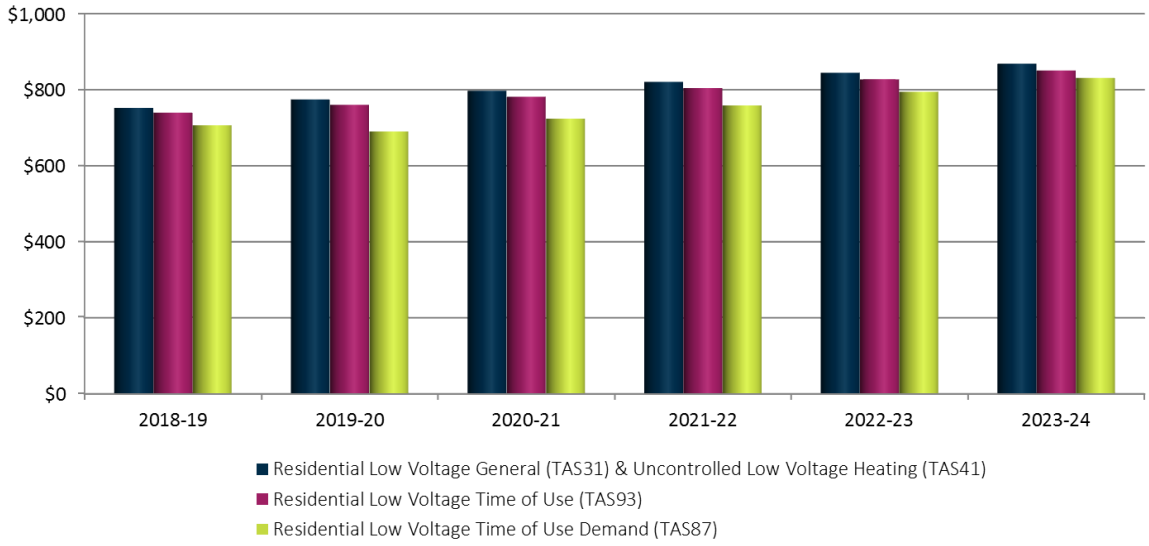
Residential demand based time of use tariff

There is another option available to residential customers through their retailer, our demand based time of use tariff (TAS87). This tariff options distinguishes between the time of day that electricity is used and applies reduced demand based network charges in off-peak periods. The peak and off-peak periods for the demand based time of use tariff (TAS87) are the same as for our consumption based time of use tariff (TAS93), including weekends, which are deemed to be off-peak in their entirety.

The difference is that the variable off peak and peak charges are based on an average of the four highest demand readings recorded in both peak and off-peak periods over the course of a month, without any reference to the volume of electricity consumed. In fact, even though the retail bill received by a customer on a demand based network tariff will still include a charge for the amount of electricity consumed by the customer, because the cost of that energy needs to be recovered from the customer who used it, our demand based network tariff doesn't feature a consumption based charge.

The following chart forecasts the likely changes in network costs over the coming TSS period for an average residential customer were they on the TAS87 network tariff[26] (without any other complementary network tariffs) and using around 7,400 kWh per annum. The average monthly peak demand of this customer is assumed to be approximately 4.5 kW. The figure below does not allow for any change in the usage of electricity that might occur as a result of time of use price signals. Estimated network charges for the same customer using the combination of TAS31 and TAS41 as well as TAS93 are shown for comparison.

Figure 24 Annual network charges for a medium usage residential customer on TAS87 ($nominal)

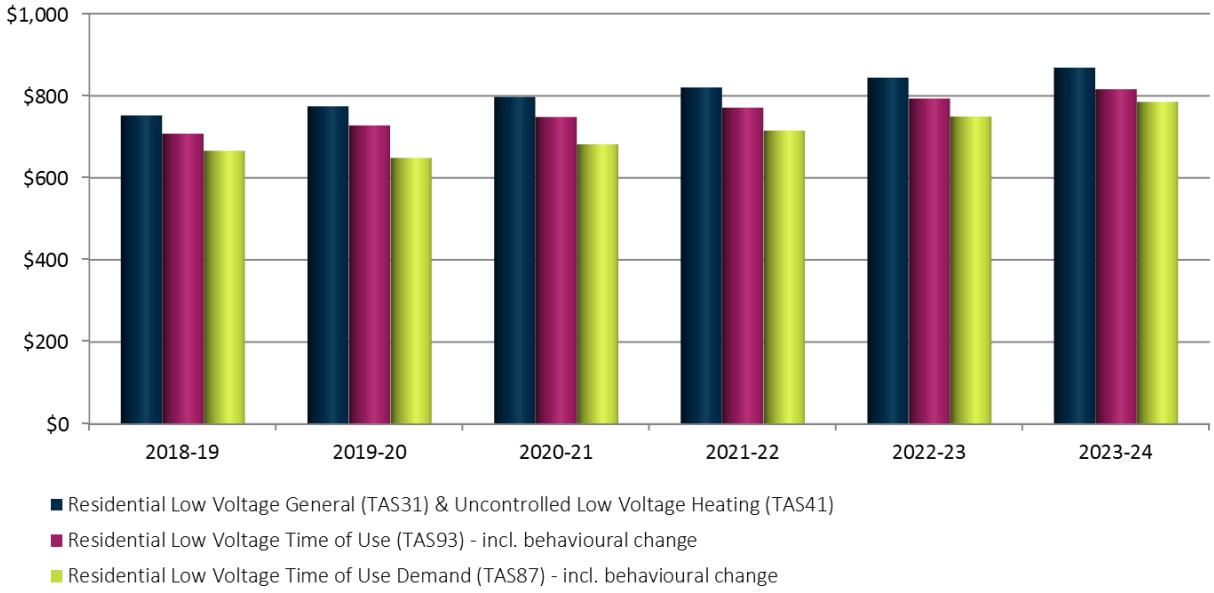


[26] At the time of writing, the TAS87 network tariff was not yet available to residential customers through their retailer, Aurora Energy, as part of a retail tariff.

Figure 24 shows that for a medium usage customer like this, even without any change in their use of electricity to take advantage of the cheaper demand based network charges applying in off-peak times, TAS87 potentially reduces network charges compared to the current flat consumption based tariffs, as well as in comparison to the time of use consumption tariff (TAS93).

If we overlay a 10 per cent reduction in maximum demand during peak periods and a similar reduction in off-peak periods, the following chart (Figure 25) shows a potentially greater benefit for customers on the TAS87 demand tariff, particularly compared to the commonly used TAS31 and TAS41 combination.

Figure 25 Annual network charges for a medium usage residential customer on TAS87, assuming behavioural change ($nominal)



Time of use tariffs and our emPOWERing You Trial

To help our customers understand what a change to a time of use tariff might mean for them, we've been running the emPOWERing You Trial, which has involved the installation of advanced meters in 600 homes to gather the data needed to estimate people's network charges under our new tariffs. We're also using the trial to assess customers' ability to understand and respond to different pricing arrangements, such as time of use pricing and demand based network tariffs.

The households involved with the emPOWERing You Trial include a range of customers, in terms of the amount of electricity they use, household composition, dwelling size and the use of solar panels.

We've grouped trial participants into five broad categories that cover the full spectrum of residential customers. To use the projections of our network charges under TasNetworks' new ToU consumption and demand based tariffs and compare them with the charges that would apply under the traditional flat consumption tariffs most customers are still on, a residential customer just needs to figure out which category of customer they and their household most resemble.

Based on information gathered through the emPOWERing You Trial, we've identified five broad customer types which between them are representative of the majority of residential customers. We identified them on the basis of a combination of their electricity usage patterns, plus the characteristics of their household.

We've used these representative customer types to portray the sort of network charges that residential customers are likely to incur over the coming five year regulatory period from 2019 to 2024. The five residential representative customer types are defined below.

Small stay at home households

Small stay at home households tend to be one or two person households, sometimes three, in which at least one adult tends to be at home during the day. This results in a flatter load profile when compared to other residential customers, and medium range electricity consumption. The majority of customers in this group are not employed (and may have retired), which is reflected in typically below average household incomes.

Small working households

Small working households comprise up to three people, but typically only one or two occupants, with adult household members tending to work during the day and household incomes tending to be above average. This type of household will typically have lower levels of electricity usage throughout the day and a pronounced evening peak, driven by a steep increase in usage when residents return home from work. Small working households' overall energy usage tends to be in the medium range. Many small working households have installed solar panels, but these generate little energy during the late afternoon/evening peak period and therefore only provide a small offset to the higher energy usage during the evening.

Large stay at home households

Large stay at home households typically are households comprising five or more people, in which adult household members tend to be at home during the day. Households in this group are typically high users of electricity, with their consumption of electricity remaining relatively high throughout the day, and only a small disparity between morning and evening peaks. This flatter usage profile is likely to be driven by household members remaining home during the day. Households in this group are likely to have a medium level of household income and are more likely to utilise pre-payment metering than other customer groups in the trial. Customers in this group are also likely to be renting their home and are unlikely to have solar panels.

Singles and retirees

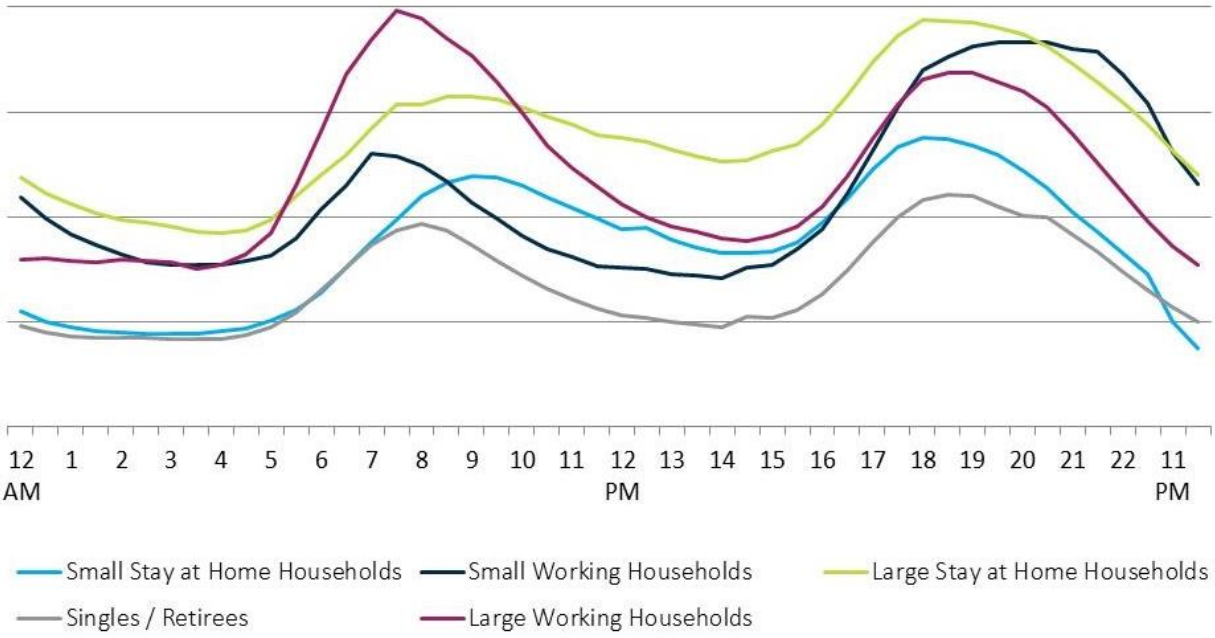
This type of household general comprises either a single person or a couple, who tend to be at home during the day. The majority of customers in this group are not employed, and more likely to be either retired or unemployed. This type of household is the lowest consumption household of the five identified in the emPOWERing You trial, and is likely to have installed solar panels. Members of this group tend to have pronounced morning and evening peaks relative to their overall level of electricity usage.

Large working households

In this group we typically see households with five or more occupants, generally two adults plus children. Adult household members tend to be employed, working during the day, with household incomes typically above average to high as a result. These households typically have high consumption levels, with clearly defined peaks. The distinct morning and evening peaks are likely to be driven by the employment status of the adult residents, as household usage tends to reduce in the morning when residents leave for work and increase in the evening when residents return home. Customers in this group are the most likely to use an electric heat pump (reverse cycle air-conditioner) as their main source of home heating. Depending on their location, households in this group are also more likely to be connected to the reticulated natural gas network, and more likely to have installed solar panels. The majority of customers in this group own or are in the process of buying their own home.

Figure 26 below shows the average load profiles of the identified customer groups. It illustrates the groups' general usage levels and how their usage patterns differentiate throughout the day.

Figure 26 EmPOWERing You Customer Group Load profiles



Network charges comparison based on emPOWERing You customer groupings

The following charts illustrate some of the possible outcomes for residential customers as the result of a move to more cost reflective network pricing. The charts draw on some preliminary results from the emPOWERing You trial across the five customer groupings identified amongst the trial participants.

Based on interval metering data gathered during the trial, for each customer grouping the charts show:

- the network charges that typical customers in each group would incur under their current network tariffs, based on their 'pre-trial' behaviour, in terms of electricity usage

and compares that with estimates of the network charges which would apply:

- under a time of use consumption based network tariff (TAS93), and;
- under a time of use demand based network tariff (TAS87)

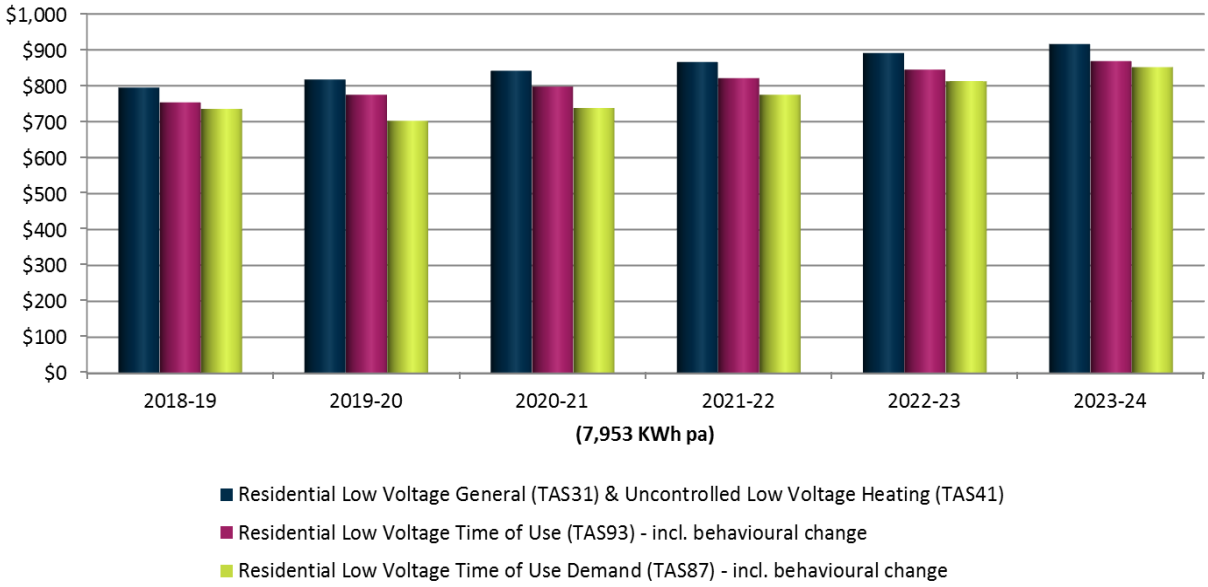
The network charges presented for TAS93 and TAS87 take into account an indicative change in electricity use by customers in response to peak versus off-peak pricing signals. The comparisons factor in a 10 per cent shift in household's typical consumption from peak to off-peak periods and a 10 per cent reduction in their maximum demand in peak periods by customers in response to the time of use pricing signals in TAS93 and TAS87 respectively. In both cases, it has been assumed that customers' total consumption remains unchanged.

Small stay at home households

The following chart compares the network charges incurred by a typical small stay at home household currently supplied under the combination of TAS31 and TAS41network tariffs used by nearly 80 per cent of residential customers with the network charges the same customer might incur if they were to switch, through their retailer, to a single time of use consumption based network tariff (TAS93) or time of use demand based network tariff (TAS87).

Without behaviour change, the network charges under the three tariff options are fairly similar. But the comparison shows that by shifting 10 per cent of their current consumption in peak periods into off-peak periods of the day (or to the weekend), the small stay at home household used in this example could reduce its network charges if they switched to a ToU consumption based network tariff (TAS93). Under a ToU demand based network tariff, reducing the household's maximum demand in peak periods would see an increased reduction in network charges.

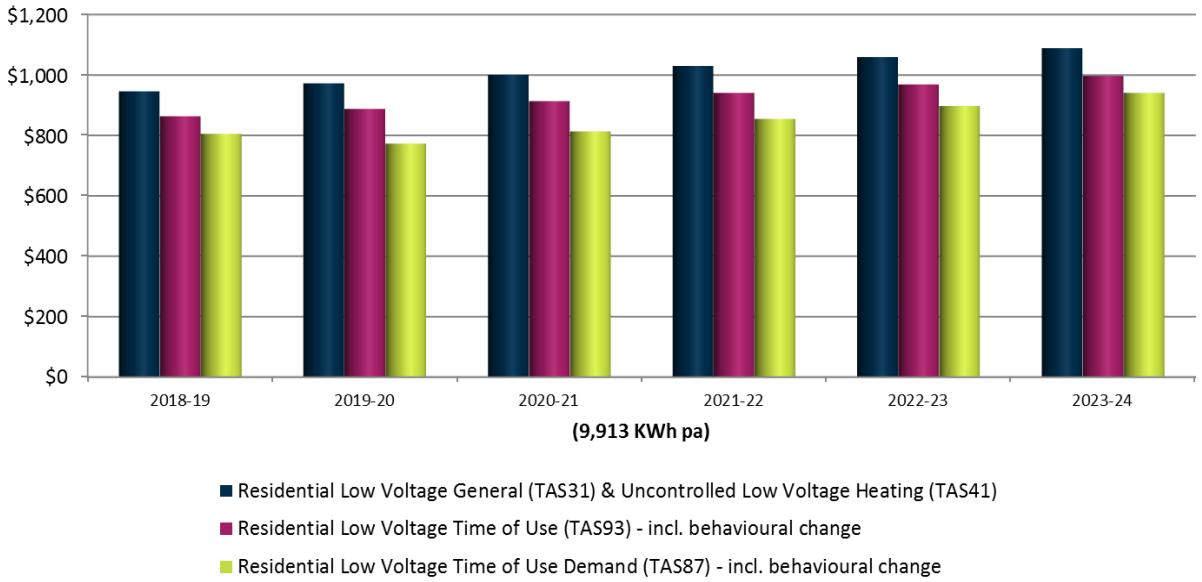
Figure 27 Annual estimated network charges – Small stay at home household ($nominal)



Small working households

The following chart shows the estimated annual network charges that might be incurred by a typical small working household under a variety of different network tariffs. The chart shows that if the household used in the example has the capacity to respond to the time of use network pricing signals offered by either the TAS93 or TAS87 network tariffs, relatively modest changes in behaviour could result in a reduction in the delivered cost of energy for that customer. Even without behaviour change, for this example customer, TAS87 and TAS93 are both lower cost options than remaining on their existing flat consumption based network tariffs.

Figure 28 Annual estimated network charges – Small working household ($nominal)

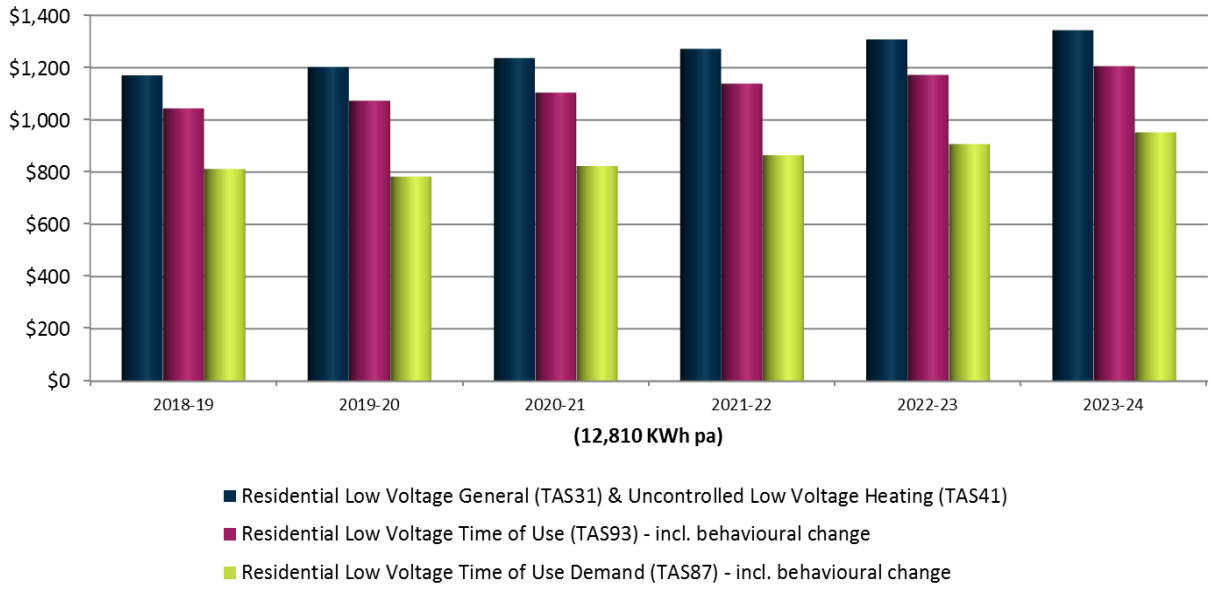


Large stay at home household

The following chart shows the estimated annual network charges that might be incurred by a typical large stay at home household under a variety of different network tariffs. For a household that is able to shift (but not necessarily reduce) its consumption of energy into off peak periods, or reduce its maximum demand at peak times of the day, the chart shows that potentially significant reductions in network costs could be available if the customer were to switch to a ToU consumption or demand based network tariff, through their retailer.

High annual consumption and a relatively flat load profile mean that the large stay at home household modelled in this example would incur significantly lower charges under TAS87 even without behaviour changes.

Figure 29 Annual estimated network charges – Large stay at home household ($nominal)



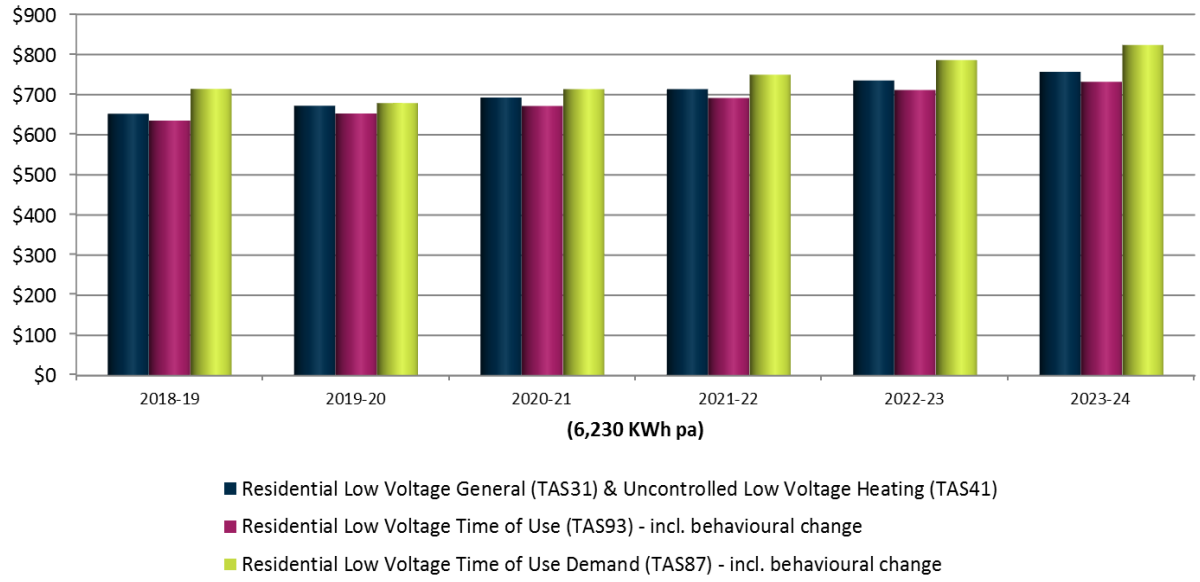
Singles and retirees

The following chart shows the estimated annual network charges that might be incurred by a single person household or retiree couple under a variety of different network tariffs. The chart shows that because single person households and retiree couples tend to use significantly less electricity than other households, their capacity to reduce their network charges is comparatively limited. This is also contributed to by the shape of their load profile.

In general, low annual consumption and a relatively peaky load profile in relation to consumption mean that a large proportion of single person and retiree couple households are likely to incur lower network charges under their existing flat, consumption based network tariffs. However, the difference between TAS93 and the existing tariffs is minimal, even without behaviour changes, and TAS93 becomes slightly cheaper with a 10 per cent shift in consumption from peak to off-peak periods.

So, for a retiree couple or single person household with the capacity to shift their use of electricity from peak to off peak periods, the reduction in network tariffs shown under the TAS93 ToU consumption based network tariff suggests that it should still be possible to reduce their electricity costs, without reducing their consumption, comfort or amenity.

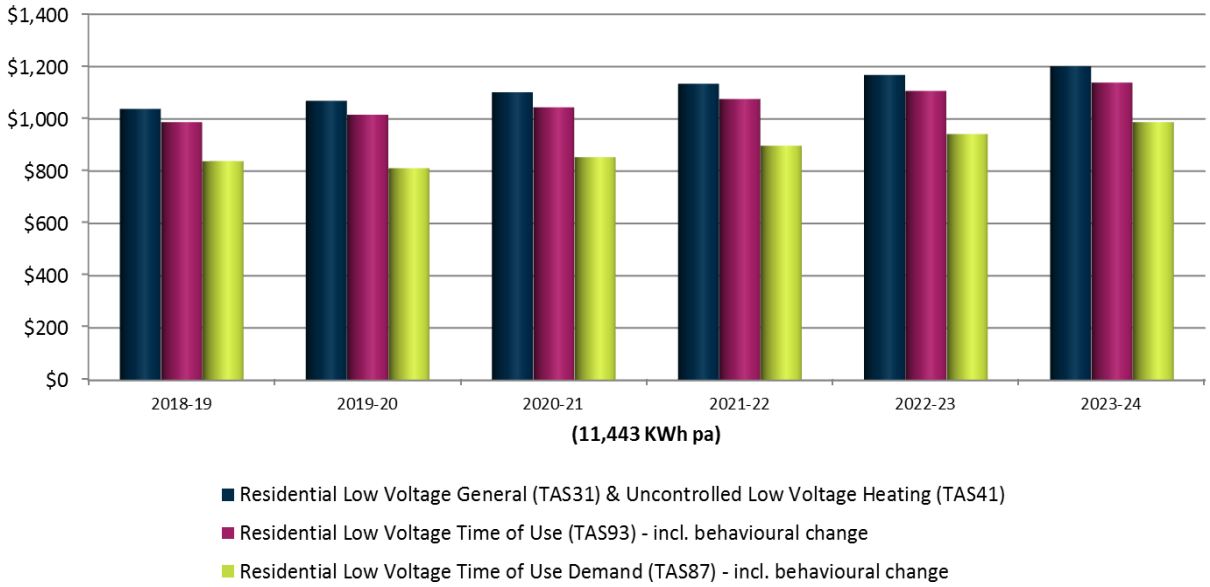
Figure 30 Annual estimated network charges – Singles and retirees ($nominal)



Large working household

The following chart shows the estimated annual network charges that might be incurred by a large working household under a variety of different network tariffs. The chart suggests that if the large working household in the example has the capacity to shift some of its use of electricity from peak periods into off-peak periods, or to reduce its maximum demand in peak periods, it could reduce its network charges significantly without necessarily reducing consumption, by switching to either TAS93 or TAS87, through their retailer.

Figure 31 Annual estimated network charges – Large working household ($nominal)



Small businesses

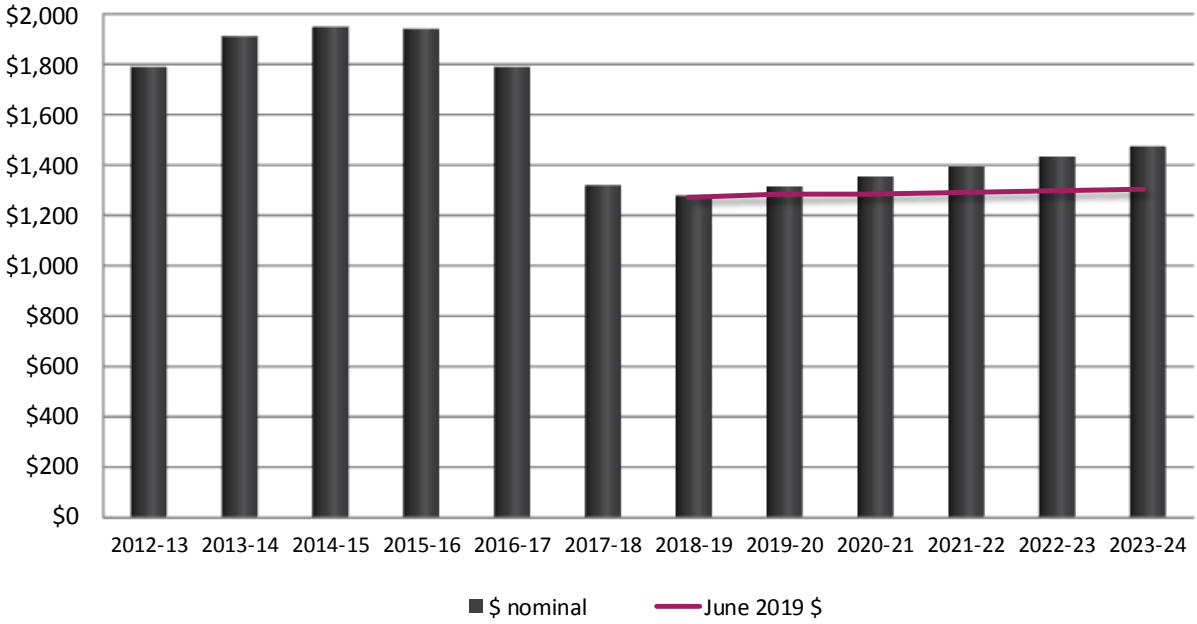
Consumption tariff customers

General power and light only

The *Business low voltage general* tariff (TAS22) is the network tariff assigned to most small businesses that are supplied with electricity at low voltage. Like residential customers, small business can also opt for a number of complementary, secondary tariffs, including the TAS41 tariff for uncontrolled low voltage heating and/or hot water.

However, 81 per cent of small business customers are supplied under the TAS22 network tariff only, so the following chart projects the network costs for an 'average' small business user of electricity consuming around 11,400 kWh per annum, supplied under the TAS22 network tariff.

Figure 32 Network costs for a typical small business on TAS22



Note: We've used an average consumption figure to produce the above chart, rather than a medium level of consumption (used for the residential customer analysis). This is because the range of consumption for customers on TAS22 is so broad that using a medium consumption figure would have meant little to the vast majority customers.

Small business time of use (consumption based)

There is a business *consumption based* time of use tariff (TAS94) available to small business customers, through their retailer, which distinguishes between the time of day that electricity is consumed, and applies reduced network charges to each unit of power used in off-peak periods. The peak and off-peak periods for TAS94 are outlined in Table A1 of this document.

For small businesses that operate around the clock, on weekends or in the early hours of the morning, or which have the scope to shift some of their energy consumption away from peak periods, TAS94 may offer greater control over their network costs than their existing tariffs, potentially without reducing their consumption.

TAS94 only became available as part of a retail standing offer in July 2016, but already there are nearly 5,000 customers that have made the switch to the new tariff, equating to over 10 per cent of all small business connections.

The following chart forecasts the likely changes in network costs over the coming TSS period for a small business customer on the TAS94 network tariff (without any other complementary network tariffs) using around 33,900 kWh per annum. Estimated network charges for the same customer under the TAS22 network tariff are shown for comparison. Based on analysis of interval metering data from existing customers on TAS94, it has been assumed that the high usage small business in this example uses 57 per cent of the electricity they consume in peak periods, 15 per cent in shoulder periods and 28 per cent in off-peak periods. For customers with different load profiles the outcomes may not be the same.

Figure 33 Network costs for a high usage small business on TAS94 ($nominal)

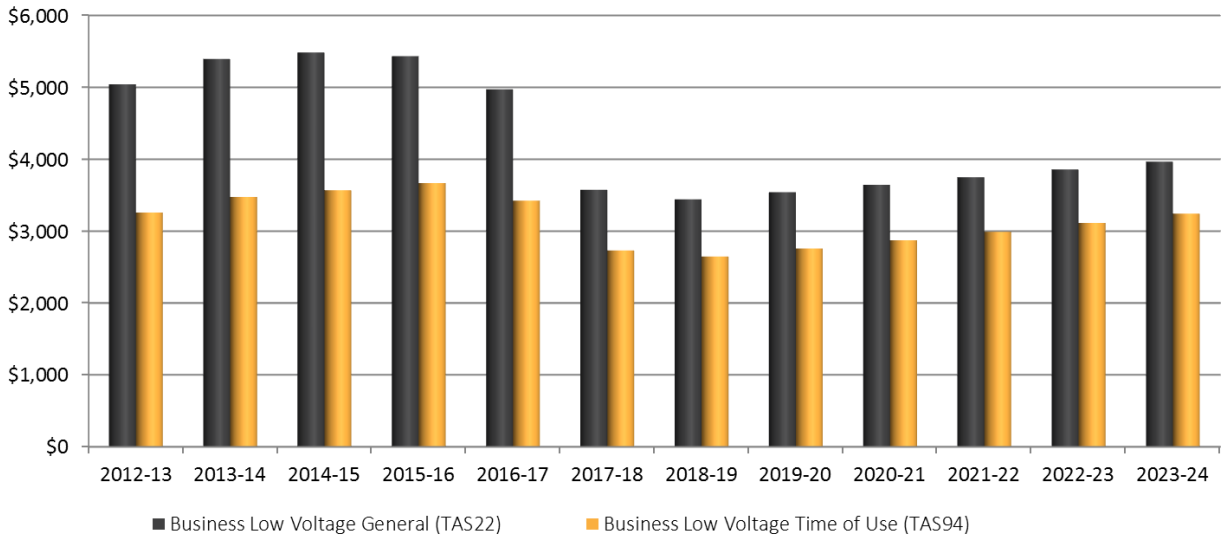


Figure 33 shows that for a high usage small business like this, even without any change in their use of electricity to take advantage of the cheaper network charges applying in off-peak times, TAS94 potentially leads to lower network charges than the current flat consumption based tariffs.

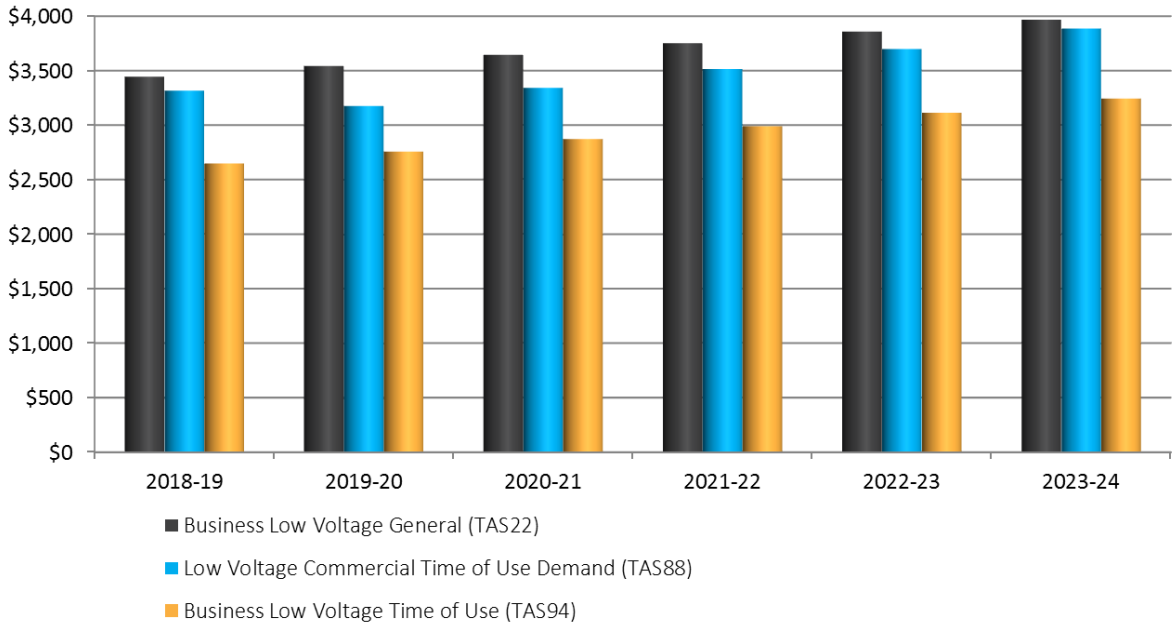
Demand tariff small business customers

On 1 July 2017, we introduced a new demand based time of use tariff as an opt-in choice for small businesses, via their retailer. That tariff features a daily service charge and two demand charges that reflect the business' maximum demand for electricity recorded during each monthly billing period. One demand charge applies to the maximum demand recorded during peak periods on weekdays, the other to off-peak periods (including weekends). So, instead of paying a flat rate for the delivery of their electricity all day, businesses on the new tariff are charged different rates depending on when and how they use electricity.

The following chart shows the forecast changes in network charges over the coming TSS period for a small business customer on the TAS88 network tariff using around 33,900 kWh per annum. The average monthly peak demand of this customer is assumed to be approximately 12.5 kW. Estimated network charges for the same customer under TAS22 and TAS94 are shown for comparison.

Figure 34 shows that for a high usage small business like this, even without any reduction in their level of demand during peak times of the day when higher network charges apply, TAS88 or TAS94 potentially represent lower network charge options than the current flat consumption based TAS22 tariff. However, as there is a wide range of usage profiles within this customer class, customers should consider their energy usage and discuss their tariff options with their retailer.

Figure 34 Annual network charges for a high usage small business on TAS88 ($nominal)



Irrigators

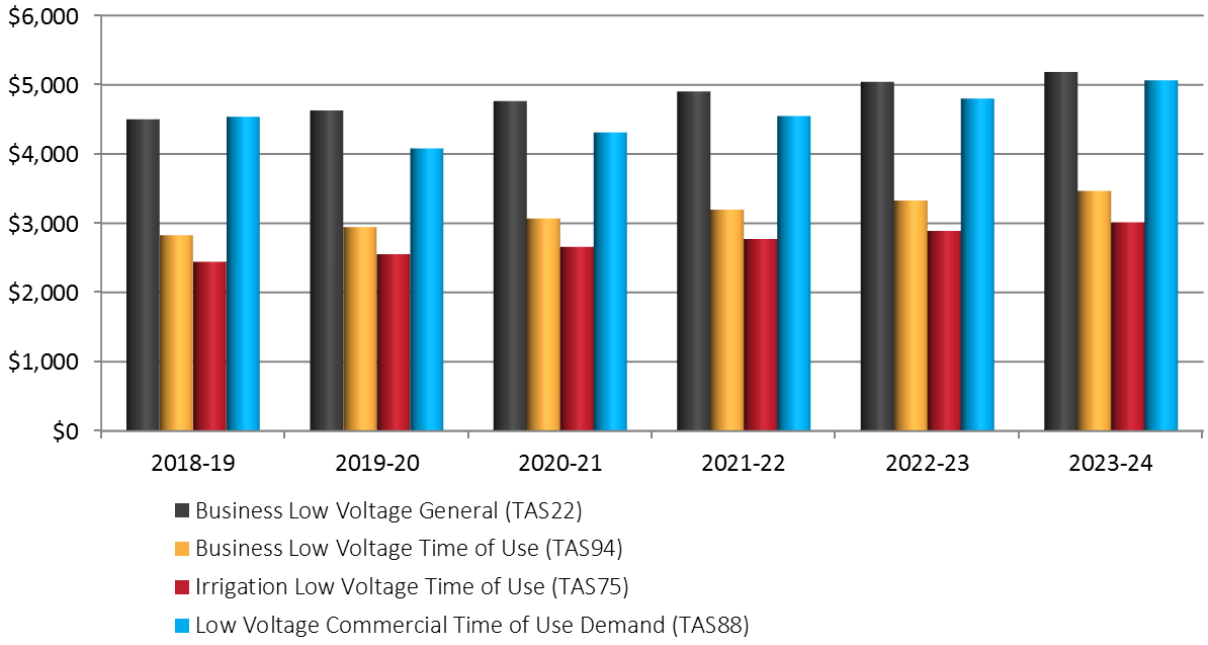
For some time, primary producers have had access to a dedicated irrigation tariff (TAS75), which is a consumption based time of use tariff consisting of a daily service charge and a charge for each unit of energy consumed (kWh). The consumption charge varies depending on whether energy is consumed during pre-defined peak, off-peak or shoulder periods of the day, which are defined differently in summer and winter (refer Table A1 of this document).

As well as the dedicated irrigation tariff, irrigation customers can also access a number of network tariffs that are available to any customer who takes a low voltage supply (where that supply is not being used to provide power to premises that are wholly or primarily used as a residence). Those options include the general business low voltage network tariff (TAS22), the consumption based low voltage time of use tariff for businesses (TAS94) and a low voltage time of use demand tariff (TAS88), which features a demand charge that doesn't vary during the course of the year.

The chart below shows estimates of the network charges that would apply in the coming TSS period to an average usage irrigator using around 44,900 kWh per annum, across a selection of the network tariffs available to irrigators. Based on analysis of billing data from existing customers on TAS75, it has been assumed that the average usage irrigator in this example uses 5 per cent of the electricity they consume in peak periods, 36 per cent in shoulder periods and 59 per cent in off-peak periods.

It should be noted that the network charges forecast in the chart don't reflect differences in electricity usage that might occur in response to the different pricing signals in each of the tariffs, in terms of time of use and/or peaks in demand, and are based on a limited sample of customers. This analysis however shows that for the average usage irrigation customer TAS75 remains an attractive network tariff option, however depending on usage patterns the consumption based low voltage time of use tariff for businesses (TAS94) is also an option which may be considered by our irrigation customers.

Figure 35 Annual network charges for an average usage irrigator ($nominal)



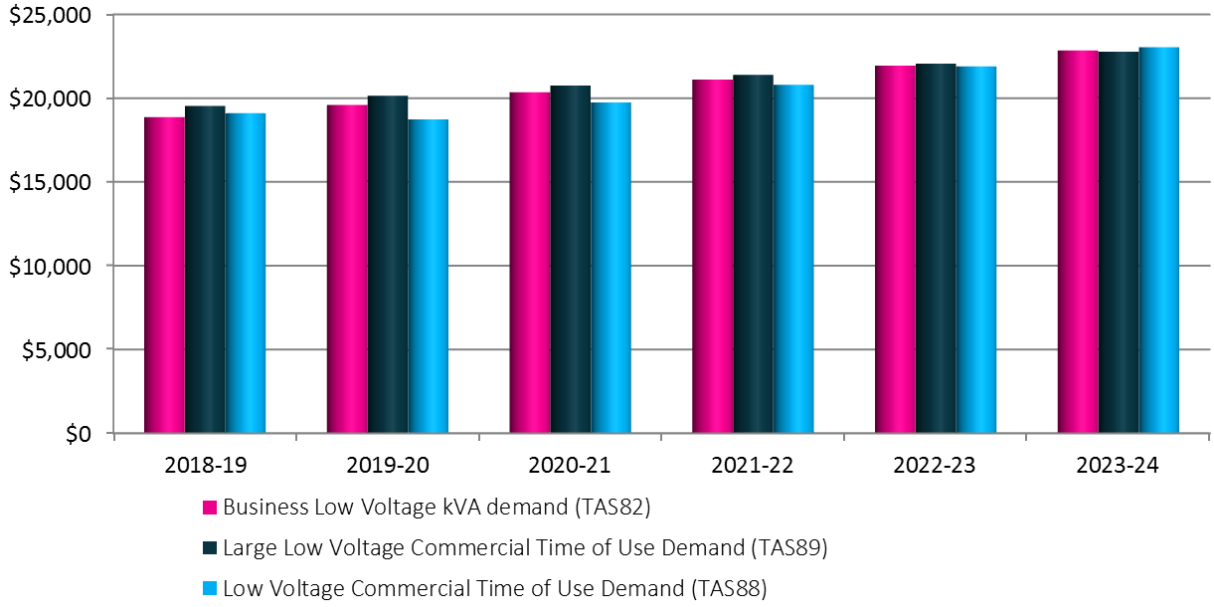
Large businesses

Large low voltage businesses

Figure 36 (below) shows a comparison of the annual network charges likely to be incurred under three different tariffs by large businesses with a low voltage multi-phase supply. The example business uses approximately 321,700 kWh of electricity per annum and has an Anytime Maximum Demand of around 84 kVA, making it a 'medium' sized customer amongst large businesses in Tasmania.

The chart shows that for a typical large low voltage business customer, there aren't significant differences in network costs between the three tariffs available to large low voltage businesses. However, the customer bill impacts associated with each of the tariffs depend on individual customers' characteristics, which is why a number of large businesses have chosen to switch from TAS82 to TAS88 and TAS89, while others actively choose to stay on TAS82.

Figure 36 Annual network charges for low voltage large businesses ($nominal)



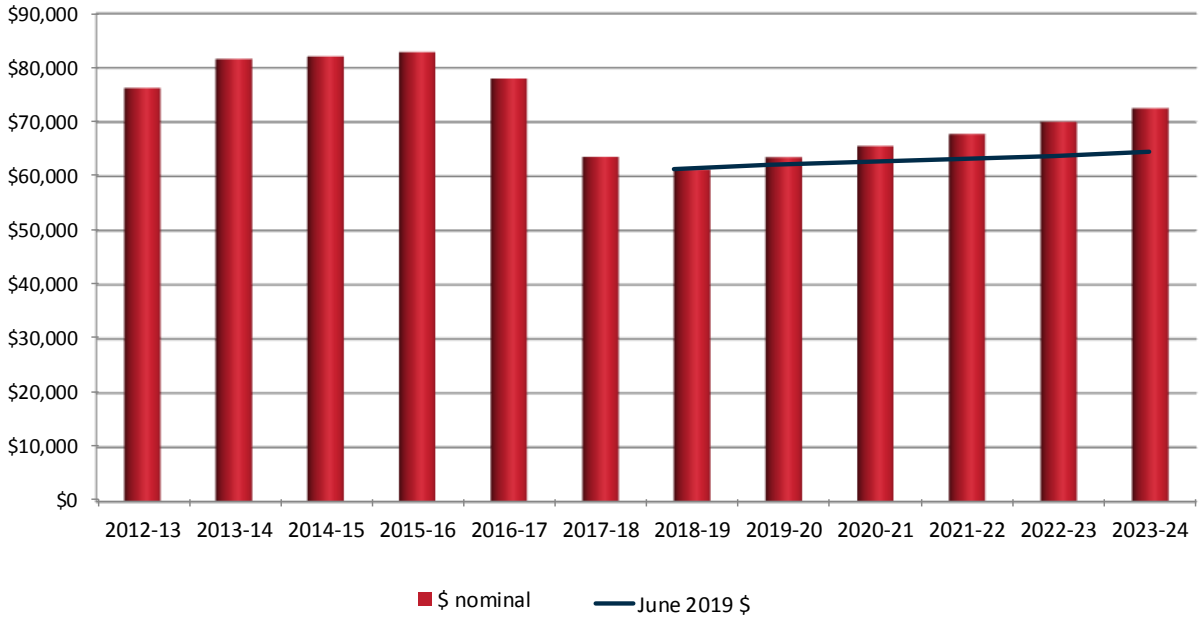
Large high voltage businesses

For large businesses taking supply at high voltage, we can only provide indicative network charges for businesses using the TASSDM tariff (Business high voltage kVA specified demand).

The TAS15 tariff (Business high voltage kVA specified demand) is also available to businesses connecting to the distribution network at high voltages. However, the tariff applies to a very small number of customers and incorporates site specific Transmission Use of System charges that depend on the characteristics of the connection, meaning that there isn't really an indicative customer that can be used as a basis for comparing network charges over time.

The following chart (Figure 37) outlines the forecast network charges of a customer assigned to the TASSDM network tariff that uses around 2,261 MWh per annum with a Specified Demand of around 590 kVA. Based on analysis of billing data from existing customers on TASSDM, it has been assumed that the high voltage business customer in this example uses 29 per cent of the electricity they consume in peak periods, 32 per cent in shoulder periods and 39 per cent in off-peak periods.

Figure 37 Annual network charges for high voltage large businesses



Appendix E: Setting time of use time windows

In addition to deciding on the components which make up our various network tariffs, for some tariffs we also need to set the time periods that apply to any components of those tariffs which take time of use into account. These periods typically reflect the level of demand collectively being placed on the electricity network by all customers because, in the long term, the cost of providing the network is driven by having to build the network to handle peaks in demand.

We set the time periods applying to tariff components with a time of use element by looking at our system load profiles to work out when in the day and week our system typically experiences peak loads or capacity constraints. Time can then be divided into peak, shoulder or off-peak periods, and different prices applied to use of the network during those periods.

The chart below shows a typical 24 hour demand profile for the entire distribution network, recorded on a cold winter's day.

Figure 38 Network demand profile – all customers

Choosing the time of use periods

Prior to lodging our TSS with the AER for the 2017 – 2019 regulatory period, we consulted with our customers and stakeholders on the time of use periods that should apply to the new network demand based tariffs which we were planning to introduce. This involved considering a variety of alternatives, which were evaluated in the context of the Tasmanian market and the pricing principles developed for evaluating prospective new network tariffs.

Following is a an overview of some of the key choices which were made when determining the time of use periods which will apply to our new demand based network tariffs.

Maximum demand

The first step in determining the time of use periods to be applied to the new demand based network tariffs was to identify when peaks in demand typically occur at a network level.

The choice of peak and off-peak periods for the time of use component of our demand based network tariffs was guided by our knowledge about when the network is most heavily loaded. While the load profile in local areas of the network may differ slightly, we elected to use the load profile of the system as a whole to identify the peak and off-peak periods to be used for the new demand network tariffs. In part, the decision was driven by the requirement to use postage stamp pricing, which means that setting prices that recognise local network constraints isn't possible. This was done partly for reasons of simplicity and partly because we are required to charge the same network tariffs for all customers within a particular tariff class that use less than 150 Megawatt hours per annum, regardless of their location.

Multiple time of use types

Some of our existing consumption based network tariffs offer three-period time of use tariffs that divide the day into peak, off-peak and shoulder periods. However, to ensure that our new demand based network tariffs are readily understood by our residential and low voltage business customers, and in response to feedback from our working group, we decided to distinguish only between peak and off-peak periods. We consider that the greater cost reflectivity offered by using three time of use periods does not outweigh the added complexity.

Further, in the interests of simplicity and in recognition of the reduced demands that customers place on the network at weekends, the peak time of use periods chosen for the new network tariffs will only apply on weekdays. This means that weekends will be treated as being entirely off-peak.

Business versus residential demand

Even though the daily load profiles of residential customers and low voltage businesses are not exactly the same, we have decided to use the same peak and off-peak times for the demand based network tariffs offered to both residential and low voltage business customers. While many businesses tend to use most of their energy during the day, using different time of use periods for residential customers and businesses would have sent mixed pricing signals when considering system wide peak demand.

Some customer advocates have argued that the time of use periods that have been chosen do not align with their constituents requirements for energy, and that the timing of their business activities and, therefore, their consumption of energy, is unable to be moved in response to network pricing signals. TasNetworks acknowledges that it is not possible for our time of use periods to align perfectly with the commercial activities or lifestyles of all customers. However, it is the collective use of energy by all of our customers that shapes the largely consistent and predictable peaks in demand at a whole of network level, and it is catering for this level of demand that ultimately drives the cost of providing the network. Therefore, it is appropriate that the time windows applying to tariff components which reflect time of use be set and applied consistently across small business and residential customers.

Seasonality

Unlike most interstate electricity markets, Tasmania's demand for electricity peaks in winter, largely due to the demand for space heating. In other markets within Australia, peak demand is driven by the use of air-conditioning on hot summer days.

The AER has encouraged all networks to consider refining their approach to setting time of use windows. As part of this feedback, the AER asked TasNetworks to consider time of use pricing windows that include the element of seasonality.

Although the use of seasonality as part of demand pricing does have the potential to provide a greater degree of cost reflectivity to address particular network constraints, our approach is informed by feedback received from our customers. Our customers have told us they do not support seasonal variations for new tariffs, due to the potential impact of increased charges during the winter period, and that they prefer the simplicity of having no seasonal variation.

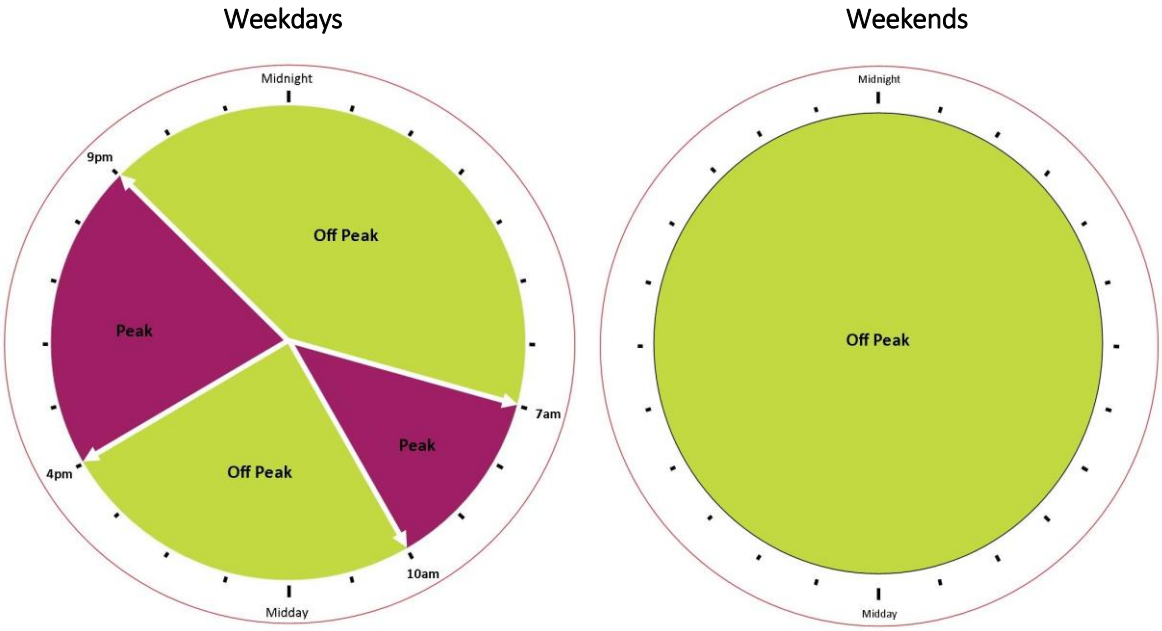
Peak period duration

Peak periods need to be long enough to encourage the shifting of demand without creating new peaks immediately on either side of the existing peaks in the network's load. Small shifts of demand have the potential to render the designated peak period(s) irrelevant and require an adjustment to the time of use periods.

Conversely, our customers have previously expressed concerns that a wide peak period may limit their ability to shift their demand away from system peaks and into off-peak periods.

The peak time of use periods chosen for our new demand based network tariffs strike a balance between a range of competing tensions. The figure below shows the peak and off-peak time of use periods that apply to the demand based network tariffs introduced for retail and small business customers in the 2017 – 2019 TSS period.

Figure 39 Demand based network tariffs time of use periods



Appendix F: Pricing related feedback from stakeholders

The following table summarises the pricing related feedback raised by stakeholders in response to questions posed in TasNetworks' *Draft Directions and Priorities Consultation Paper*, which was released for public comment in August 2017. It also includes limited documentation of views expressed by members of the PRWG during the group's meetings held as part of the development of TasNetworks' TSS for the 2019-24 regulatory period.

The following table does not include the stakeholder feedback collected from submissions received during the consultative process that informed development of the TSS for the 2017-19 regulatory period, although the key questions raised by or on behalf of customers during that process are discussed in Table 3 (*Issues raised by our customers and our responses*).

Overwhelmingly, people have told us that they want about the same reliability for about the same price. Is this consistent with what you think?		
Stakeholder	**Comments**	**Tariff Structure Statement content / actions**
Consumer Challenge Panel (CCP)	• The CCP submitted that customer expectations are also for *lower* costs. The CCP contended that consumers expect real price reductions and that any increase in overall network charges is not consistent with this. Any price increases above CPI need to be rigorously explained and justified. • The CCP linked the funding of improvements in reliability outcomes to the use of cost savings and efficiency gains.	Like any business, we face upward pressure on our costs. Many of the factors which drive increases in our costs are external to the business and, therefore, largely beyond our control. Technological advances, regulatory changes and market forces have all played a part in increasing our costs. For example, the uptake of solar panels in recent years has required us to augment many parts of our distribution network to address the power quality issues posed by the intermittent nature of photovoltaic power generation. Even though the rate of growth in customer numbers in Tasmania trails other markets in Australia, we have to cater for the addition of three to four thousand new connections to our distribution network each year. In our Revenue Proposal for the 2019-24 regulatory period we have taken a number of measures to minimise price impacts on our customers, including the use of efficiency savings to offset anticipated increases in the cost of labour and cost increases driven by customer growth. As stated in our regulatory proposal for the 2019-24 regulatory period, we are also committed to only achieving efficiencies and savings where doing so does not compromise the safety and reliability of the network, now or into the future.

John Marrone	• Mr Marrone indicated a preference for "better reliability at a lesser price" otherwise "we will always be at the same level and unable to improve."	Our distribution customers have generally told as that they are comfortable with the level of network reliability they receive but, as intimated by Mr Marrone, are concerned about the affordability of our services. While our customers may consider current reliability levels satisfactory, our regulatory proposal for the forthcoming regulatory period does propose improvements in reliability, with a focus on select areas of the distribution network with historically lower levels of reliability. TasNetworks agrees that any reduction in cost that can be achieved without compromising reliability is of benefit to our customers. As stated in our regulatory proposal for the 2019-24 regulatory period, we are committed to only achieving efficiencies and savings where doing so does not compromise the safety and reliability of the network, now or into the future.
Tasmanian Farmers & Graziers Association (**TFGA**)	• The TFGA advocated the importance of consistent and predictable pricing.	Sending consistent and predictable price signals to customers about the value of their network connection (and the impact that their use of the network has on the cost of providing the network) is one of the key drivers of our pricing reforms, in particular the introduction of our new demand based time of use network tariffs. The importance of predictable pricing can also be seen in the gradual transition of some of our existing network tariffs towards full cost reflectivity, which we will be doing over multiple regulatory periods in order to avoid price shocks for our customers. Indicative prices for tariffs for the period 2019 to 2024 are set out in the *Indicative Pricing Schedule* provided in Appendix B of our 2019-24 TSS to guide customers' expectations about any changes in network charges over the forthcoming regulatory period.
Tasmanian Small Business Council (**TSBC**)	• The proposition of maintaining current levels of network reliability along with similar prices is consistent with the longstanding views of TSBC members. • TSBC noted that despite this view (which it	Consistent with the TSBC's position, our regulatory proposal for the forthcoming regulatory period proposes maintaining current overall levels of reliability, with improvements in reliability limited to select areas of the network with historically lower levels of reliability. Our Regulatory Proposal provides further information on our future expenditure plans.

	noted is not unique to Tasmanian small businesses) networks have, for many years, been spending progressively more on reliability and charging their customers more.	
Tasmanian Council of Social Services Inc. (TasCOSS)	• TasCOSS submitted that there should be no reduction in reliability or increase in cost, but that any reduction in cost which can be achieved without compromising reliability would assist people who are now struggling to pay for the energy they need.	TasNetworks agrees that any reduction in cost which can be achieved without compromising reliability is of benefit to our customers. As stated in our regulatory proposal for the 2019-24 regulatory period, we are committed to only achieving efficiencies and savings where doing so does not compromise the safety and reliability of the network, now or into the future.

Do you agree with our direction and priorities for 2019-24? If not, how should they be amended and why?		
Stakeholder	**Comments**	**Tariff Structure Statement content / actions**
COTA	• "COTA is pleased that TasNetworks aims to reduce network charges from July 2017 and that costs will aim to be kept as low as sustainably possible. This is very important for low energy use households whose energy bills are largely made up of fixed costs. Reducing fixed charges will also incentivise people to change their energy behaviour with demand based tariffs as they are more likely to see reductions in their energy bills."	Our service charges for each tariff are primarily designed to recover the fixed costs that arise from the connection and management of each customer to our network. This sends a consistent and predictable price signal to customers about the value of their network connection. Our volume based charges are designed to recover the residual or shared network costs on a basis which reflects how our customers use the distribution network. Over time we will be reducing our reliance on consumption based network charges and moving towards a greater reliance on demand based time of use network charges. Our new demand based time of use network tariffs for residential and small business customers are designed to recover our costs in a way that reflects how our customers use the distribution network at the peak times which is what drives our future variable costs.

		A feature of these new network tariffs is that they have no charge that reflects how much power the customer uses over the course of the billing period. This offers customers the scope to shift their electricity usage to off-peak times (including weekends) to minimise their network charges, without adversely affecting their lifestyle.
TasCOSS	• TasCOSS called for greater consideration to keeping energy affordable, especially for low income and disadvantaged Tasmanians, and that making electricity affordable for all Tasmanians should be stated explicitly as part of TasNetworks' vision.	TasNetworks recognises that with Tasmania's colder climate and Tasmanians' greater reliance on electricity, for some households electricity bills can represent a greater contributor to the cost of living than might be the case in other states and territories. Reflecting ongoing efficiencies in the operation of our network, from 1 July 2017 electricity distribution network costs in Tasmania fell by around 20 per cent. As noted by the AER in announcing its approval of our revenue proposal and Tariff Structure Statement for the 2017-19 regulatory period, this reduction in network costs will help to offset the impact of rising wholesale electricity costs in Tasmania for all customers, including low and income and disadvantaged Tasmanians. The AER has estimated that if these savings are passed on they will result in a saving of $133 for an average Tasmanian household electricity bill in 2017-19. Nobody wants to pay more than they have to for electricity. We are committed to ensuring that customers pay only to the extent that they access and use our network services, and that the prices they pay are the lowest, sustainable prices possible.
Tasmanian Renewable Energy Alliance (**TREA**)	• TREA highlighted the importance of providing customers with pricing signals that reflect the value that access to the network provides to customers with, or contemplating an investment in DER, even to the extent that some may consider "paying more for access to the network if it provides additional value to them". • In supporting the aim of providing improved	Sending price signals to customers about the value of their network connection is one of the key drivers of our network tariff reforms, including the introduction of new demand based time of use network tariffs designed for households and small businesses which invest in DER.

	customer information, TREA highlighted the need to provide information to consumers about locations in which potential network constraints may either limit the ability to install DER or provide an opportunity for DER to add value to the network.	
Tasmanian Small Business Council (**TSBC**)	• TSBC questioned the assumption that the electricity market – including prices – will remain stable, citing the potentially significant impact that the loss of one or more major industrial customers or a rapid migration to embedded and off grid generation could have on network prices and service outcomes.	The loss of major industrial load in Tasmania would be likely to have some impact on the transmission network costs recovered from users of the distribution network through our network tariffs, but is a hypothetical prospect and not a matter which has been addressed in our TSS for the 2019-24 regulatory period. The installation of micro embedded generation by Tasmanian households and small businesses, largely in the form of photovoltaic solar panels, has been gathering momentum for a number of years. This has already caused TasNetworks to spend significant amounts on upgrades to the distribution network, notably in the form of larger capacity transformers, to enable customers with solar arrays to connect to the network and to help negate the power quality issues that can arise due the intermittent nature of solar generation. Those costs have been borne by the wider customer base, including those without solar panels, meaning that the uptake of solar panels is already having an impact on network prices. Under the Rules, retail customers with micro-generation facilities must be treated no less favourably than retail customers without such facilities but with a similar load profile. One of the challenges for pricing reform is to comply with the requirements of the Rules in this regard, without perpetuating subsidisation of customers with micro generation by customers without embedded generation.

Do you have any feedback on our preliminary revenue requirements and indicative pricing outcomes?		
Stakeholder	**Comments**	**Tariff Structure Statement content / actions**
Aurora Energy	• Through our PRWG consultation Aurora Energy have discussed the importance of limiting price increases to the rate of inflation, and needing to be clear of the customer benefit should prices exceed that level.	TasNetworks notes that from 1 July 2017, electricity distribution network costs in Tasmania fell by around 20 per cent. As noted by the AER in announcing its approval of our revenue proposal and Tariff Structure Statement for the 2017-19 regulatory period, this reduction in network costs will help to offset the impact of rising wholesale electricity costs in Tasmania. The AER has estimated that if these savings are passed on they will result in a saving of $133 for an average Tasmanian household electricity bill in 2017-19. The reduction in network charges was made possible by savings in the operation of our distribution network, with the AER accepting virtually all of TasNetworks' regulatory proposal, including its capital and operating expenditure forecasts. TasNetworks will continue to work with Aurora Energy to ensure that our network prices are accurately reflected in the retail electricity prices and standing offers available to all customers in Tasmania.
COTA	• COTA requested that more information be provided about how consumers will be educated about new tariffs.	As noted in this TSS, TasNetworks is currently undertaking the emPOWERing You Trial, one of the aims of which is to test customer communication and education processes, in order to help us establish the most effective methods to support customers and retailers during this transition. The results of that trial will inform how we explain demand based time of use tariffs to customers and guide the development of tools to help our customers compare network tariffs and understand what a change to a demand based tariff might mean for them.
Tasmanian Small Business Council (TSBC)	• The TSBC claimed that a gap between the prices paid by small business compared to domestic customers, and the inherent cross subsidy, will be maintained over the next six years, or maybe even widened. The TSBC did not support such an outcome.	In 2016-17, the daily service charges and per kilowatt hour network charges applying to the general power and light network tariffs that apply to most residential and small business customers (TAS31 and TAS22 respectively) were the same. However, this changed in 2017-18 and will continue to be the case as we progressively remove cross subsidies from our tariff suite. TasNetworks has inherited a number of legacy tariffs which result in cost shifting

		between tariffs and different types of customers. TasNetworks acknowledges the TSBC's view that the rate at which any subsidies affecting small businesses are unwound should be accelerated. However, as noted in Table 3 in Section 4 of this TSES (*Network tariff setting process*), we are mindful of the impact of pricing reform on all customers and we will continue to take the customer impact principle into account when making changes to our existing network tariffs. Our shareholders have also expressed a preference for a slower pace of network tariff reform. Consequently, we will continue implementing the changes approved for our 2017-19 TSS during the forthcoming TSS periods, to achieve full cost reflectivity by July 2029 in a manner that avoids material customer impacts.
TasCOSS	• With reference to information provided by TasNetworks which showed above inflation growth in revenue from distribution network customers, TasCOSS argued that such an increase would present difficulties for people on low incomes who are already struggling with energy prices and cost of living pressures.	TasNetworks recognises that with Tasmania's colder climate and Tasmanians' greater reliance on electricity, for some households electricity bills can represent a greater contributor to the cost of living than might be the case in other states and territories. This is one of the reasons why TasNetworks is transitioning gradually to cost reflective pricing and seeking to run an efficient business, in order to avoid price shocks for customers, particularly vulnerable customers, and minimise upward pressure on the delivered cost of electricity. Energy prices and the provision of support for low income and vulnerable customers are, however, separate areas of public policy, with the support provided to customers in relation to their electricity costs being a product of Government social policy, rather than one economic regulation. In Tasmania, the distribution network tariffs for all small customers of a particular class are also required to be uniform, meaning that there is no mechanism available to TasNetworks to delivery discounts or concessions to customers identified as being vulnerable. Further, any growth in our revenue, to the extent that it places upward pressure on customer's charges, is also approved by the AER. TasNetworks has already achieved significant inroads into easing the upward pressure on electricity prices in Tasmania. From 1 July 2017, electricity distribution network costs in Tasmania fell by around 20 per cent. As noted by the AER in

		announcing its approval of our revenue proposal and Tariff Structure Statement for the 2017-19 regulatory period, this reduction in network costs will help to offset the impact of rising wholesale electricity costs in Tasmania. The AER has estimated that if these savings are passed on they will result in a saving of $133 for an average Tasmanian household electricity bill in 2017-19.

What information would you like to better understand in our tariff reform plan?		
Stakeholder	**Comments**	**Tariff Structure Statement content / actions**
Aurora Energy	• Throughout our consultation process Aurora Energy have remained supportive of a slow transition to cost reflective pricing. Based on concerns about: affordability for customers and lack of understanding of the change to cost reflective pricing, the impact of change to retail market systems and billing processes and lack of available data to better understand implications for customers.	TasNetworks welcomes Aurora Energy's support of the pace of network tariff reform in Tasmania and will continue to work closely with Aurora energy on the subject of tariff reform. TasNetworks is committed to applying cost reflective network prices for all customers by 2029 and appreciative of Aurora Energy's support regarding the pace of network tariff reform. The process of pricing reform is challenging and, to be successful, we will need to gain customers' understanding and acceptance of any new or modified tariffs. Through our emPOWERing You Trial we are gathering data about customers' electricity use and their responses to the type of demand based time of use network tariffs we are proposing, which will help us gauge customers' willingness to embrace change. While the new demand based time of use tariffs will initially only be available to households and small businesses on an opt-in basis via their retailer, subject to the level of advanced meter take-up in Tasmania, TasNetworks plans to begin billing retailers serving residential and small business customers on a cost reflective basis during the 2029-34 regulatory period. Whether those prices are passed on to the customer will then become a matter for the retailer to decide. However, the AER has indicated its support for this phased approach to network tariff reform, involving an initial customer-led transition to cost reflective network tariffs

		followed by assignment principles which support a faster pace of reform.
CCP	• The CCP expressed concern that the progress towards tariff reform outlined in TasNetworks' Directions and Priorities consultation paper might not be sufficient to fulfil the 2025 Roadmap's vision. • The CCP suggested that it would be of value to consumers for TasNetworks to outline how they are collaborating with other DNSPs on the AER's view of the current and future TSS.	We recognise that there are some stakeholders with an appetite for a faster rate of reform than we have proposed (for example the TSBC). However, there are divergent views about the pace of pricing reform. Our shareholders have, for example, expressed a preference for a slower pace of pricing reform. We are mindful of the impact of pricing reform on all customers when making changes to our existing network tariffs. Our overarching pricing strategy remains, therefore, to continue a gradual transition to cost reflective pricing in a way that avoids material customer impacts, particularly for vulnerable customers. We will continue implementing the changes approved for our 2017-19 TSS over the next two TSS periods, to achieve full cost reflectivity by July 2029. TasNetworks has sought to engage with all retailers on the subject of network tariff reform and Aurora Energy has been a key retail contributor to the development of our pricing reform plans (as a member of our PRWG) since we began engaging with stakeholders on the subject in late 2014. We will continue to work with all electricity retailers, including Aurora Energy, to progress our pricing strategy and ensure that our new and adjusted network charges are incorporated into the retail tariffs offered to customers in the future. TasNetworks is a member of the Energy Networks Australia Pricing Group, which includes representatives from DNSPs and TNSPs from around the country. The Pricing Group met with the AER in the lead up to the submission of our 2019-24 TSS to discuss are proposal and also to understand the proposals of others submitting in January 2018.
COTA	• COTA highlighted the need for TasNetworks to provide information and instruction to older Tasmanians (particularly those with low levels of digital literacy) to enable them to benefit from TasNetworks' new network tariffs and advanced metering, particularly in such a way as to reduce their energy bill	As part of our emPOWERing You Trial, we have been engaging with some 600 households, representing a broad cross section of the Tasmanian community, including a number of older customers. Through the emPOWERing You Trial we are learning how best to explain demand based tariffs to all customers. The trial will help us share informative customer stories with the community about their electricity usage which explain how customers can take advantage of network tariff reform to reduce their energy bill without adversely affecting their lifestyle.

	without reducing energy use or adversely affecting their lifestyle.	
Tasmanian Renewable Energy Alliance (**TREA**)	• TREA requested that more consideration be given, or information provided, regarding tariffs which apply to or support local energy trading, the provision of network support services and the integration of EVs into the grid. • TREA requested advice on whether TasNetworks intends providing restrictions or incentives to discourage or encourage the installation of DER in particular localities, to the benefit of the network. • TREA also enquired about: – what, if any, incentives might be offered by TasNetworks to the owners of storage capacity to provide services to the network. – whether TasNetworks proposes to introduce tariff or other arrangements to encourage the charging of electric vehicles in ways which minimise negative impacts on the network – what tariffs might be used to encourage/enable electric vehicle owners to provide services to the network	In Tasmania, the distribution network tariffs for all small customers of a particular tariff class are required to be uniform, regardless of where in mainland Tasmania the customer is supplied with electricity. Only larger, usually high voltage customers like energy intensive businesses, might pay network charges that to some degree reflect their location. Nonetheless, we are undertaking a trial of solar panels and batteries in 40 homes on Bruny Island – which is supplied with electricity via an undersea cable that is facing capacity constraints. The trial is being conducted to provide us with insights into the potential for customers to manage their electricity usage and control their electricity costs using DER – while also using these resources to benefit our electricity network and other customers. For more information about this trial see *Distributed Energy Resource case study* on page 17 of this TSES. TasNetworks has already introduced a consumption based time of use network tariff for residential customers (**TAS93**) which became available as part of a retail standing offer from 1 July 2016. This new tariff offers customers with DER (including EVs) the scope to be rewarded with lower network charges for using electricity in off-peak periods, which also benefits the network. And like the new demand based time of use network tariffs which we will introduce in the coming TSS period, one of which is specifically designed for customers with DER, TAS93 offers customers with photovoltaic solar panels, batteries and/or an EV to use the electricity they generate or store for home heating and/or hot water, or charging EVs, not just for the purposes of general power and light.
Tasmanian Small Business Council (**TSBC**)	• The TSBC requested to see the information that will be provided to small businesses	We realise that time of use demand charges are a new concept for many small businesses and that a lot of businesses will not be aware of what their typical

	about tariff reform, and find out how the information will be communicated. • The TSBC identified the need for small business operators to be able to understand: – any difference between what their business is currently being charged and what they will be charged in future as a result of tariff changes (assuming no change in tariff assignment or consumption behaviour); and – what they might be charged if they switch tariffs or change their consumption behaviour. • The TSBC contends that small businesses are unlikely to (and should not be expected to) modify their electricity consumption behaviour unless the rewards for doing so are sufficiently large and measurable.	demand is. We also realise that many small business operators won't know which appliances to switch off or turn down in order to reduce demand. That's why we are offering demand based time of use tariffs as a choice for small businesses, via retailers, on an opt-in basis. And if a small business switches to a retail tariff that incorporates one of our new demand based time of use network tariffs, we'll provide an opportunity for that business to revert to its previous tariff arrangements, should the business decide that the new tariff isn't working for them. Throughout the development of our new network tariffs for small businesses, we have engaged with advocates for small business, like the TSBC. The insights provided by businesses and their advocates will assist us in helping small businesses to transition to demand based time of use network tariffs, by teaching us how best to explain demand based tariffs and aiding the development of tools that small businesses can use to compare network tariffs and understand what a switch to a demand based time of use network tariff might mean for them.
TasCOSS	• TasCOSS submitted that it would be beneficial for TasNetworks to provide more information about social impacts of losing the Tariff 41 network tariff for hot water and heating, including the public health benefits of the essential services of heating and hot water, and the costs incurred by the whole community when people cannot afford the energy they need.	Many Tasmanians rely on electricity to provide home heating and hot water in a way not seen anywhere else in Australia. The TAS41 network tariff for uncontrolled low voltage heating currently provides customers with significantly discounted network charges for hard-wired space heating and hot water systems, despite the demands that home and hot-water heating place on our network – often at peak times of the day. In the lead-up to our TSS for the 2017-19 regulatory period, one of the options we canvassed with stakeholders was removing the discounted network tariffs for uncontrolled low voltage home and hot water heating for all new customers. At the same time we proposed reducing the price of other network tariffs used by the same customers to offset the change. However, most of the feedback we received

		during the engagement was not supportive of this approach. We have instead gone down the path of gradually rebalancing the price of the TAS41 network tariff with the Residential Low Voltage General (TAS31) tariff. Over time the charges under both tariffs will become the same but, for most customers, the transition should involve only small changes that avoid material customer impacts from year to year. There will be no sudden abolition of these discounted tariffs. Rebalancing the two tariffs will occur over the course of multiple regulatory periods in order to allow customers time to adjust to the changes being made. Our aim is to promote a customer led shift to demand based time of use tariffs, while transitioning the remaining tariffs, like TAS41, to reflect total efficient costs, thereby removing cross-subsidies between existing tariffs.

Do you support our approach to tariff reform?		
Stakeholder	**Comments**	**Tariff Structure Statement content / actions**
CCP	• The CCP submitted that a central objective of tariff reform needs to be transparency of the drivers of costs and their allocation to different customers. An important aspect of this is for customer representatives to be able to engage with TasNetworks and Aurora Energy at the same time. CCP noted that this had occurred at a recent Pricing Reform Working Group and that further opportunities for engagement are being identified, which the CCP supported. • The CCP indicated that the Directions and Priorities Consultation Paper could have	We established the TasNetworks PRWG (formerly the *Tariff* Reform Working Group) in late 2014 to provide us with advice about our customers' needs and act as an advisory group on pricing issues. The Group is made up of around twenty stakeholders comprising representatives of the community sector, businesses, consumer advocates and members of the electricity supply industry. Aurora Energy is a member of the PRWG and has been a contributor to the development of our pricing reform plans since we began engaging with stakeholders on the subject in late 2014. We also engage with Aurora Energy outside of the PRWG forum and, along with Aurora Energy, participate in joint pricing meetings convened by OTTER. We will continue to work closely with Aurora Energy and other electricity retailers, to ensure that the price signals in our increasingly cost reflective network tariffs are visible to customers through the retail tariffs on offer from the electricity retailer. TasNetworks notes the feedback from the CCP regarding the extent to which

	dealt more comprehensively with the issues involved with tariff reform in Tasmania (including political and customer issues).	network tariff reform was covered in the Directions and Priorities Consultation Paper. Our regulatory proposal for the 2019-24 regulatory period sets out our tariff reform plans at a high level, while the accompanying TSS provides customers and other interested stakeholders with insights into the key issues raised by stakeholders in relation to pricing reform, as well as our responses to those representations.
COTA	• COTA noted that fixed [service] charges can represent a higher proportion of the delivered cost of energy for low energy use customers, with the result that minimising energy use may have very little impact on how much they pay for their electricity. With older Tasmanians characterised as being low energy use consumers, COTA contends that fixed charges should be kept to a minimum, in the interests of enabling the consumers it represents to maintain control over their electricity costs. • COTA advocated that the population samples in upcoming trials and pilots need to reflect the diversity of the Tasmanian community, the implication being that older Tasmanians should be represented in those sample groups. • COTA has indicated that it is supportive of TasNetworks approach to tariff reform, but noted the importance of ensuring that consumers are able to use the new tariffs effectively. • "COTA recognises the effort that	The traditional flat consumption based network tariffs which have been in use for decades only offer older Tasmanians the scope to reduce their electricity bills by reducing the amount of electricity used during the course of a billing cycle. However, a reduction in electricity use can often be accompanied by a loss of amenity through, for example, using heating less during cold weather. Over time we intend reducing our reliance on consumption based network charges and moving towards a greater reliance on demand based time of use network charges. The new demand based time of use network tariffs for residential customers are designed to recover the costs of the shared network in a way that reflects how our customers use the distribution network at the peak times that drive our future variable costs. Customers with the flexibility to shift their electricity use into off-peak times of the day (which include weekends) will potentially be rewarded with lower network charges, without necessarily reducing their consumption of electricity or adversely affecting their lifestyle. Older Tasmanians are potentially amongst those residential customers with the greatest scope to exercise control over the timing of their energy use and take advantage of off-peak network tariffs. Our emPOWERing You Trial involves around 600 households, representing a broad cross section of the Tasmanian community, including a number of older customers. Through the emPOWERing You Trial we will learn how best to explain to customers how they can take advantage of network tariff reform to reduce their energy bill without adversely affecting their lifestyle.

	TasNetworks have made to consult with their community and address issues to support Tasmanians with their energy use."	
Tasmanian Farmers & Graziers Association (**TFGA**)	• The TFGA is supportive of cost-reflective network tariffs for primary producers. • TFGA contended that TasNetworks thinking in relation to the application of differential pricing to time of use periods, as they relate to irrigation at least, may not be consistent with contemporary agricultural practices, which can see crops needing to be irrigated throughout the day.	The power lines servicing remote and rural areas often span large areas and serve customers located a long way from the network's nearest connection point with the transmission network. As distances from transmission substations increase, the strength of the network decreases. As a result, even small changes in demand can place greater localised stress on the network than similar loads might in other parts of our network. And transformers in rural settings often have to be over sized in order to cope with the start-up currents associated with irrigation pumps. So, although the peak demand on our wider network occurs in winter, many of the network assets used to connect irrigation customers experience their peak during the summer months, largely as a result of an increased need for irrigation in warmer weather. As a result, the irrigation tariff is unique amongst our time of use network tariffs in that it is priced based on a summer peak. In this sense, the current irrigation tariff is highly cost reflective, in that its time of use periods recognise the impact that the use of electricity by irrigators has at different times of the day, and the year, on our network costs.
Tasmanian Irrigation (**TI**)	• TI contends that TasNetworks' current ToU tariff structures are not aligned with optimal crop irrigation timing and that a move to cost reflective pricing will overly burden the irrigated agriculture sector. • TI was critical of the network tariffs currently available to irrigators, which it claimed don't provide end users with the right incentives to adopt optimal energy use behaviours. • TI contends that for an irrigator supplied	TasNetworks acknowledges that agriculture has long been a key part of Tasmania's economy. The continuing growth in the economic contribution of agriculture has been driven by the expansion of irrigation across the State, which in turn has been powered by electricity, delivered to primary producers and irrigation schemes by TasNetworks. The introduction of two new commercial time of use demand tariffs for commercial customers in the next regulatory period mean that irrigators will potentially have up to six network tariffs to choose from, including the existing dedicated irrigation tariff, TAS75. This is a wider range of network tariffs than is available to any other category of customer and encompasses a flat consumption based tariff, a time of use consumption tariff, a tariff that combines consumption and demand charges,

	under the TAS75 Irrigation TOU Tariff, their network charges will 39% over a 6-year period from 2017-18 to 2022-23, representing an average of increase of 5.70% each year, well in excess of recent rates of inflation. • TI has proposed a number of alternative tariff reform measures: - introduce tariff relief for irrigation customers to minimise exposure to TOU peak pricing; - introduce a flat tariff structure for irrigation customers at or below the equivalent overall cost structure of TAS75; - introduce incentives to irrigation customers that encourage optimal energy consumption behaviours; - only apply TOU tariff structures where load constraints exist on a particular feeder; - any future TOU tariff options need to align with both crop requirements and address load constraints; - irrigation tariff prices should be capped and indexed at CPI; and - existing cross subsidies into irrigation tariffs should be maintained.	and demand based time of use tariffs. TasNetworks considers that the network tariffs available to irrigators are sufficient, and sufficiently diverse, to enable irrigators to choose network tariffs which suit their circumstances. That said, we welcome further consultation with the agricultural sector including the exploration of trials and data gathering to support an improved understanding of customers electricity usage. This will in turn support the exploration of alternative pricing structures for the future.
Tasmanian Renewable Energy	• TREA is supportive of the introduction of	TasNetworks welcomes the support of TREA and other stakeholders for the

Alliance (**TREA**)	demand based time of use tariffs on an opt-in basis for residential and small business customers. • TREA expressed concern that increases in service or fixed charges and reductions in variable charges may discourage energy efficiency. • TREA expressed reservations about the social impact of closing the pricing differential gap between the TAS31 and TAS41 network tariffs. • TREA advocated the use of trials to identify the appropriate tariffs to support greater integration of DER into the network.	introduction of our new demand based network tariffs for residential and small business customers on an opt-in basis. About 76 per cent of residential customers are currently supplied under a combination of the *Residential Low Voltage General* (**TAS31**) tariff and the *Uncontrolled Low Voltage Heating* tariff (**TAS41**). TAS41 currently provides customers with significantly discounted network charges for hard-wired space heating and hot water, despite the fact that the load associated with home and hot water heating frequently coincides with periods of peak demand on the network. Our plan is gradually rebalance the price of TAS41 with TAS31, in recognition of the demands that heating loads place on our network, with the two network tariffs to be aligned by the end of the 2024-2029 TSS period. We recognise that many customers have made significant investments in electric space heating on the basis of the current charging arrangements, which have been in place for several decades. However, we believe that the transitional period being proposed is long enough to give customers the chance to understand and respond to changing price signals and reduce the potential impacts of reform on their electricity bills – potentially through migrating to an alternative network tariff. Noting the planned introduction of a demand based time of use network tariffs specifically intended for residential and small business customers with DER, TasNetworks is also conducting a trial on Bruny Island involving customers using solar panels and battery storage in conjunction with energy management software. The trial aims to research how customers can use DER in ways that not only reduce customers' network charges, but also reduce the amount of electricity being drawn from the network at peak times. The lessons learned from the trial are already influencing the design of our network tariffs and future pricing strategy, and in the longer term will potentially inform our network planning.
Tasmanian Small Business Council (**TSBC**)	• The TSBC continues to be broadly supportive of TasNetworks' approach to tariff reform, in particular: – moving to cost reflective network tariffs	TasNetworks notes the views expressed by the TSBC in relation to the pace of tariff reform. For more information on TasNetworks response in regard to the time taken to transition to cost reflective network pricing, see *Stakeholder engagement* in Section 4.

	and eliminating existing cross subsidies – the move to demand based tariffs • However, TSBC consider that the proposed timeframe for the phase out of existing cross subsidies is too long. • The TSBC also consider that any increase in fixed charges is contrary to the objective of using pricing signals to bring about changes in consumption. • The TSBC noted that the benefits of network tariff reform would be undermined if retail prices do not reflect network pricing signals, and urged TasNetworks to engage with Aurora Energy, the Tasmanian Economic Regulator and other stakeholders to achieve that end as quickly as possible. • "We welcome and support the consumer engagement activities that TasNetworks has undertaken to date in developing both its regulatory Proposal and its Directions and Priorities, including its involvement with the TSBC. The TSBC also notes that TasNetworks has continued to evolve and improve its consumer engagement. As part of our input to TasNetworks' last distribution determination, we suggested a need to engage more with rural and regional small businesses in Tasmania in order to better understand their needs. We understand that TasNetworks has moved further in this	Electricity retailers have an important role to play in supporting network pricing reform, by ensuring that cost reflective network pricing signals are preserved in the electricity prices seen by all customers, rather than being bundled up as part of the delivered cost of electricity. We will continue to work with all electricity retailers, to progress our pricing strategy and work to ensure that our new and adjusted network charges are incorporated into the retail tariffs offered to customers in the future. We will also continue to participate in the regular joint pricing meetings convened by the OTTER. While our new demand based time of use network tariffs will initially only be available to households and small businesses on an opt-in basis via a retailer, depending on the level of advanced meter take-up in Tasmania, we plan to begin billing retailers serving residential and small business customers on a cost reflective basis during the subsequent regulatory periods. Whether those prices are passed on to the customer will then be a matter for the retailer to decide. The AER has indicated its support for this phased approach to network tariff reform, involving an initial customer-led transition to cost reflective network tariffs followed by assignment principles which support a faster pace of reform.

	direction as part of developing its 2019 to 2024 Revenue Proposal…”	

Appendix G: TEC Methodology – The Application of the Total Efficient Cost (TEC) Model in the tariff setting process

TEC Methololology

The application of the Total Efficient Cost (TEC) Model in the tariff setting process

2017-18 to 2018-19

As approved by the Australian Energy Regulator

Tasmanian Networks Pty Ltd
PO Box 606
Moonah TAS 7009
ABN 24 167 357 299

Enquiries regarding this document should be addressed to:

Commercial Solutions Team Leader
PO Box 606
Moonah TAS 7009
Email: networktariff@tasnetworks.com.au

Table of Contents

1 Introduction 171

2 Background 172

3 Geographic region definition 173

4 Asset group definition 175

5 Customer group definition 176

6 Revenue entitlement grouping definition and allocation process 177

6.1 Allocation to asset classes 177

6.1.1 Return on capital 177

6.1.2 Regulatory depreciation 178

6.1.3 Operating expenditure 178

6.1.4 Tax allowance 178

6.1.5 Under/over recoveries and pass through events 178

6.1.6 Transmission charges 179

6.2 Allocation to customer classes 179

6.2.1 Transmission assets 179

6.2.2 Subtransmission assets 179

6.2.3 Zone substation assets 179

6.2.4 High voltage assets 179

6.2.5 Distribution transformer assets 180

6.2.6 Low voltage assets 180

6.2.7 Common service assets 180

6.2.8 Connection assets 180

7 Tariff group definition 181

8 Allocation to tariff groups 182

8.1.1 Unmetered 182

8.1.2 Streetlighting 182

8.1.3 Uncontrolled energy 182

8.1.4 Controlled energy 182

8.1.5 Residential (light and power) 182

8.1.6 Low voltage < 25 kVA 183

8.1.7 Low voltage 25 to 70 kVA 183

8.1.8 Low voltage 70 to 300 kVA 183

8.1.9 Low voltage >300 kVA 183

8.1.10 High voltage < 2 MVA 184

8.1.11 High voltage > 2 MVA 184

8.1.12 Embedded generation 184

8.2 Cost allocation summary 184

1 Introduction

In accordance with the provisions of clause 6.18.2(a)[1] of the National Electricity Rules (**Rules**), TasNetworks is required to prepare an Annual Pricing Proposal for submission to and approval of the Australian Energy Regulator (**AER**).

Clause 6.18.5(a) of the Rules states that the network pricing objective is that the tariffs levied by a Distribution Network Service Provider in respect of its provision of direct control services to a retail customer should reflect the Distribution Network Service Provider's efficient costs of providing those services to retail customers.

TasNetworks' Total Efficient Cost (**TEC**) Model forms an important step in our tariff setting process for standard control services and this document provides an overview of the processes and methodologies used within our TEC Model.

---

[1] All references to the National Electricity Rules in this document relate to version 90 of the Rules.

2 Background

Our TEC Model uses the Annual Revenue Requirement (**ARR**) as an input and allocates revenue to asset groupings (by geographic region) and then to customer groups. The output of the TEC Model is a 'target revenue' for each customer group, which is to be recovered via our network tariffs.

The TEC Model process includes:

- geographic definition and asset data extraction;
- customer group definition;
- revenue allocation to asset classes and customer groups;
- an output of revenue by customer group and geographic region; and
- an output of revenue allocation by tariff group.

3 Geographic region definition

Our TEC Model has been constructed to reflect geographic differences in the cost of the distribution services that we provide. The geographic zones have been spatially defined (in our geo-spatial environment) allowing repeatable and consistent data extraction. Whilst it is a Rules requirement that uniform tariffs must be developed, an understanding of geographic costs assists in analysing the merits of pricing zones and communication of differential profitability and cross-subsidies.

We have divided Tasmania into 20 regions for operational performance measurement. The areas are defined to represent regions of homogenous operating conditions (similar assets, environment and customer characteristics). The regions are as follows:

- Burnie Urban
- Devonport Urban
- East Coast North
- East Coast South
- George Town Industrial
- Highlands
- Hobart CBD
- Hobart Urban
- Launceston CBD
- Launceston Urban
- Midlands North
- Midlands South
- North Central
- North Coast
- North East
- North West
- Sorell-Peninsula
- South
- Tamar West
- West Coast

Our TEC Model utilises six geographic regions, based on the amalgamation of the regions defined for operational performance management. The geographic areas used in the TEC Model are outlined in Table 1.

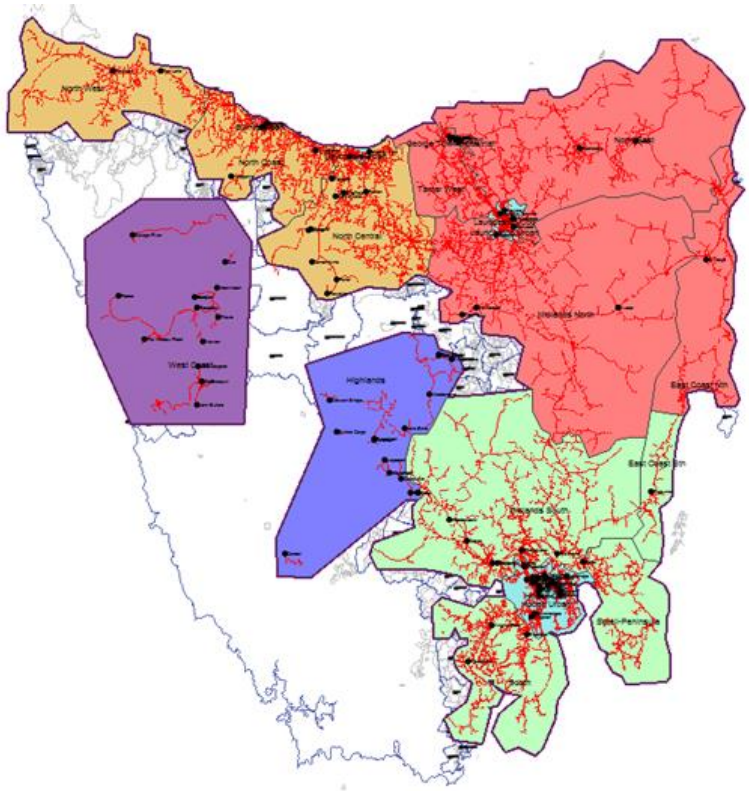
Table 1: TEC Model regions

TEC region	Distribution performance management region
Urban/CBD	Burnie Urban, Devonport Urban, Hobart CBD, Hobart Urban, Launceston CBD and Launceston Urban
North West	North Central, North Coast and North West
North	East Coast North, George Town Industrial, Midlands North, North East and Tamar West
Highlands	Highlands
South	East Coast South, Midlands South, Sorell-Peninsula and South
West Coast	West Coast

The use of the outlined TEC regions allows for a one-to-one correlation with operational areas which makes asset data capture both manageable and repeatable.

The map below depicts the TEC Model geographic regions.

Figure 1: TEC Model regions



4 Asset group definition

The following asset groups have been used within our TEC Model:

- transmission;
- subtransmission;
- zone substation;
- high voltage;
- distribution transformer;
- low voltage;
- common service; and
- connection.

These asset groups have been chosen as they represent the individual components within the distribution network where the driver for expenditure varies and the connection characteristics of the customer also vary. These asset groups are expanded below:

- transmission – all customers are a beneficiary of the transmission network and should receive a share of the costs associated with the provision of the transmission network;
- subtransmission and zone substation – all customers are a beneficiary of the subtransmission network and the associated zone substations. They should receive a share of the costs associated with the provision of subtransmission network and zone substations in their geographic region;
- high voltage – all customers are a beneficiary of the high voltage (HV) network and should receive a share of the costs associated with the provision of the HV network. Customers in rural areas should however receive a larger allocation of these costs as there is limited use of low voltage networks in these regions;
- low voltage – only low voltage (LV) customers are a beneficiary of LV assets. All large LV customers are likely to have dedicated (or largely dedicated) transformers, whereas small LV customers and all residential customers will use a large proportion of the shared LV network and therefore indirectly the transformers associated with that network;
- common service – all customers are a beneficiary of the common services (buildings, fleet, etc.) that we provide; and
- connection – all customers have connection assets that are associated with their use of the distribution network.

5 Customer group definition

The following customer groups have been used within our TEC Model:

- unmetered;
- street lighting;
- uncontrolled energy;
- controlled energy;
- residential (light and power);
- LV < 25 kVA;
- LV 25 to 70 kVA;
- LV 70 to 300 kVA;
- LV > 300 kVA;
- HV < 2 MVA; and
- HV > 2 MVA.

The rationale for adopting these LV customer groups includes:

- LV single phase less than 25 kVA customers was chosen because 100 amps reflects the minimum service fuse size, which typically reflects non-process loads;
- LV customers with maximum demand between 25 kVA and 70 kVA will most likely fall within the manufacturing/commercial sector and be involved in some form of process usage. The upper boundary of the proposed range was selected because the maximum size for whole current meters is 100 amps. For more than 100 amp multi-phase, customers are likely to be supplied via an underground cable which represents a difference in costs associated with supply;
- LV customers with maximum demand between 70 kVA and 300 kVA are multi-phase customers likely to be connected to the shared LV system; and
- LV customers with maximum demand in excess of 300 kVA are likely to have dedicated (or largely dedicated) transformers and use a small proportion of the shared LV system.

Embedded generation has been excluded as a customer group in this iteration of the TEC Model as we currently have no generation customers that necessitate revenue apportionment. The Rules require that generation customers are not charged for the utilisation of the shared distribution network. Our existing embedded generation customers currently have no dedicated connection assets that have not been fully funded by the customer as a component of their connection.

The inclusion of an embedded generation customer group will be considered in the future (where dedicated connection assets are not fully funded) as this would aid in the correct apportionment of associated connection assets which comprise part of our regulated asset base (RAB).

The use of the outlined customer groups does not pose a restriction in terms of network tariff definition and development. A single TEC customer group may have multiple network tariffs associated with it or, alternatively, multiple TEC customer groups may be covered by a single network tariff.

6 Revenue entitlement grouping definition and allocation process

Our Revenue Cap has been determined by the AER and is based on a building block approach, which includes each of the regulated cost components, namely:

- a return on capital (including the indexation of the RAB);
- a return of capital (regulatory depreciation);
- an estimate of the amount of corporate income tax payable;
- any revenue increments or decrements arising from the application of the efficiency benefit sharing scheme, capital expenditure sharing scheme, service target performance incentive scheme and demand management incentive scheme;
- any revenue increments or decrements arising from the application of a control mechanism in the previous regulatory control period;
- any revenue increments or decrements arising from an under/over-recovery and/or pass through events; and
- forecast operating expenditure.

The revenue estimate for our network tariffs also includes an estimation of the charge that will be levied for the use of the transmission network.

6.1 Allocation to asset classes

The first step of the TEC process is to allocate or assign the network costs to asset classes in the most efficient and cost reflective way. That is, the TEC methodology ensures costs are allocated on a causal basis.

6.1.1 Return on capital

The return on capital component of the revenue cap (which represents the return on our RAB) can be separated into three distinct cost groups on the basis of the asset type. These cost groups are:

- network – the return on capital for those system assets employed in the provision of distribution services to customers.
- common service – the return on capital for those assets associated with the provision of common services. For example, fleet, IT and buildings.
- connection services – the return on capital for connection assets.

Return on capital costs are allocated to each geographic region on the basis in proportion to the depreciated value of the assets or depreciated optimised replacement cost (DORC).

In addition, the return on capital component allocated to the network cost pool is further allocated to the following distribution asset classes:

- subtransmission;
- zone substations;
- high voltage network;
- distribution transformers; and
- low voltage network.

Return on capital costs are allocated to each asset class in proportion to the DORC valuation.

6.1.2 Regulatory depreciation

The regulatory depreciation allowance is separated into the same three cost groups as the return on capital allowance. These cost groups are:

- network – the regulatory depreciation of those assets employed for the provision of distribution services to customers.
- common services – the regulatory depreciation for those assets associated with the provision of common services. For example, fleet, IT and buildings.
- connection services – the regulatory depreciation for connection assets.

Regulatory depreciation costs are allocated to each geographic region on the basis in proportion of to the installed value of the assets or optimised replacement cost (ORC).

Further, the regulatory depreciation component allocated to the network cost pool is further allocated to the following distribution asset classes:

- subtransmission;
- zone substations;
- high voltage network;
- distribution transformers; and
- low voltage network.

Regulatory depreciation costs are allocated to each asset class in proportion to the ORC valuation.

6.1.3 Operating expenditure

The AER has determined an overall efficient operating expenditure target for us as part of the regulatory review process. The operating expenditure costs are separated into two distinct cost groups based on the proportion of operating expenditure. These cost groups are:

- network costs – those costs directly associated with the operation and maintenance of asset classes that are attributable to particular customer classes.
- common service – include overheads and other operating costs which represent the summation of the non-system based costs which include corporate and divisional overheads.

The TEC Model is used to allocate these network costs to the users of the respective asset class. Costs are allocated to asset classes on the basis of the remaining life of the asset, following which costs are allocated to customer classes. An allocation on the basis of remaining asset life ensures that the oldest assets receive the largest proportion of maintenance costs as maintenance activities increase with asset age.

6.1.4 Tax allowance

The benchmark tax liability, as calculated within the AER's Post Tax Revenue Model (PTRM), is allocated to each of the three building block components of operating expenditure, return on capital and regulatory depreciation. The allocation is based on the ratio of their respective allocated revenue amounts. As outlined above, within each of these regulatory cost components there are a number of cost groups. The allocated tax allowance is therefore allocated to each cost group on the basis of their respected share of the total revenue.

6.1.5 Under/over recoveries and pass through events

Any calculated under or over-recoveries or costs associated with a pass through event is allocated to each of the three building block components of operating expenditure, return on capital and

regulatory depreciation. The allocation is based on the ratio of their respective allocated revenue amounts. As outlined above, within each of these regulatory cost components there are a number of cost groups. The allocated under or over recoveries or a cost associated with a pass through event is therefore allocated to each cost group on the basis of their respected share of the total revenue.

6.1.6 Transmission charges

Transmission charges are fully allocated to an asset class of transmission. Estimated transmission charges are allocated to geographic regions using an extension of our transmission locational pricing methodology.

6.2 Allocation to customer classes

The second step of the TEC process is to allocate or assign the network costs, already allocated to asset classes, to customer classes in the most efficient and cost reflective way. That is, the TEC methodology ensures costs are allocated on a causal basis.

There are a range of cost allocators that are used within our TEC Model. The selection of the appropriate allocator is based on the ability of the allocator to reflect the fundamental cost driver. We have adopted the allocators outlined below in the TEC Model for the following reasons:

- number of customers – this allocator is deemed appropriate for those costs that are dependent upon or driven by the number of connected customers.
- anytime maximum demand (ATMD) – this has been used to reflect the long run marginal cost associated with changes in demand.

The uncontrolled and controlled heating group is allocated an estimate of incremental costs as they are only available in conjunction with another type of network tariff. All other customer groups are allocated average costs.

Network costs are related both to the number of customer connections and customers' maximum demands. In general the closer the cost can be attributed to the customer, the more "per customer" the cost allocation. Consider the transmission network costs, the cost of adding a new residential subdivision is only related to the diversified maximum demand. However, the cost of the 400 V extension required is almost perfectly correlated with the number of new residential customers.

6.2.1 Transmission assets

All customer groups use the transmission network. Costs are typically driven by the demand requirements of the network and are therefore allocated to customer groups on the basis of group ATMD.

6.2.2 Subtransmission assets

All customer groups use the subtransmission network. Costs are typically driven by the demand requirements of the network and are therefore allocated to customer groups on the basis of group ATMD.

6.2.3 Zone substation assets

All customer groups use zone substations. Costs are typically driven by the demand requirements of the network and are therefore allocated to customer groups on the basis of group ATMD.

6.2.4 High voltage assets

All customer groups use the HV network. Costs are driven by the demand requirements of the network and the number of customers and are therefore allocated to customer groups on the basis of group ATMD and customer numbers.

As there is little use of LV networks in rural areas, the driver for the HV assets in these regions is weighted toward the number of customers as each connecting customer will tend to increase the size of the HV network.

HV network costs are allocated to urban customer groups 60 per cent on ATMD, 40 per cent on customer numbers. Rural customer groups are allocated 20 per cent on ATMD and 80 per cent on customer numbers.

6.2.5 Distribution transformer assets

No costs are allocated to HV connected customers because these customers do not use TasNetworks-owned distribution transformers.

No costs are allocated to the LV > 300kVA customer group as these customers generally have a dedicated distribution transformer and these costs are therefore included as connection assets.

Distribution transformer costs are allocated to remaining customer groups 60 per cent on ATMD, 40 per cent on customer numbers.

6.2.6 Low voltage assets

No costs are allocated to HV connected customers because these customers do not use the LV network.

No costs are allocated to LV > 300kVA group as these customers are connected to the LV terminals of a distribution transformer or all the LV cabling is included as connection assets.

LV network costs are allocated to remaining customer groups 25 per cent on ATMD, 75 per cent on customer numbers.

6.2.7 Common service assets

All customer groups use common service assets. Costs for these assets are allocated to customer groups 50 per cent on ATMD, 50 per cent on customer numbers.

6.2.8 Connection assets

Connection assets are allocated to customer groups on the basis of typical connection configurations.

7 Tariff group definition

The output of the TEC Model is a 'target revenue' for each tariff group. This tariff group target revenue is to be recovered via final network tariffs.

Our TEC Model has been constructed to reflect the customer, connection and pricing differences in the network tariffs that we prepare.

The following tariff groups have been used:

- unmetered;
- street lighting;
- uncontrolled energy;
- controlled energy;
- residential light and power (single rate);
- residential (time of use);
- commercial light and power (single rate);
- commercial (time of use);
- nursing homes;
- low voltage metered demand;
- irrigation;
- high voltage metered demand;
- high voltage negotiated; and
- embedded generation.

The rationale for adopting these tariff groups includes:

- the need to group customers on an economically efficient basis that adequately reflects customer characteristics;
- the impact that customers will have on the distribution network;
- recovering the costs of the distribution network on a basis which reflects the characteristics of the connected customer; and
- it groups like customers based upon their connection characteristics and their resulting metering requirements.

The use of the outlined tariff groups does not pose a restriction in terms of network tariff definition and development. A single tariff group may have multiple network tariffs or, alternatively, a tariff group may be covered by a single network tariff.

8 Allocation to tariff groups

The aim of the 'TEC to tariff group' process is to allocate or assign the network costs already allocated to customer groups to tariff groups in the most efficient way.

There are a range of allocators that are used and the selection of the appropriate allocator is based on the ability of the allocator to reflect the fundamental tariff outcome. We have adopted the allocators outlined below for the following reasons:

- number of customers – this allocator is deemed appropriate for those costs that are dependent upon or driven by the number of connected customers.
- annual consumption or anytime maximum demand – this allocator has been used to reflect the variable charge component included in our final network tariffs.

8.1.1 Unmetered

We have a single unmetered supply network tariff. Costs are therefore allocated 100 per cent to the unmetered tariff group.

8.1.2 Street lighting

We have a single street lighting network tariff. Costs are therefore allocated 100 per cent to the street lighting tariff group.

8.1.3 Uncontrolled energy

Our uncontrolled energy tariffs are available to both residential and commercial customers as a tariff in their own right or alternatively as a component of a time of use tariff.

The uncontrolled energy customer group is allocated to the residential (time of use), commercial (time of use) and uncontrolled energy tariff groups based upon the weighted average of historic consumption and customer numbers within this customer group.

The consumption within the residential (time of use) and commercial (time of use) is split between light and power, uncontrolled energy and controlled energy based upon the typical consumption of our residential and commercial customers.

8.1.4 Controlled energy

Our controlled energy tariffs are available to both residential and commercial customers as a tariff in their own right or alternatively as a component of a time of use tariff.

The controlled energy customer group is allocated to the residential (time of use), commercial (time of use) and controlled energy tariff groups based upon the weighted average of historic consumption and customer numbers within this customer group.

The consumption within the residential (time of use) and commercial (time of use) is split between light and power, uncontrolled energy and controlled energy based upon the typical consumption of our residential and commercial customers.

8.1.5 Residential (light and power)

Our residential tariffs are only available to residential customers as a residential light and power tariff or alternatively as a component of a time of use tariff.

The residential (light and power) customer group is allocated to the residential light and power (single rate) and residential (time of use) tariff groups based upon the weighted average of historic consumption and customer numbers within this customer group.

The consumption within the residential (time of use) is split between light and power, uncontrolled energy and controlled energy based upon the typical consumption of our residential and commercial customers.

8.1.6 Low voltage < 25 kVA

We have five tariff groups that fall within the LV < 25 kVA customer group, namely:

- commercial light and power (single rate);
- commercial (time of use);
- nursing homes;
- LV metered demand; and
- irrigation.

The LV < 25 kVA customer group is allocated to these tariff groups based upon the weighted average of historic consumption and customer numbers within this customer group.

8.1.7 Low voltage 25 to 70 kVA

We have five tariff groups that fall within the LV 25 to 70 kVA customer group, namely:

- commercial light and power (single rate);
- commercial (time of use);
- nursing homes;
- LV metered demand; and
- irrigation.

The LV 25 to 70 kVA customer group is allocated to these tariff groups based upon the weighted average of historic consumption and customer numbers within this customer group.

8.1.8 Low voltage 70 to 300 kVA

We have five tariff groups that fall within the LV 70 to 300 kVA customer group, namely:

- commercial light and power (single rate);
- commercial (time of use);
- nursing homes;
- LV metered demand; and
- irrigation.

The LV 70 to 300 kVA customer group is allocated to these tariff groups based upon the weighted average of historic consumption and customer numbers within this customer group.

8.1.9 Low voltage > 300 kVA

We have five tariff groups that fall within the LV > 300 kVA customer group, namely:

- commercial light and power (single rate);
- commercial (time of use);
- nursing homes;
- low voltage metered demand; and
- irrigation.

The LV > 300 kVA customer group is allocated to these tariff groups based upon the weighted average of historic consumption and customer numbers within this customer group.

8.1.10 High voltage < 2 MVA

The HV < 2 MVA customer group is allocated 100 per cent to the HV metered demand tariff group.

8.1.11 High voltage > 2 MVA

The HV > 2 MVA customer group is allocated 100 per cent to the HV negotiated tariff group.

8.1.12 Embedded generation

The embedded generation customer group is allocated 100 per cent to the embedded generation tariff group.

8.2 Cost allocation summary

Table 2 provides a summary of the tariff group allocation adopted in accordance with our established principles.

Table 2: Allocation of costs to tariff groups

	TEC Customer Group											
Tariff Group	**Unmetered**	**Streetlights**	**Uncontrolled energy**	**Controlled energy**	**Residential light & power**	**Commercial LV < 25 kVA**	**Commercial LV 25 to 70 kVA**	**Commercial LV 70 to 300 kVA**	**Commercial LV > 300 kVA**	**Commercial HV < 2 MVA**	**Commercial HV > 2 MVA**	**Embedded generators**
Street lights		100%										
Residential light & power single rate					82%							
Residential TOU					18%							
Commercial light & power single rate						87%	9%	4%	2%			
Commercial TOU			1%	14%		10%	40%	39%	11%			
Nursing homes						1%	0%	3%	4%			
Controlled energy				86%								
Uncontrolled energy			99%									
LV metered demand tariff						1%	6%	40%	70%			
Irrigation						1%	45%	14%	13%			
HV metered demand tariff										100%		
HV negotiated tariff											100%	
Unmetered	100%											
Embedded generation												100%
TOTAL	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Glossary

Term or Abbreviation	Definition or description
AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator
AIC	Average incremental cost
Cost reflective pricing	Pricing which is indicative of the true cost of supplying or providing a service
DER	Distributed energy resources refers to typically small capacity electricity generation and storage devices connected to the distribution network and often sited on customers' premises, such as photovoltaic solar panels, batteries, storage water heaters and electric vehicles.
Distribution network	The assets and services that carry the electricity conveyed from generators by the high voltage transmission system and deliver it to individual consumers at the lower voltages required to operate industrial equipment, lighting and household appliances.
DNSP	Distribution network service provider
DUoS	Distribution use of system
GWh	Gigawatt hour
HV	High voltage
kV	Kilovolt
kVA	Kilovolt-ampere
kW	Kilowatt
kWh	Kilowatt hour
LRMC	Long run marginal cost
LV	Low voltage
NEM	National Electricity Market
NER or the Rules	National Electricity Rules
NUoS	Network Use of System charges (reflecting a combination of TUOS and DUOS)
MVA	Megavolt-ampere
MW	Megawatt
MWh	Megawatt hour
Price signal	Information conveyed to end users of electricity via the prices charged for network services, which provides a signal about the true cost of providing a service and/or the value to the customer of that service, which influences their decisions about their use of electricity.
PRWG	TasNetworks' Pricing reform working group
Retailer	A business that buys electricity from generators through the wholesale electricity market, packages it with transportation (network services) and metering services, and sells it to end users.

Tariff class	A class of retail customers for one or more direct control services who are subject to a particular tariff or particular tariffs.
TASCOSS	Tasmanian Council of Social Services Inc.
TEC	Total Efficient Cost
ToU	Time of use
Transmission network	The assets and services that enable large generators, like windfarms and hydro-electric power stations, to transmit the high voltage electrical energy they produce to population centres and major industrial users of electricity.
TSS	Tariff structure statement
TSES	Tariff structure explanatory statement
TUoS	Transmission use of system
Unmetered supply	A connection to the distribution system which is not equipped with a meter and for which the consumption of electricity is estimated. Connections to things like public lights and traffic lights are not normally metered.

Tasmanian Networks Pty Ltd
ABN 24 167 357 299
PO Box 606
Moonah TAS 7009