Jemena Electricity Networks (Vic) Ltd

2021 - 26 Electricity Distribution Price Review
Revised Proposal

Attachment 12-02

Tariff structure statement - Explanatory document
For 1 July 2021 to 30 June 2026

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Table of Contents

Abbreviations ..... **v**
Overview ..... **vi**
1. Background **1**
1.1 What is the tariff structure statement? 1
1.2 Purpose of this Explanatory Document 1
1.3 Our network 1
1.4 Collaborative designing tariffs with our customers 3
1.5 Pricing objectives 4
1.6 Trends influencing tariff development 5
1.6.1 Meeting customers' peak demand 5
1.6.2 How vulnerable customers are identified and treated 8
1.7 Tariff reform in the future 9
1.8 Complimentary measures to tariff design 10
1.8.1 Demand response as an alternative to tariffs 10
2. Tariff classes **11**
2.1 Standard control services – what have we done? 11
2.2 Standard control services – why have we done it? 12
2.3 Alternative control services tariff class – what have we done? 12
2.4 Alternative control services – why have we done it? 13
3. Households **14**
3.1 Our household customers 14
3.2 Our household customer and stakeholder engagement 15
3.2.1 Collaborative Victorian distributor engagement 16
3.2.2 JEN-specific customer engagement 22
3.3 Proposed changes 22
3.4 Our default tariff structure and how it meets our pricing objectives 24
3.4.1 Why two-rate is preferred to three-rate? 24
3.4.2 Why we chose 3pm - 9pm peak period? 24
3.4.3 Why are we including weekends? 27
3.4.4 Should the peak period only apply at certain times of the year? 28
3.4.5 DER integration 28
3.4.6 EV tariffs and trials 29
3.5 Assignment policy and transition 30
3.5.1 Assignment policy 30
3.5.2 The transition options we considered 30
3.5.3 Customer impact analysis for our initial proposal 31
3.5.4 Applying what we heard from customers and stakeholders to our proposal 35
3.5.5 Consultation on residential fixed charge 36
3.5.6 Reassignment customer impact analysis since the AER draft decision 38
3.5.7 Our opt-out arrangements for households 39
3.6 How customers can save 40
3.6.1 Assessment against our pricing objectives and the principles in the NER 40
4. Small business **44**
4.1 Our small business customers 44
4.2 Our small business customer and stakeholder engagement 46
4.3 Proposed changes for customers consuming under 40MWh per year 46
4.4 How the default tariff structure meets our principles objectives 47
4.4.1 Two-rate or three-rate? 47
4.4.2 What hours to set the peak window? 47
4.4.3 Should the peak apply to weekends? 49
4.4.4 Should the peak apply year round? 50

4.5 Assignment policy and transition (customers consuming less than 40MWh per year) 50
4.5.1 Assignment policy 50
4.5.2 The transition options we considered 51
4.5.3 How the customer impacts have influenced our proposal 55
4.5.4 Why we are retaining opt-out for small business customers consuming under 40MWh per year? 56
4.5.5 Jemena-specific proposed changes for small businesses consuming under 40MWh per year 56
4.6 Proposed changes for small business customers consuming over 40MWh per year 56
4.7 Assessment against our principles objectives and the principles in the NER 57
5. Large business 60
5.1 Our large commercial and industrial business customers 60
5.2 AER draft decision 60
5.3 What our large business customers have told us 61
5.3.1 Engagement prior to initial proposal 61
5.4 Our proposed changes 61
5.4.1 Change to how demand is measured for billing 62
5.4.2 New subtransmission multiple feeder tariff 63
5.4.3 Reducing the peak window 64
5.4.4 Should the peak apply to weekends? 65
5.4.5 Tariff structure options considered 66
5.4.6 Transitional arrangements 68
5.4.7 EV charging tariffs and trials 69
5.4.8 Why we have not proposed ICCs 70
5.5 Assessment against the pricing principles in the NER 70

List of attachments

Attachment A Seed Advisory, Victorian Electricity Future Forum Report, 20 March 2018
Attachment B ACIL Allen, Victorian DNSP vulnerable customer analysis, 20 March 2019
Attachment C JWS Research, Electric Vehicles Research Report, September 2019
Attachment D Network pricing options – reflections from initial customer consultation, September 2018
Attachment E Long run marginal cost

Abbreviations

Acil Allen	Acil Allen Consulting
AER	Australian Energy Regulator
AEMO	Australian Energy Market Operator
AEST	Australian Eastern Standard Time
AIC	Average incremental cost
ARENA	Australian Renewable Energy Agency
CEFC	Clean Energy Finance Corporation
DNSP	Distribution Network Service Provider
ECA	Energy Consumers Australia
EV	Electric Vehicle
EVC	Electric Vehicle Council
Explanatory document	Tariff Structure Statement explanatory document
ICC	Individually calculated customer
JEN	Jemena Electricity Network
LRMC	Long run marginal cost
NEM	National Electricity Market
NER	National Electricity Rules
NMI	National Meter Identifier
OIC	Order in Council
PV	Present value
SDIC	Summer demand incentive charge
ToU	Time of Use
TSS	Tariff Structure Statement
TUoS	Transmission Use of System

Overview

As one of five Victorian distribution network service providers (**DNSPs**), Jemena Electricity Network (Vic) Ltd. (**JEN**) provides our customers with distribution network services, residential and small business metering, public lighting and other related services that they might request. For these services, we generally charge retailers, not customers. But ultimately, our customers pay for our services within the bill they receive from their retailer.

Each year, we publish a network tariff schedule which sets out our network tariffs for the year. Before we set prices, we must determine how to structure our tariffs. How we structure our tariffs is set out in our Tariff Structure Statement (**TSS**). It also includes our assignment and reassignment policy to allocate customers to tariffs. The accompanying TSS, assignment and reassignment policies, will apply from 1 July 2021 to 30 June 2026.

This TSS explanatory document (**Explanatory Document**) provides the reasons behind why we have proposed the tariff structures and assignment and reassignment policy we have as part of our Revised Proposal, including how we have relied on the feedback we have received from our customers and stakeholders.

JEN submitted our initial proposal TSS on 31 Jan 2020 as part of our 2021-26 regulatory proposal.[1] The Australian Energy Regulator (**AER**) provided its draft decision on 30 September 2020.[2] In it's draft decision, the AER accepted most of the elements of JEN's TSS proposal, however it:

- required JEN to introduce tariff choice for large business customers in addition to the proposed default tariff in the form of individually calculated customer (**ICC**) tariffs.
- suggested JEN consider:
  - closing the legacy residential time of use tariffs and reassigning those customers to the new time of use and demand tariffs
  - amending peak charging windows for business customers to make these more targeted
  - including a statement on how tariff proposals are integrated with demand management and other initiatives
  - continuing to explore including replacement capital expenditure into estimates of long run marginal cost (**LRMC**)
  - our approach to assigning tariffs for grid-scale batteries.

We have considered these items further within the window available for submitting our revised proposal.

For our household, and small business customers consuming less than 40MWh per year, JEN continued our collaborative approach to engagement with the four other Victorian DNSPs and our positions remain aligned. From the outset of our engagement with stakeholders, we heard both support for change but also calls for restraint in terms of the pace of change to ensurevulnerable customer impacts are minimised.

Since the draft decision we have:

- updated our analysis for legacy residential customers to understand the bill impacts from CY20 to the 2022 financial year (FY22)[3] under the draft decision
- undertook further engagement on our large business tariff structures.

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1 JEN, Regulatory Proposal, Tariff Structure Statement for 1 July 2021 to 30 June 2026, Att 08-01, 31 Jan 2020.

Available here: https://www.aer.gov.au/system/files/Jemena%20-%20Att%2008-01%20Tariff%20structure%20statement%20-%2031%20January%2020201.pdf

2 AER, draft decision, Jemena distribution determination, 2021 to 2026, Attachment 19 – Tariff Structure Statement. Available here: https://www.aer.gov.au/system/files/AER%20-%20Draft%20decision%20-%20Jemena%20distribution%20determination%202021-26%20%20-%20Attachment%2019%20-%20Tariff%20structure%20statement%20-%20September%202020.pdf

3 When expressing the financial year, we follow the initials with a two year digit code. The two digist represent the latest year that stradded annual period. For example, the financial year 1 July 2021 to 30 Jun 2022 is respresented as FY22.

Based on our previous engagements and the additional work since the AER's draft decision, our position is, therefore:

- for household customers, we will create a new two-rate time of use (**ToU**) tariff for households with a 3pm-9pm every-day peak period. From 1 July 2021:
  - any household can choose this network tariff via their retailer
  - new connections, customers who upgrade to three-phase power supply and customers who install solar PV or batteries and customers on our legacy ToU tariffs will be assigned to this network tariff by default. We may also seek to assign customers who have an electric vehicle (**EV**) or EVfast charger to the new ToU network tariff.
  - any customer who chose or has been assigned to the new ToU network tariff can move to a single rate or demand network tariff. The potential exception to this is if the Victorian Government update the AMI Order in Council (**OIC**) to create any exemptions, such as for customers with electric vehicle fast chargers.
- for our small business customers consuming less than 40MWh per year, from 1 July 2021, we will amend our current ToU network tariff to:
  - have a shorter peak window of 9am to 9pm
  - be the default network tariff for small business customers consuming less than 40MWh per year.

  We will also reassigning customers from our legacy ToU network tariff onto the new default ToU network tariff.
- for our small business customers consuming over 40MWh per year, we are not proposing any changes to our tariff structures or assignment criteria. However, we are changing how we measure demand from:
  - an ongoing ratcheting approach to a 12 month rolling average
  - for simplicity, we will move all our peak periods from AEST to local time.
- for our large business customers (those consuming over 400MWh per year), we are:
  - changing how we measure demand to the 12 month rolling average and shifting our peak periods to local time
  - reducing our peak window for our usage charges and for setting maximum demand for our demand charge to 8am-8pm weekdays
  - introducing a new tariff component—the summer demand incentive charge (**SDIC**) with a 4pm-7pm workday peak window over summer months—to better target our summer peaks
  - transitioning to cost reflective SDIC price levels over 5 years to mitigate relative customer impacts, especially given the current economic situation faced by customers due to the pandemic
  - providing the option for customers to immediately choose a network tariff with cost reflective SDIC price levels.

We have not sought to introduce ICC tariffs for a number of reasons we outline in section 5.

In relation to grid-scale batteries, JEN will provide network exemptions in certain circumstances where the customer enters a contract with JEN that results in operational of the battery to the net benefit of our customers. This is detailed in Section 3 of our TSS.

Document structure

The document is structured as follows:

- chapter 1 provides background information
- chapter 2 sets out and explains how our proposed tariff classes meet our pricing objectives which are underpinned by the pricing principles set out in the National Electricity Rules (**NER**).
- chapter 3 sets out and explains our proposed tariff structures for **households** and how this meets our pricing objectives – this proposal is largely common across all Victorian DNSPs.
- chapter 4 sets out and explains our proposed tariff structures for **small businesses** and how this meets our pricing objectives. For small business customers consuming under 40MWh per annum, this proposal is largely common across all Victorian DNSPs. For small business customers consuming over 40MWh per annum, each proposal is unique to each DNSP.
- chapter 5 sets out our proposed tariff structures for **large businesses** and how this meets our pricing objectives.

1. Background

As one of five Victorian DNSPs, JEN provides our customers with distribution network services, residential and small business metering, public lighting and other related services that they might request.

For these services, we charge retailers, not customers. But ultimately, our customers pay for our services within the bill they receive from their retailer.

1.1 What is the tariff structure statement?

A "tariff" is how we charge a retailer for the services we provide to our customers. The tariff can be made up of different tariff components such as fixed charges, usage charges or demand charges. These tariff components, the charging parameters[4] and the applicable prices constitute the tariff structure[5]. The total network charges for any particular customer will depend on their assigned network tariff and their network usage.

The TSS sets out each distributor's applicable tariffs and their policies and procedures for assigning or reassigning customers to particular tariffs. The TSS must ensure that the proposed tariffs conform with pricing principles specified in the NER. The NER also requires that each distributor submits its TSS to the AER for approval alongside its Regulatory Proposal.

Our TSS explains our proposed tariff structures for the 2021-26 period. It is published concurrently with this explanatory document, which provides detailed information and analysis to support the TSS.

1.2 Purpose of this explanatory document

In this explanatory document, we outline the context for how we propose to set network prices for customers in the 2021-26 regulatory period including:

- describing our household and business customers, and the changing way our customers use the network
- explaining how we engaged with customers and detail how their feedback has informed our proposal
- detailing our pricing objectives and explaining how these have changed to reflect customer feedback
- providing reasons for the tariff classes, tariff structures and assignment policies we are proposing, including an assessment against the pricing principles in the NER.

A key objective is to provide consumers and stakeholders with an understanding of the reasons for our proposed changes to tariff structures and tariff assignment and reassignment in the 2021-26 period.

1.3 Our network

JEN, along with AusNet Services, CitiPower, Powercor and United Energy are the five electricity distribution businesses that transport electricity to homes and businesses across Victoria. Collectively, we are responsible for maintaining distribution network safety and reliability, along with planning and designing network extensions and upgrades to meet our customers' current and future electricity needs. We also operate the network on a day-to-day basis, connect new customers (large and small) to our network, and provide metering services. The service territory for each Victorian distributor is shown in Figure 1.1 below with JEN's distribution area in Figure 1–2.

JEN is the sole distributor of electricity in north-west greater Melbourne. We service more than 330,000 households and businesses via more than 6,500km of overhead and underground lines and 91,000 poles.

[4] Charging parameters help to explain key information such as peak periods and minimum chargeable demand levels.

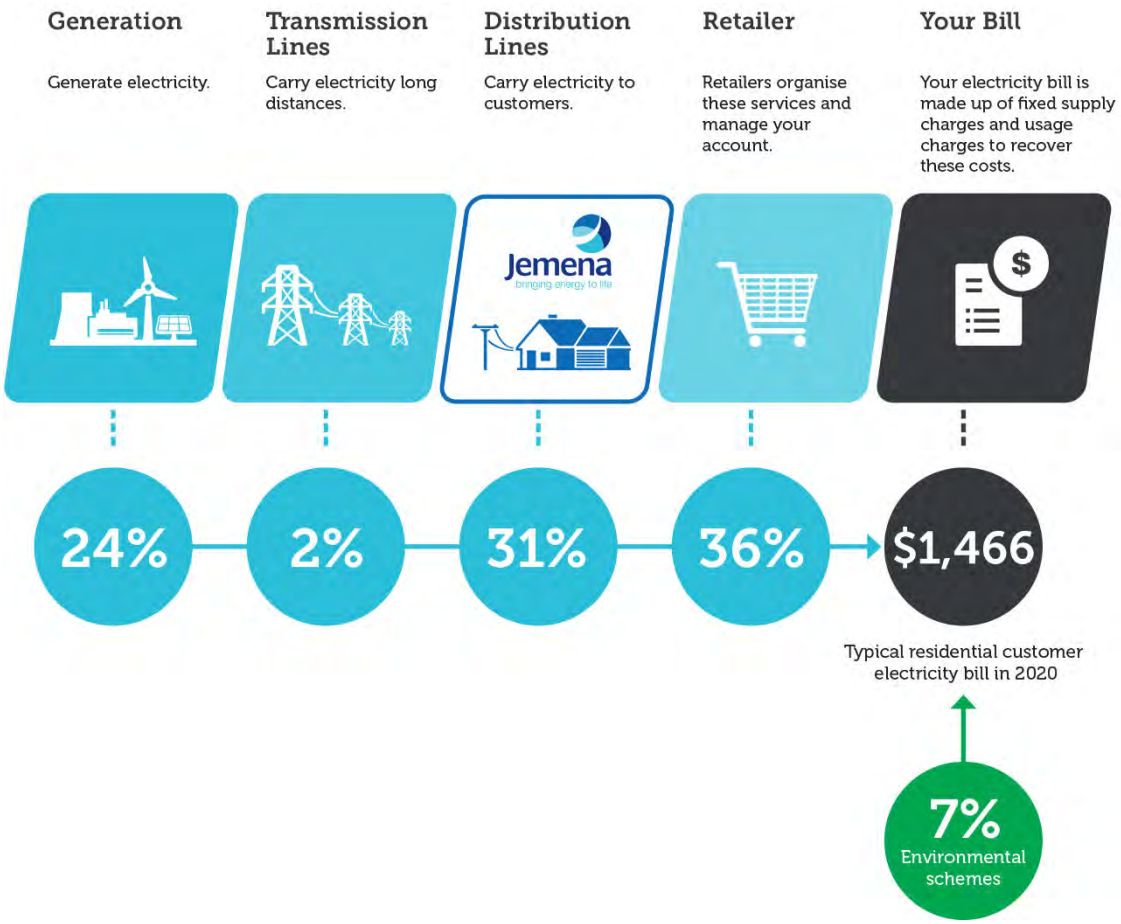
[5] In this document we use the term tariff structure to be consistent with the terminology in the NER, but we have often used the term "price structure" to mean the same thing within our engagement materials.

Figure 1–1: Victorian Electricity Networks

Figure 1–2: Jemena Electricity Network

The cost of distributing energy across our network is paid for through customer's electricity bill. Our network charges typically amount to around 31 per cent of your total bill (see Figure 1–3).

Figure 1–3: Electricity supply chain



As a regulated business, the distribution revenue we can recover from our customers is determined by the AER on a five-yearly basis to ensure this reflects efficient costs of providing network services. The 2021–2026 regulatory period comes into effect on 1 July 2021.

Each year, we submit an annual pricing proposal to the AER. The purpose of these pricing proposals is to obtain approval for how we recover our distribution revenue allowance, transmission costs and other government policy charges in any given year. The way we set our prices does not impact the total amount of revenue we collect but does influence how individual customers pay for their energy services.

We recover our network and metering charges from electricity retailers, who recover these costs from customers through their retail tariffs. Our customers currently pay some of the lowest network charges in Australia, and Victorians pay the lowest network charges in the country.

1.4 Collaboratively designing tariffs with our customers

We are mindful of the impact tariff structures have on our customers, as any change will make some customers relatively better off and others worse off. Over the last three years, we have taken a customer-led approach to ensure we understand and reflect our customer and related-stakeholders' priorities as we developed our tariff structures for the 2021-2026 regulatory period. In developing our proposal, we embarked on an extensive consultation process with a wide range of stakeholders who had an interest in, or might be impacted by, network

pricing reform in Victoria. We recognised that successful reform depends on effective engagement with our customers and stakeholders.

Our engagement approach ensured that we involved all our customer segments, customer advocates, retailers, the Victorian Government and the AER in our pricing forums. We understood that bringing people together would lead to decisions that fairly balance the views of a wide array of stakeholders.

We focused on opening up two-way conversations with our stakeholders to understand our customers' needs and priorities and facilitate joint decision making. Only after listening to our customers did we begin developing ideas and testing them through further consultation.

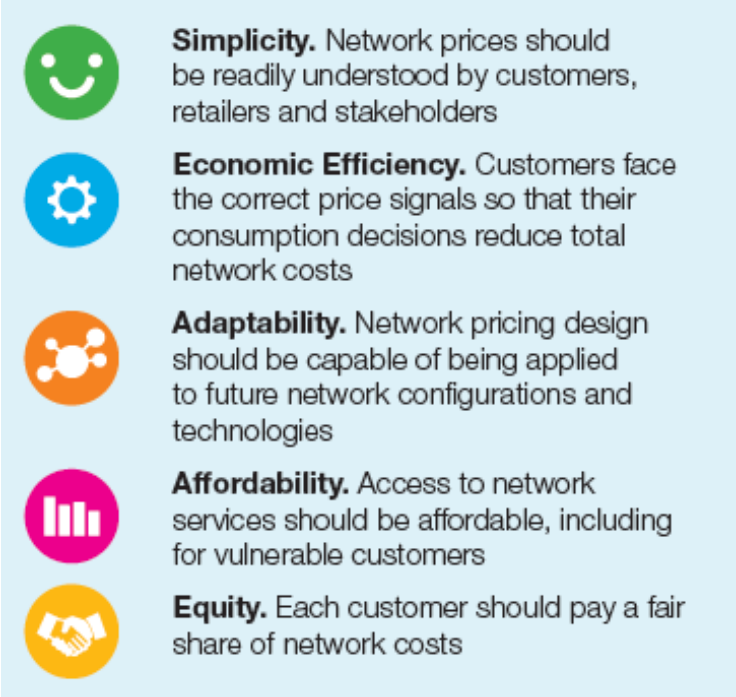
We have worked to ensure a common approach to pricing in response to the feedback on our previous TSS process for the 2016-2020 regulatory period. Common small customer tariff structures across the State are preferred by all stakeholders to make pricing simpler and fairer for all Victorians. As a result, a key component of our engagement in this period has involved working closely with other Victorian DNSPs. An important outcome from this collaborative work has been a high degree of standardisation for this explanatory document across all the Victorian DNSPs.

In subsequent chapters of this explanatory document, we provide more detail on what our different customer groups and stakeholders told us, and how we have responded.

1.5 Pricing objectives

At an initial household and small business public forum[6], the Victorian DNSPs heard how customers and stakeholders prioritised the objectives we should consider when developing tariff structures (see Section 3.2.1.1). We distilled this feedback into five key pricing objectives, which are set out in Figure 1–4. We also engaged separately with our large/industrial customers through surveys and on a one-on-one basis. We outline what we heard from our large customers through this process in Chapter 5.

Figure 1–4: The five stakeholder objectives for pricing design



The five objectives provide a framework to determine how we design our proposed household and small business tariff structures, assignment and transition by assessing options against these objectives. These objectives were a key foundation for engaging on our proposed tariff structures. It provided a framework for exploring options on

[6] 1 November 2017.

pricing designs with customers and stakeholders. It was recognised that no single tariff option can address all of these objectives, which means that trade-offs or compromises need to be considered.

Table 1–1 shows how these objectives are consistent with the pricing principles specified in the NER.

Table 1–1: How our pricing objectives relate to the NER requirements

Pricing objective	Explanation	Aligns to pricing principle in the NER
Simplicity	Customers, retailers and stakeholders should readily understand information about network prices	NER clause 6.18.5(i) – customers must be reasonably capable of understanding the tariff structures.
Economic efficiency	Customers face the correct price signals so that their consumption decisions reduce total network costs.	NER clause 6.18.5(a) - The network pricing objective.[7] NER clause 6.18.5(e)-(g) – compliance with these pricing principles is consistent with providing efficient price signals.
Adaptability	Network pricing design should be capable of being applied to future network configurations and technologies.	This pricing objective is not specifically linked to the principles in the NER but is consistent with promoting efficient outcomes.
Affordability	Access to network services should be affordable, including for vulnerable customers.	NER clause 6.18.5(h) requires us to consider the impact on customers of changes in tariffs.
Equity	Each customer should pay a fair share of network costs.	NER clause 6.18.5(h)&(i) require us to consider customer impact. NER clause 6.18.3 requires us to set tariff classes together on an efficient basis, but also with regard to avoiding unnecessary transaction costs.

1.6 Trends influencing tariff development

In addition to directly engaging with stakeholders, another part of developing effective tariffs for the upcoming period is to understand the changing needs of our customers and the impact this has on the network. A number of these trends impact peak demand, although voltage issues also drive some network expenditure.

Below we discuss:

- our obligation to meet customers' peak demand levels and the factors affecting future growth
- the importance the community places on managing the impact of tariff changes on vulnerable customers.

1.6.1 Meeting customers' peak demand

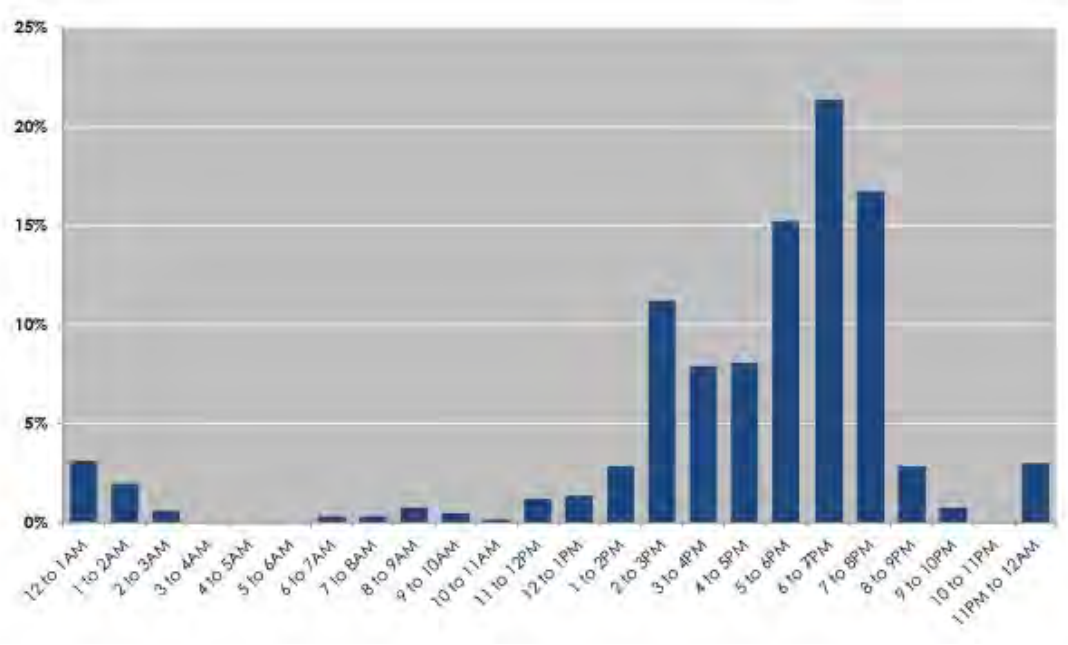
Our costs, and therefore customers' bills, are influenced by the need to meet peak demand on the electricity network. Naturally, peak demand will increase as new customers connect to the network, driven primarily by population growth in Victoria.[8] In addition to population growth, peak demand will be affected by how customers use the network.

[7] The network pricing objective is 'that the tariffs that a DNSP charges in respect of its provision of direct control services to a retail customer should reflect the DNSP's efficient costs of providing those services to the retail customer. See cl 6.18.5(a).

[8] New customers connecting to the network in the 2021-26 regulatory period is a large driver of network capacity investment, with the Victorian residential customer base growing by about 2.4 per cent per annum (around 52,000 new homes each year). New customers pay a capital contr bution when connecting to the network. This is calculated so that any costs not estimated to be recovered through long-term tariffs are collected from the newly connecting customers.

In most parts of Victoria, peak demand occurs on a very hot day when customers are using air-conditioners (see Figure 1–5). Most zone substations peak between 2pm and 8pm (local time). There are also “tails” to this period, with several substations peaking between 11am and 9pm local time. However, CitiPower, which covers the Melbourne CBD peaks between 10am to 5pm, which must be taken into account when designing uniform tariffs across the State.

Figure 1–5: Victorian zone substation peaks by hour of day (2015-17), local time



While single-rate tariff structures incentivise customers to decrease total usage, they do not specifically encourage customers to decrease usage at peak times. When our costs are driven by meeting peak demand, but the majority of customers are on single-rate tariff structures, customers with higher usage during peak times will be cross-subsidised by other customers with flatter usage profiles, creating inequities and inefficiencies.

Historically customers had relatively similar load profiles, so this wasn't as much of an issue. However, existing and emerging market developments mean that customers' usage profiles are diverging over time. In future, peak demand will be affected by changes in the way that customers use the network, including:

- continued growth in air-conditioner load, exacerbating the early evening peak
- emergence of electric vehicles (**EV’s**) which could exacerbate the early evening peak
- future take-up of home batteries with solar PV effectively allowing photo-voltaic generation to be shifted to any time period.

We discuss each of these further below. By reducing growth in peak usage, we can reduce future network capacity requirements and put downward pressure on customer bills in the long-term. Tariff structures that reflect the real costs of using the network also ensure cost fairness between customers.

1.6.1.1 Growth in air conditioners and other appliances

In the early to mid-2000s, we were required to invest significantly in new capacity to meet growing demand at peak times while ensuring network stability. This was a result of more customers installing and running air conditioners, with Energy Networks Australia estimating that more than 70% of households use an air conditioner

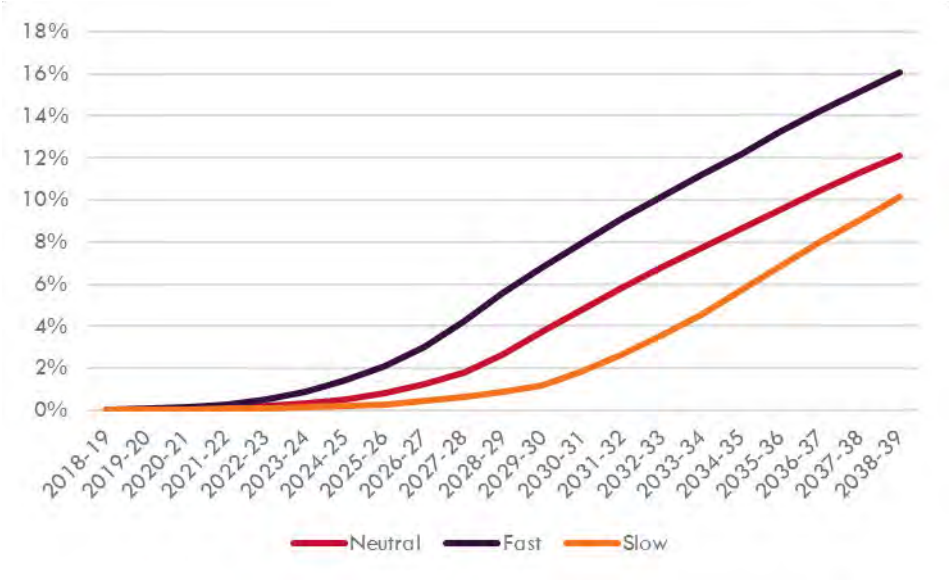
on hot days.[9] Since that time, peak demand growth has subsided due to energy efficiency initiatives, for example, although investment is still required in areas of high population growth.

In the future, we want to have tariff structures in place so that customers are efficiently making these investment decisions and appropriately contributing to the costs incurred.

1.6.1.2 Electric vehicles

EV uptake is expected to increase significantly over the long term. For example, the Australian Energy Market Operator's (**AEMO's**) forecast suggests that EVs consumption share of operational demand in Victoria will be about 13% by 2040 under a neutral scenario and 15% under a faster uptake scenario (see Figure 1–6).[10] Although this forecast impact is material, it is more conservative than several other credible forecasts.[11]

Figure 1–6: AEMO modelling assumptions for EV consumption share of operational demand



Source: AEMO 2019, Assumptions and Inputs workbook

Given that EVs can have a significant impact on maximum demand, our stakeholders understand that network tariffs can play an important role in facilitating efficient outcomes. Stakeholders want a future where the demand growth associated with the expected increased penetration of EVs is no more than necessary, and the costs of resulting network augmentation are appropriately targeted.

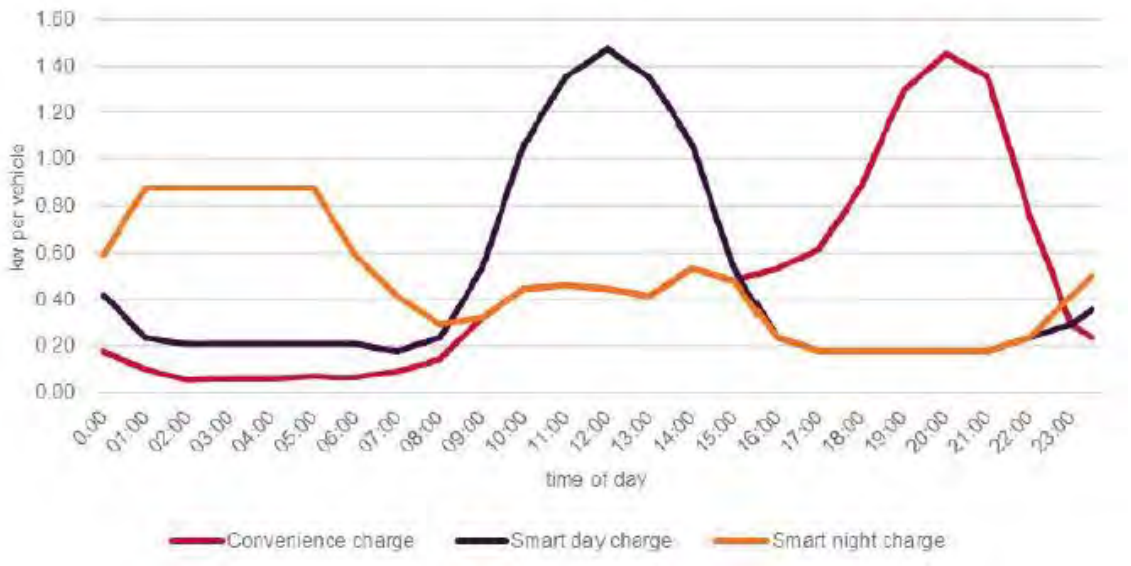
Tariff design is an important element in managing the impact of EVs by providing pricing signals that reward customers for charging EVs outside peak times. In particular, as seen in Figure 1–7, cost-reflective tariff structures such as ToU can be used to incentivise customers to charge their EVs during the day or overnight instead of during peak time. These tariffs will also encourage uptake of new technologies such as automated smart night charging.

9 Energy Networks Australia, Staying warm this winter – and keeping bills down (26 April 2018), www.energynetworks.com.au/news/energy-insider/staying-warm-this-winter-and-keeping-bills-down/

10 See AEMO ISP 2019 (August 2019) Input and Assumptions workbook.

11 For example, recent analysis by Energeia undertaken on behalf of the Clean Energy Finance Corporation (**CEFC**) and the Australian Renewable Energy Agency (**ARENA**) forecast that with only 'moderate' intervention, customer uptake of battery electric and plug-in hybrid vehicles will account for 100% of new vehicle sales in Australia by 2040 (see Energeia, Australian Electric Vehicle Market Study: prepared by Energeia for ARENA and CEFC (May 2018)).

Figure 1–7: EV daily charge profile, residential user (weekday in February)



Source: AEMO 2018, Electricity Statement of Opportunities, August 2018

1.6.1.3 Solar PV and home batteries

The capacity of installed solar PV across Victoria is forecast to continue to increase over the 2021-26 period.[12] On JEN's network, we expect installed solar PV capacity to increase by 69% between 2020 and 2026.

Cost reflective tariff structures can efficiently reduce the need for future network investment by encouraging customers to invest in energy solutions, and behave in ways, that minimise network demand peaks or solar export peaks.

New solar customers already have an incentive to use their solar generation, rather than export it, since the avoided cost of grid energy is usually higher than the standard solar feed-in-tariff. Currently a customer receives a minimum of 12 c/kWh for their solar exports and pays around 25 c/kWh on a single-rate retail tariff. This means new solar customers generally have an incentive to defer solar output from midday to the early evening, for instance by installing west-facing solar panels or to use a batteries to charge from their solar panels and discharge when electricity is needed.

Network tariffs can strengthen this incentive by setting rates higher in the early evening compared to around midday.

1.6.2 How vulnerable customers are identified and treated

We have heard that the level of support for change depends materially on the outcomes for vulnerable customers. Some customer advocate groups voiced concerns that we would be unable to identify all vulnerable customers in any solution that sought to exclude vulnerable customers from tariff reassignment. In particular, concern has not only been voiced for vulnerable customers as a single, but difficult to identify, cohort (our analysis in section 3.2.1.3 shows that on average vulnerable customers would be better off on a new ToU tariff), but also in relation to outcomes for individual vulnerable customers.

For example, a solution that identifies and excludes from reassignment customers on life support and with a medical cooling concession only amounts to around 1.5 per cent of households. This would mean some customers on retailer payment assistant schemes or claiming the mains electricity concession, who we can't individually identify, could still be negatively impacted by being reassigned to a new tariff structure. Similarly, stakeholders

[12] Under its moderate scenario, CSIRO estimate that rooftop solar capacity will increase by about 50 per cent by 2030. CSIRO, Projections for small-scale embedded technologies, June 2018, pp. 35-36. A customer (or their solar installer) installing solar for the first time, or upgrading their solar system is required to inform their distribution network.

indicated that that mortgage stress customers or some pensioners—who as a group are increasingly installing solar panels—may also be considered vulnerable.

While there was support for complementary measures (such as retailer communications, literacy programs, technology rebates, energy efficiency programs and peak time rebates), there was also concern that these initiatives may not penetrate a significant part of the household customer base who do not, or cannot, engage in the energy market.

In light of the difficulty of identifying vulnerable customers, we erred toward a more conservative assignment and reassignment policy for the 2021-26 period, unless reassingment can occur with minimal adverse customer impacts. The objective of this approach was to ensure that vulnerable customers would not be adversely affected by the proposed changes.

1.7 Tariff reform in the future

Any change to tariff structures will mean that some customers are relatively better off and some worse off.[13] Our stakeholders have been clear that any changes must be managed in a way that ensures customers are not unfairly disadvantaged. These concerns led us to consider more conservative transitional arrangements and the potential impact on the total costs to customers, as explained below.

Peak demand growth is not expected to rise much over the 2021-26 period, meaning that additional capacity investment will be a relatively low part of our cost base in the short term. As a result, deferring these investments over this time would have a modest impact on customer bills. Table 1–2 shows that even under the extreme case where we deferred all capacity investment, the impact on household bills would be less than 1% for all Victorian networks.

Table 1–2: Size of the prize – contribution to 2026 retail bill when assuming all of 2021-26 capacity investment caused by average coincident peak demand growth is deferred

Distribution area	Demand-driven augex 2021-26 ($2021, $m)[14]	Contribution to 2026 retail bill	
		Dollars ($2021)	% of the total bill
CitiPower	18	1	0.1
Powercor	124	3	0.2
United Energy	75	2	0.2
Jemena	102	6	0.4
AusNet Services	92	4	0.2

Given the minimal impact on customers in the short term, there is less pressing need to mandate cost-reflective tariffs across our household and small business tariff classes. A more gradual transition that focuses on readying customers for ToU over time and making incremental changes to peak periods was considered more palatable by a number of stakeholders (see section 3.2). This approach would also make more substantial moves toward cost-reflective tariffs in future, which are key to ensuring long-term peak demand is as efficient as possible, less of a step change.

We have also considered the potential medium to longer-term benefits of moving toward more cost-reflective network pricing. Some of these broader benefits include:

- reducing network investment to support future electrification and rapid population growth which over time, should lead to lower network costs for all consumers;

[13] This is particularly the case under our revenue cap form of price control.

[14] These numbers may vary from individual distributors proposals as these were estimated at the time of our forum 3 engagement in March 2018.

- keeping pace with the unprecedented changes in the energy landscape to adapt to new and emerging energy technologies, and reflect changes in the way customers use electricity and interact with the grid; and
- move demand away from peak generation periods to help reduce wholesale prices.

1.8 Complimentary measures to tariff design

Our stakeholders have told us that tariff reform needs to be accompanied by a strong communication and education program for customers. They considered that a successful communication plan requires cross-industry cooperation and that working effectively with retailers is important.

The complementary measures that we intend to further investigate and support over 2021-26 includes:

- **literacy programs**—some distribution networks currently support energy literacy programs within the communities they serve. If ToU pricing develops at the retail level, we will adjust our literacy programs accordingly. For JEN, this includes a recommendation by our People's Panel to increase investment in energy literacy and energy awareness by $330,000 per year.
- **technology rebates**—in our view, home automation is a key enabler of more complex tariff structures. While a simple peak/off-peak ToU tariff structure is relatively straight-forward for customers to understand and recall, in the future, there may be a business case to provide rebates for home energy management services and technologies that will automate customers' responses to network tariffs.
- **energy efficiency programs**—sensible, cost-effective energy efficiency programs can help lower energy usage overall, and those that target air-conditioners can help mitigate peak demand.
- **peak time rebates**—in areas where there are network constraints, networks can reward customers for reducing their consumption during nominated critical peak periods, or reward customers for allowing the network to control certain devices during critical peak periods.

1.8.1 Demand response as an alternative to tariffs

As well as tariff design, each Victorian distributor is actively engaging with customers to manage costs through demand response, whereby distributors incentivise customers to decrease energy usage during peak events to address local network constraints and defer investment.

As we learn more about how our customers want to engage in demand response, greater numbers of customers are participating and consistently using less energy during critical periods. Over the 2021–2026 regulatory period we will also continue to learn more about how our customers want to engage with us. For example, this may be through:

- implementing consumer segmentation research to **increase customer engagement** and **drive better network outcomes**
- **understanding customer motivations** and drivers so that existing and future programs incorporate their needs and expectations
- working with network planners to ensure we **target the right customers** in those areas of most need
- identifying the partners to help us **build scale and develop programs** that provide meaningful value to customers and the network.

2. Tariff classes

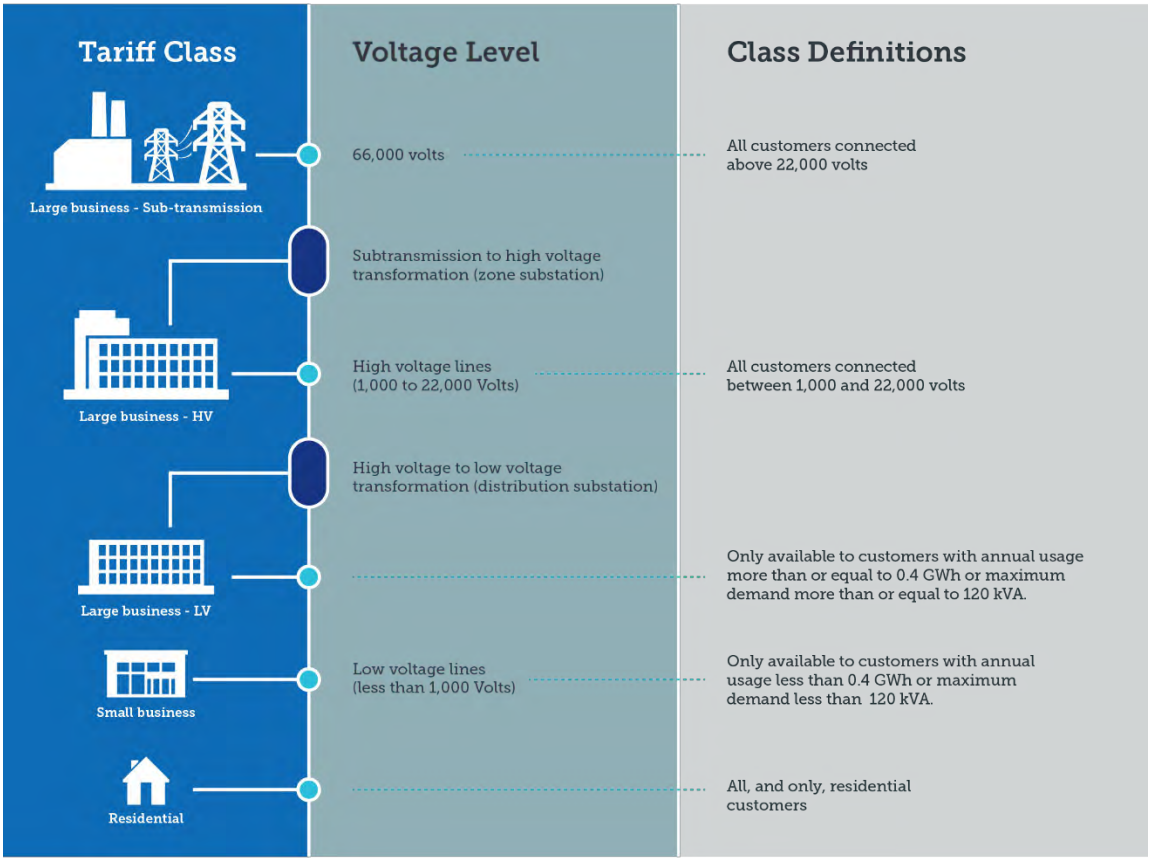
This section explains the tariff classes JEN proposes for the 2021-26 regulatory period, and how they reflect our pricing objectives and requirements under the NER.

Tariff classes are described for our direct control services. Direct control services are those that are regulated by the AER. They are categorised into standard control services and ancillary services—which include AMI metering services as well as specific services requested by a user. Here we describe how we divide our customers for each service into tariff classes.

2.1 Standard control services – what have we done?

The standard control services tariff classes we are proposing to include in our tariff schedule in the 2021-26 regulatory period are shown in Figure 2–1. These are the same tariff classes that we had in place for the 2016-20 regulatory period.

Figure 2–1: Tariff classes - standard control services



JEN uses 120kVA to differentiate between our small business and large business customers. This is based on common connection standards adopted by the Victorian energy industry. 120kVA is the maximum demand capacity an overhead service cable can deliver to a customer.

2.2 Standard control services – why have we done it?

Having five tariff classes enables us to achieve an optimal balance between differentiated price signalling—taking into account customer load and connection characteristics—and the transaction costs of providing more customised tariffs.

In other words, the five tariff classes:

- Correspond to our five major customer segments which have materially different costs to connect and serve
- Ensure we can avoid unnecessary costs to ourselves, retailers (for example IT and billing systems and processes changes) and customers.

We can also assess our approach against our pricing objectives:

- **Equity** – As we have more than 330,000 residential and business customers with a range of different load and connection characteristics, we group customers with shared characteristics together. This ensures that similar customers pay similar prices.
- **Efficiency** – Our set of tariff classes enables us to design tariffs that encourage efficient usage decisions by ensuring that our charges reflect the extent to which customers use the network. For example, large business customers who connect at high voltage levels do not use the low voltage network. Also, limiting the number of tariff classes reduces complexity.

2.3 Alternative control services tariff class – what have we done?

In addition to our standard control services, we provide user-requested services and metering services[15] (alternative control services). The full cost of these services are attributed to the customer who receives the service.

There is only a single tariff class for these services—the 'alternative control services tariff class'. Within this tariff class, there are multiple user-requested services, each with their own associated price or unit rates that are proposed by us, but approved by the AER. The method for determining prices for these services takes two different forms as described in the table below.

Table 2–1: Alternative control services

Service	Tariff class definition
Fee-based services	Includes: • Alternative control services for which the AER has applied a cap on prices, for example, services such as basic connections, de-energisations, re-energisations • Metering for 'small customers' (Type 5, 6 and AMI meters), Type 7 metering[16] and other auxiliary metering services provided on a customer-requested basis. • The operation, maintenance and replacement services for public lighting, which the AER has applied a cap on the price per lighting type.

[15] Our metering services include the provision of smart and accumulation meters for small customers and the associated data services. These have not changed for those that applied during the 2016-20 regulatory control period.

[16] Definitions of the different types of meters can be found in our classification of services attachment to our 2021-26 regulatory proposal. See: JEN - Att 07-06 Classification of services – 20200131.

Service	Tariff class definition
Quoted services	Services for which the AER has placed a cap on the applicable labour rates (inclusive of labour on-costs and overheads). Prices for quoted services are based on quantities of labour plus materials and contractor services.

2.4 Alternative control services – why have we done it?

We assess our approach against our pricing objectives:

- **Simplicity and Economic efficiency** – Only one tariff class is necessary for these services because the price applies to a service and does not change according to the type of customer using the service. There is no advantage in dividing customers into further groups.
- **Equity** – We allocate the costs of providing user-requested services to those who request them, and set our prices to recover these costs. This ensures that only those customers who benefit from a service pay for it.

3. Households

The purpose of this chapter is to set out:

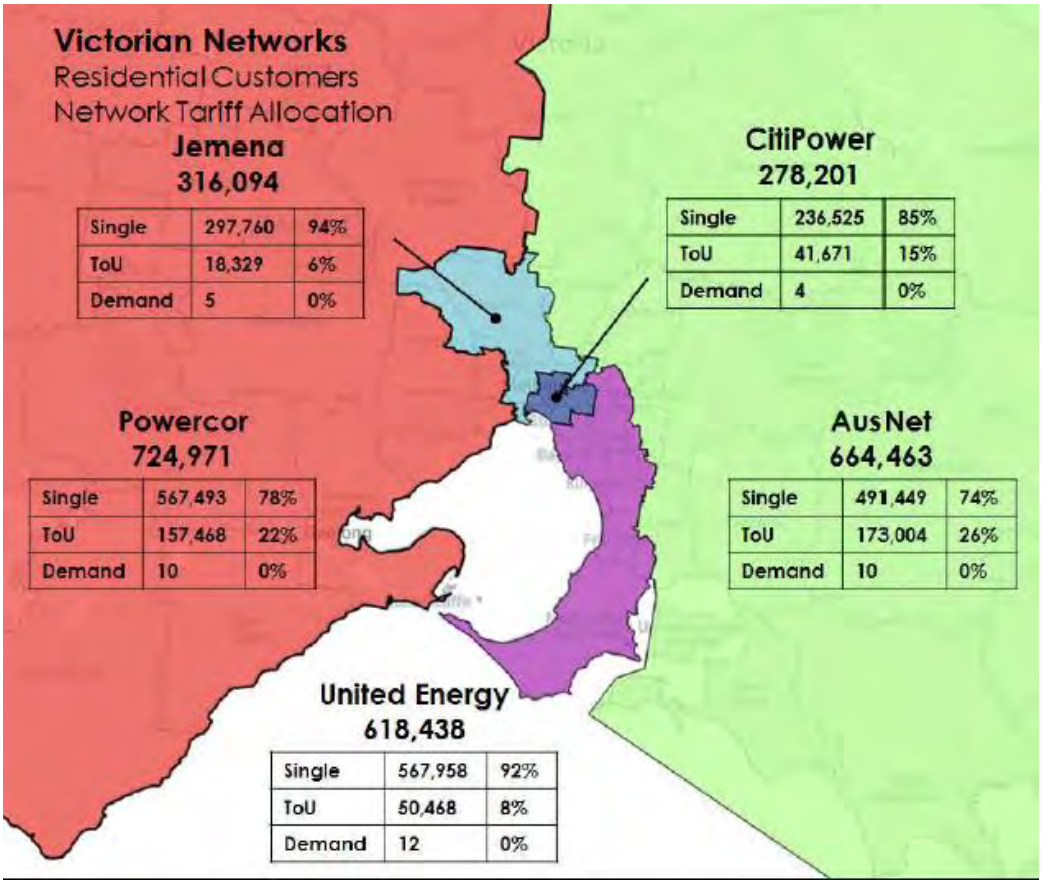
- who are our household customers and their existing network tariffs
- our customer and stakeholder engagement
- our proposed changes for household network tariff structures and assignment policy as set out in our TSS.
- why we consider our proposed changes best meets the needs of our customers and stakeholders, taking account of our consultation process, our pricing objectives and the NER requirements.
- how customers can save on our new ToU tariff.

3.1 Our household customers

The households in our network area are diverse. For example, our customers differ in terms of rural or regional centre location, people in the household, age, medical needs, financial means, and whether they have solar PV.

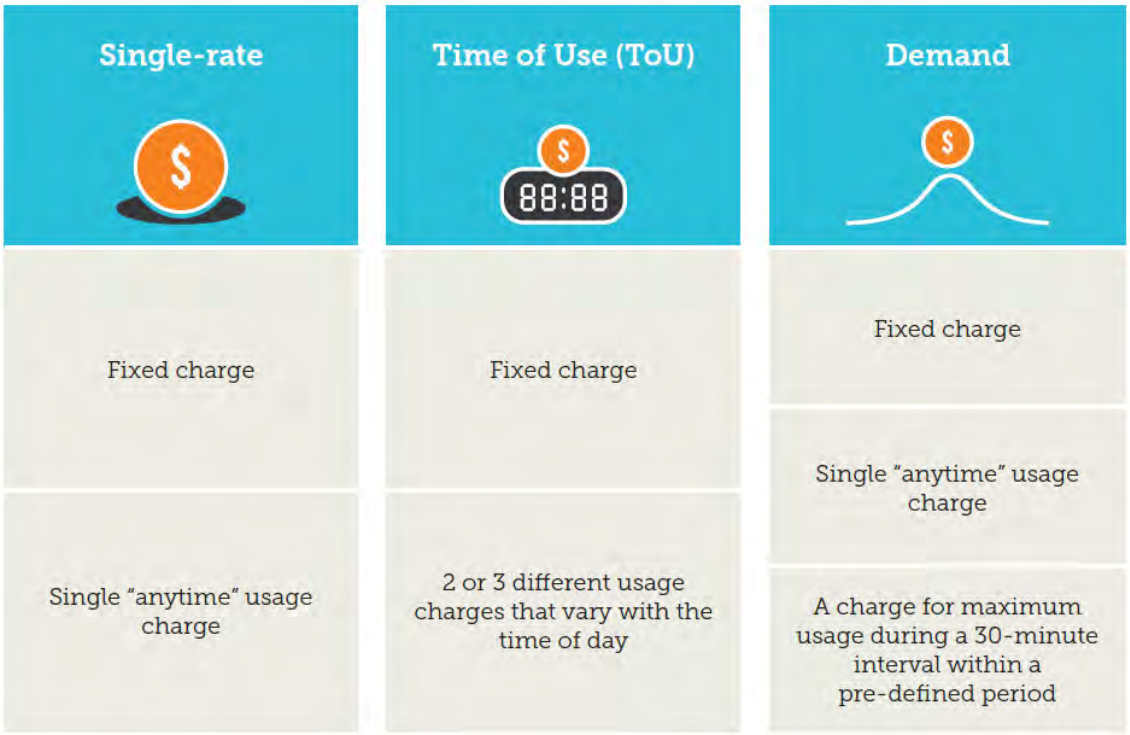
Figure 3–1 shows the number of households in each Victorian network on single-rate, ToU and demand tariff structures.

Figure 3–1: Victorian residential customers on each tariff structure



Currently, we have three main types of residential electricity network tariff structures, as can be seen in Figure 3–2.

Figure 3–2: Simplified view of different network tariff structures



The makeup of household tariffs is as shown below:

- more than 80% of Victorian residential customers are currently on a **single-rate** tariff structure where usage charges are not dependent on time of day.
- in 2013, the Victorian Government introduced an optional three-part time-of-use tariff structure called the **'flexible'** tariff where the price of electricity changes depending on the time at which energy is used. The peak period is 3pm to 9pm weekdays. Some, but not many, customers chose to opt in to the flexible tariff, currently making up less than 1% of JEN's household customers.
- in 2017 the Victorian DNSPs introduced a **demand** tariff on an opt-in basis. Very few customers have opted into this tariff.
- the remaining residential customers are currently assigned to existing ToU tariff structures mostly with a peak-period of 7am to 11pm typically on weekdays only. These **legacy** tariffs are currently closed.
- customers may also have a dedicated circuit that supplies hot water or slab heating, which is on a secondary **controlled load** tariff. These customers are charged a low network price in exchange for us being able to control their load.

3.2 Our household customer and stakeholder engagement

In developing our TSS for the 2021-26 period, the Victorian DNSPs have collectively listened and responded to the views of our stakeholders. As individual businesses, we have also undertaken our own customer and stakeholder engagement as part of our normal engagement processes, including for our wider regulatory reviews.

In this section, we provide details of:

- the collaborative Victorian distributor engagement

- our business-specific engagement, independent of the other Victorian DNSPs.

3.2.1 Collaborative Victorian distributor engagement

Over the past two years, the Victorian DNSPs have adopted a multifaceted engagement approach to jointly develop our tariff structure and assignment policy for small customers (both households and small businesses consuming under 40MWh per annum).

Jointly, we have:

- held three pricing forums with informed stakeholders and customer groups;
- published two consultation documents on tariff design and implementation options;
- engaged a study of the impact of our ToU tariffs on a sample of vulnerable customers;
- researched community perceptions toward preparing for EVs;
- collated what we have individually heard from small customer and retailer interactions;
- undertaken customer impact analysis of reassigning legacy ToU customers onto our new ToU tariff. JEN has engaged with our Customer Council on the results of this analysis.

3.2.1.1 Pricing forums

In late 2017, the Victorian DNSPs embarked on an extensive consultation process in which we engaged a wide range of stakeholders who had an interest in, or might be impacted by, network pricing reform in Victoria. The participants in the forums included consumer representatives, regulators, Victorian government representatives and retailers. We actively sought out people who have an interest or influence on pricing reform. By bringing all the Victorian networks and interested stakeholders together, we could strive for unity of vision and a common approach to tariffs.

We held three in-depth forums. We learned that customers have strong views on what our pricing objectives should be and the design of our tariff structures. Prior to each forum, we published a discussion paper or fact sheet to help participants understand the context of the sessions, and what we were consulting on. We designed the forums to draw out a diversity of perspectives. Many of our participants delivered presentations based on the themes of the engagement session. We also wanted participants to have conversations with each other, and report back their views to the group. Our approach reflected our goal of moving from a one-way conversation to meaningful consultation.

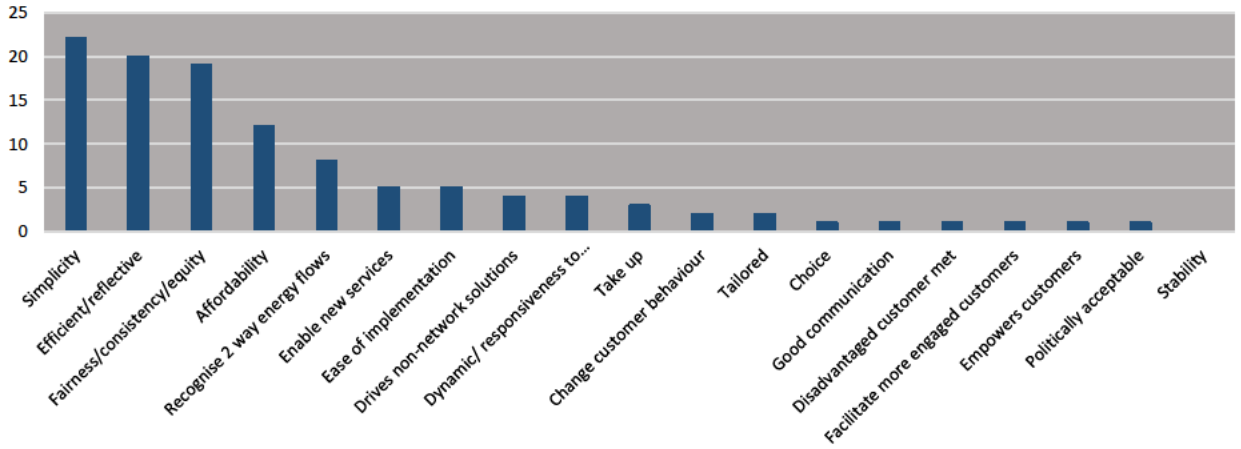
Forum 1 – Key outcome: Pricing objectives

In the first forum in November 2017, our aim was for attendees to collaborate, share and listen to stakeholder views on the challenges and opportunities that can arise from household electricity network pricing changes. We sought to:

- identify key objectives to guide network pricing changes.
- discuss how these objectives are best progressed.
- identify any research gaps that need to be filled and the complementary measures that need to be considered in our pricing design.

In this session, we heard that network pricing reform is desirable. Through the forum exercises, participants provided a range of potential pricing objectives (see Figure 3–3).

Figure 3–3: Stakeholder voting on important principles for pricing design



Participants then narrowed the principles down by voting on ones they preferred. The top 5 principles of simplicity, economic efficiency, adaptability, affordability and equity were adopted in our consultation process, as discussed in section 1.

Building on the simplicity objective, our customers, retailers and other stakeholders told us that tariff structures should be able to be understood and managed by both retailers and customers as retailers often mirror network tariff structures. Uniform tariff structures across Victoria go a long way to achieving this.

Stakeholders also told us that in the face of an increasingly complex energy market, there is a need for pricing reform. Stakeholders wanted us to empower households to reduce bills by encouraging the efficient use of energy. They also wanted us to address cross-subsidy issues and reward consumer behaviours which reduce network costs. Our stakeholders also wanted to make sure that vulnerable customers are not worse off as a result of tariff reform.

Forum 2 – Key outcome: Who responds to network prices?

In the second forum in April 2018, we asked participants whether tariff structures should be targeted towards the retailer or the end customer. The preference of forum members was that end customers wishes should be kept in mind even if tariff structures are directed towards retailers. This recognised that it is the retailer's choice as to whether the network tariff structure is passed onto the end customer, but ultimately some end customer impact is likely.

We also sought the views of our stakeholders on broad pricing design options and how these relate to the principles agreed to in the first forum. We heard:

- support for cost-reflective tariff structures, but a mixture of views on the most appropriate design.
- some support for reassigning customers to a cost-reflective tariff structure after a period of transition, but also support for opt-in only.
- a desire for analysis to support customer impacts.

At the end of the second forum, the Victorian DNSPs committed to providing a shortlist of tariff structures that would meet the principles established in the first forum. In September 2018, we published a consultation paper which shortlisted four tariff structure options and implementation options. This included single rate, ToU, peak usage subscription and demand charges.

Forum 3 – Key outcome: Majority support for a two rate TOU tariff with a fast pace of change

The third forum was held in March 2019. The Victorian DNSPs presented three “strawmen" positions for consultation.

The first strawman was a new ToU tariff structure. The structure would have a higher rate for energy use between 3 pm and 9 pm that would apply for all days of the year. About 80 per cent of participants were ok with or supported a ToU structure. The simplicity of a two-rate, year-round structure and its coverage across Victoria were the key reasons why participants supported the proposal. A key reason why some participants did not support the proposed tariff structure was uncertainty on how it would impact vulnerable customers.

The second strawman related to transitioning customers to the proposed new ToU pricing structure. In the lead up to the session, the Victorian DNSPs’ consultant (ACIL Allen) made a presentation on the impacts of ToU structures on vulnerable customers. Our proposed strawman was that life support customers and medical cooling concession customers would not be re-assigned to a ToU tariff structure, and all other households could 'opt-out' from the new tariff structure for five years. About 79% of participants were ok with or supported the transition strategy. A key message we heard was that stakeholders wanted more information on the impacts to particular household segments including small, vulnerable customers and those on existing ToU tariffs. In section 3.5, we discuss how the feedback from our participants has influenced our transition strategy.

Attachment A provides the report of forum 3 approach, pre-reading and outcomes prepared by Seed Advisory.

3.2.1.2 Joint Victorian DNSP Consultation documents

The Victorian DNSPs provided two opportunities outside of the forums for stakeholders to provide formal written feedback:

- in September 2018, we published an options paper where we asked stakeholders for their views on tariff design, implementation and transition (pace of change), which informed the strawman we provided at our third forum
- in October 2019, we sought stakeholders views on an amended position to that provided at our third forum.

3.2.1.3 ACIL Allen study of vulnerable customer impacts

Having heard customers and stakeholders views of the importance of understanding the impact of our proposed changes on vulnerable customers, we commissioned ACIL Allen to undertake further analysis.

ACIL Allen surveyed around 2,000 Victorian electricity customers to identify various demographic data that might indicate vulnerability and matched it to their electricity consumption profiles over a year. ACIL Allen then determined whether the customer would be better off on a single rate or equivalent ToU tariff.[17]

The analysis showed that vulnerable customers collectively would be better off if everyone were on a ToU tariff, with the average vulnerable customers’ bill impact being an $11.93 decrease. This indicates that vulnerable customers generally use relatively less electricity during peak periods. However, the diversity of consumption profiles occurs both within vulnerable customers as it does for non-vulnerable customers. The analysis showed that, while on average vulnerable customers would be better off, there would still be around 27 per cent of vulnerable customers who would be negatively impacted by more than $10 per annum (see Figure 3–4 and Table 3–1). Across the population of Victorian vulnerable customers, this would be a significant number of households.

[17] An equivalent ToU tariff means one that is priced to ensure that the distributors receive the same total revenue as if all customers were on the current single-rate tariff.

Figure 3–4: Customer impacts of moving everyone to our new ToU tariff

Source: ACIL Allen

Table 3–1: Customer impacts of moving everyone to a ToU tariff

	Vulnerable	Other
Proportion of customers with bill decrease	32%	19%
Proportion of customers with no change (within +/- $10)	41%	41%
Proportion of customers with bill decrease	27%	40%
Sample size	293	1658

Source: ACIL Allen

These results showed that while most vulnerable customers would have little change to their bill, around 27% of vulnerable customers would have a price increase.

Attachment B provides ACIL Allen's vulnerable customer analysis report.

3.2.1.4 JWS research on community perceptions toward preparing for EVs

The Victorian DNSPs engaged JWS Research to undertake qualitative research to uncover consumer response (initial reactions, thoughts, concerns, questions) to information about investment in infrastructure to prepare for EVs, including the role of network tariffs.

Figure 3–5 provides a summary of the key findings. In particular, we heard:

- support for ToU tariffs
- anecdotal evidence of customer perceptions of EV's that supports AEMO's forecast of minimal demand impact in the current period.

Attachment C provides JWS' final report on Community perceptions toward preparing for EVs.

Figure 3–5: Summary of JWS Research key findings

Source: JWS Research

3.2.1.5 What we have heard from customers and stakeholders

Table 3–2 provides the key themes from these consultation activities as well as from a number of one-on-one and small group meetings and individual distributor engagements with our customers.[18] We also provide key themes on how we have responded to these.

Table 3–2: What we heard and our response

What we have heard	Our response to what we have heard
Households	
• Electricity pricing is complex and not well understood • It is fair for households to pay in line with the cost they each impose on shared community infrastructure like an electricity network • Some customers may need to be supported if any changes to tariff structures are imposed • Mixed support for single-rate, ToU, and demand tariff structures • ToU pricing is more readily understood than demand pricing • There is little support for a subscription pricing[19] because of its relative complexity	• The status of electricity as an essential service drives most households to want us to price our services in a way that carefully considers those least able to respond to any changes we might implement. • Customers prefer pricing mechanisms that reward rather than mechanisms that penalise (a preference for "carrots" over "sticks"). • Many customers, even when they have access to personalised information, time, and experts, have difficulty understanding demand pricing. Meanwhile, ToU pricing is well understood and "part of life" – customers readily cite examples such as public transport fares as examples of ToU pricing. We have therefore proposed a ToU tariff as the new default tariff (see section 3.3).

[18] See for example: Jemena's Peoples Panel: https://yourgrid.jemena.com.au/33868/documents/87920; CitiPower, Powercor and United Energy deliberative forums: https://talkingelectricity.com.au/wp/wp-content/uploads/2018/08/CPPCUE-RESI-AND-SME-Forum-Report-Final-5-Jul-2018.pdf.

[19] This option applies a fixed charge for each customer based on pre-defined peak period usage band.

What we have heard	Our response to what we have heard
• Peak time rebates[20] are supported if cost-effective	
Customer and Stakeholder representatives	
• Tariff structures should be able to be understood and managed by both retailers and customers • Pricing principles should be affordability, simplicity, equity, economic efficiency and adaptability. Recognition that trade-offs are required when meeting these. • Peak time rebates are supported if cost-effective • Transition and complementary measures are important to consider but the level of support for change depends materially on the outcomes for vulnerable customers. Any reassignment should seek to minimise the number of negatively impacted vulnerable customers.	• We agree that moving to more cost-reflective tariff structures should be our aim (see our proposed changes, section 3.3). • Given retailers often mirror network pricing structures, it is important that customers understand, and can, therefore, respond to, network tariff structures. When there is a trade-off between benefits related to complex solutions and benefits of simple solutions, we have therefore erred on the side of simplicity. For example, in our choice of a two-rate tariff (section 3.4.1) and selecting when our peak period applies (section 3.4.2). • We will continue to explore demand management options as a potentially powerful tool to manage peak demand. • To minimise the potential to inadvertently and negatively impact vulnerable customers, we only assign or reassign customers when there is a customer-led trigger that is less likely to be associated with vulnerable customers. i.e. new connections, installing solar, upgrading to a three-phase power supply and potentially EV's (see section 3.5).
Retailers	
• Network tariff structures should be focussed on retailers rather than customers • Customers need to be informed of any changes that could result in their bills from a change in tariff structures. • Generally, prefer mandatory reassignment onto a new ToU tariff. • Some query whether peak periods should apply on weekends and public holidays. • Would find extended transitions where prices move slowly toward cost-reflective tariffs difficult to communicate	• Generally, retail tariff structures have tended to closely align to network tariff structures – as a result, stakeholders have asked us to have one-eye to customer outcomes if this pattern continues into the future. • We agree that customers should be made aware of material changes to their retail tariff structures. • Only the retailer itself is aware of when and how it may change a customers' retail tariff structure, so we consider it makes sense for retailers to lead communication and education efforts. • We consider that because peaks can occur on weekends and public holidays combined with the general preference for simplicity means we should apply our peak period to weekends and public holidays (see section **3.4.3**). • We will set our available tariffs at price levels we consider cost-reflective. We will not seek to slowly move price levels toward cost-reflective levels over time (see our TSS).

[20] Peak time rebates involve paying customers in a particular local area (depending on the local of a constrain) a rebate for using less electricity than they were intending to at the time we called an electricity network peak event.

3.2.2 JEN-specific customer engagement

We recognise the importance of undertaking a collaborative engagement process with our own end-customers.

In July 2018 we established a People's Panel as a means to engage directly with our residential and small-business customers.

Our People's Panel covered many topics, one of which was pricing. We sought from our Panel a view on what tariff structures they would prefer, both from an individual perspective, but also from a community perspective. We provided the Panel with pre-reading on various price options to support our presentation and panel discussions at the fifth-panel meeting. The pre-reading is here: https://yourgrid.jemena.com.au/32794/documents/87698

They provided us with two pricing-related recommendations:

- recommendation 1: The Panel believes that the "Monthly maximum demand" pricing structure is the best for customers so long as customers can opt-out.
- recommendation 2: The Panel recommends that Jemena continues to explore using rebates to encourage customers to respond during times of need (for example hot days).

We have published a report that details the Panel's discussions on pricing available here: https://yourgrid.jemena.com.au/32794/documents/88213 and provided this at Attachment D.

While the majority of our Panel recommended our default household tariff be a demand tariff, we have proposed a two-rate demand tariff (see section 3.3). A strong stakeholder preference and, therefore, a key driver for our household proposal is to provide a consistent position across Victoria (see section 1.4). This has required us to bear in mind the customer views heard by the other Victorian electricity distributors and what we have heard from customer advocate groups within our joint forums. The strong preference coming out of those engagements was for a simple ToU tariff.

This position is not far removed from our Panel's position. We consider a two-rate ToU tariff to still be consistent with the preferences of the Panel because, as shown in Attachment D, they supported:

- the principle of simplicity—many Panel members felt that ToU tariffs was more readily understood than demand tariffs
- the movement toward improved cost reflectivity—which our movement away from a single-rate tariff to a default ToU tariff would provide.

Following the AER's draft 2021-26 decision, JEN undertook analysis on the customer impacts of moving customers on our legacy residential ToU tariffs to our new ToU tariff. We set out the results of this analysis in section 3.5.5. We took this to our Customer Council and received the following feedback:

- recognised the low level of year-on-year customer impact that took into account bill decreases occurring due to the draft decision. One member also noted there would still be different *relative* impacts compared to what each customers' bill would have been if they weren't reassigned.
- it is generally favourable to have a simpler message provided by one ToU tariff and one peak period rather than multiple and peaks that make messaging more difficult
- communications are important and DNSPs should seek continual improvement in collaboration with retailers, Government and the AER.

3.3 Proposed changes

Our proposed changes to household tariff structures seek to accelerate the pace of change without jeopardising the stakeholder support that is crucial to enable change.

The main change we propose to make for the 2021-26 period is to introduce a new two-rate tariff structure (**new ToU tariff**). This is set out in section 3.4 and is also presented in our TSS.[21]

From 1 July 2021, the new ToU tariff will become our default tariff for household customers. We will assign the following customers onto the new ToU tariff:

- new connections (i.e. new homes connecting to the network for the first time, not re-energisations)
- customers who choose to upgrade from single-phase to a three-phase supply[22]
- customers who choose to install solar or batteries.

We would also like to include owners of EVs or EV fast chargers, although currently lack a credible means to identify these customers. Should a register of customers who purchase EVs or EV fast chargers become available, or there is some other robust means of identifying an EV customer over the 2021-26 period, we would also seek to assign these customers to the new ToU tariff. In the absence of this information, we will work with other stakeholders to encourage EV owners to opt in to the new ToU tariff.

The Victorian DNSPs will:

- retain our respective single-rate, demand charge, and controlled load (dedicated circuit) tariff structures from the 2016-20 period.
- reassign customers from our suite of legacy ToU tariff structures to the new ToU tariff on 1 July 2021 and removing the legacy ToU tariffs from our tariff schedule. [23] This includes the three-rate flexible tariff.[24]. Note, this position is an update from our initial proposal which was to simply close these tariffs to new entrants where they weren't already closed. We have updated this position based on new evidence to show minimal adverse customer impact. See section 3.5.5 for more detail.

Table 3–3 summarises our proposed tariff assignment and reassignment for households.

Table 3–3: Household assignment and tariff options from 1 July 2021

Proposed tariffs	Proposed assignment	Tariff options (upon request from retailer)
New ToU	New connections Supply upgrades to three-phase Households installing solar or battery	Single-rate[25] or demand
Single-rate[25]	All existing customers remain	New ToU or demand
Legacy ToU[26]	All existing customers reassigned to the new ToU tariff on 1 July 2021	Single-rate[25], new ToU or demand
Demand	All existing customers remain	Single-rate[25] or new ToU

21 For JEN, this new ToU tariff has the tariff codes A120.

22 Large electric motors can need three-phase power and require customers to upgrade their electricity supply. This can occur when customers are installing large air-conditioning systems, kilns, significant power tools (sometimes used in workshops or for home renovations), under floor heating, large pool pumps or a solar panel array above 10kVA The Victorian networks provide around 3,000 supply upgrades per annum.

23 Seventeen per cent of Victorian customers are on variations of legacy network ToU pricing structures with higher charges generally from 7am to 11pm. All these legacy ToU tariff structures will be removed with customers reassigned to the new ToU tariff from 1 July 2021. This will ultimately promote simplicity and cost-reflectivity in both network and retail pricing structures, in the long-term interests of consumers.

24 This has the relatively complex peak times of 3pm-9pm weekdays, shoulder of 7am-3pm and 9pm-10pm weekdays and 7am-10pm weekends and off-peak at all other times.

25 JEN will comply with any requirement of the Victorian Government's AMI OIC, which may restrict some specifically defined customers from accessing the single-rate tariff. For example, this could be customers who install EV fast chargers after 1 July 2021.

26 All legacy ToU tariffs will be removed and customers reassigned to the new ToU tariff on 1 July 2021. This includes our current three-rate "flexible" tariff.

Proposed tariffs	Proposed assignment	Tariff options (upon request from retailer)
Controlled load[27]	All existing customers remain	Single-rate[25], new ToU or demand

The remainder of this chapter provides the reasons for our proposal.

3.4 Our default tariff structure and how it meets our pricing objectives

In the 2021-26 period, we are proposing that the default tariff structure for households be a new ToU tariff structure. The key design features of the new ToU tariff structure are:

- a two-rate tariff structure;
- peak period occurring between 3pm to 9pm local time, all days of the week including public holidays and regardless of season; and
- off-peak applying at all other times.

Our reasons for this tariff structure are explained below.

3.4.1 Why two-rate is preferred to three-rate?

Feedback at our third forum strongly preferred the simplicity of a two-rate tariff (see Section 3.2.1.1). Customers only have to remember two times within the day – when the peak period starts and ends. The alternative is a shoulder period where rates are between the peak and off-peak rates. In conversations with us, customers showed an awareness of peak and off-peak pricing but rarely mentioned a shoulder-period. Our view is that a shoulder period may dilute the effectiveness of the signals, and therefore not be particularly effective.

We, therefore, propose to only apply a two-rate tariff structure (peak and off-peak).

3.4.2 Why we chose 3pm - 9pm peak period?

The objective of a ToU tariff structure is to provide customers with an incentive to move the discretionary load into off-peak periods, when the network is under less stress.

Stakeholder feedback indicated that we should select a peak period when households are using a large amount of electricity and the local electricity network is under stress.

Figure 1–5 shows when our (approximately) 230 zone substations are under most stress. Most zone substations are peaking between 2pm and 8pm (local time)[28]. There are also “tails” to this period, with about 10 per cent of substations peaking between 11am and 2pm, and 8pm and 10pm, local time.

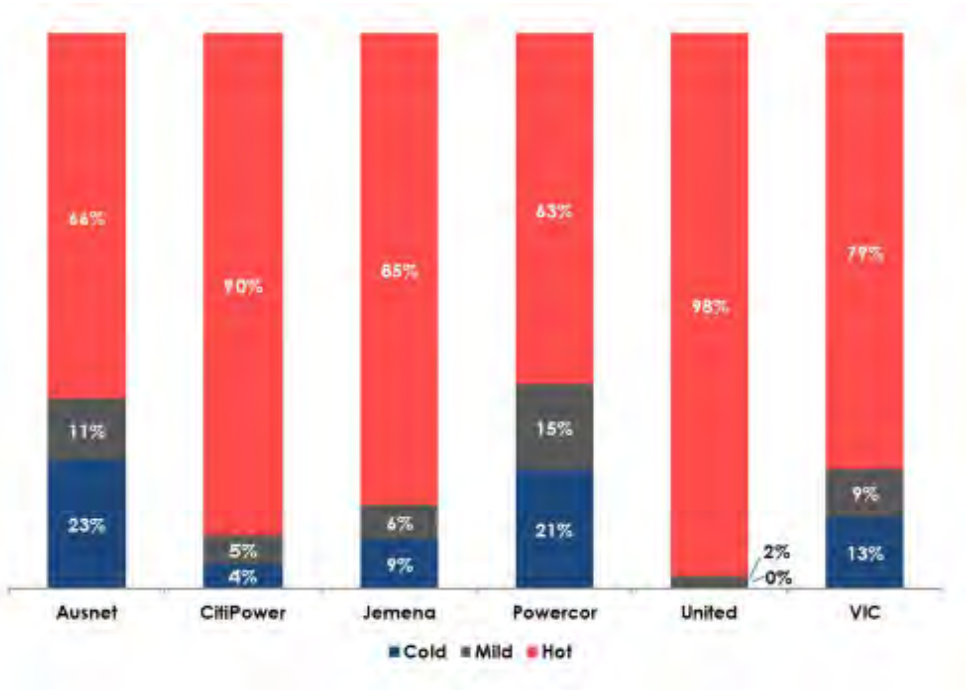
We also need to assess when households are using the most electricity. To do this, we ranked each 30 minute interval between 1 January 2016 and 31 December 2018 by total household consumption across Victoria. We observed that the top 100 household consumption intervals all occurred in December, January, February or March.

We also looked at the temperature when substations peaks where occurring. As can be seen in Figure 3–6, most occur when it is hot (although there are some that occur in colder months).

[27] Closed to new entrants. A closed tariff means no customer can be assigned to the tariff but current customers can remain on the tariff.

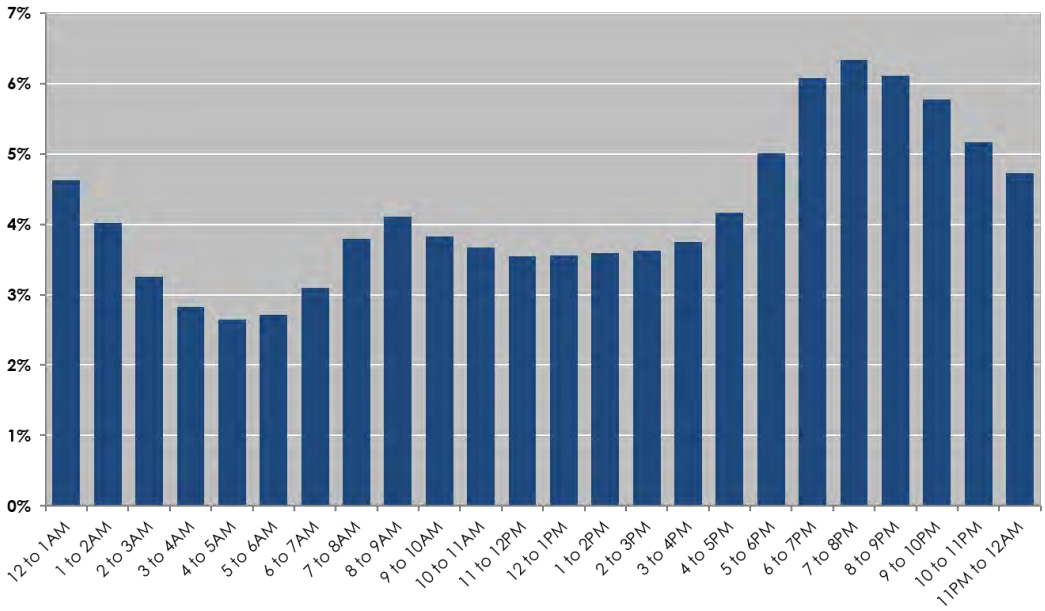
[28] Zone substations peaking between 11pm and 2am reflect zone substations supplying customers with controlled load.

Figure 3–6: Substation peak by temperature, 2015-17



Therefore, while we cannot ignore winter months, our analysis suggests we should focus on household consumption over December to March, which are generally the hottest months of the year. Figure 3–7 shows that between December and March, households tend to ramp up consumption from 4pm and continue to use large volumes of electricity to 1am (most controlled hot water heating), peaking between 6pm and 9pm during the evening.

Figure 3–7: Proportion of 2016-18 household consumption by hour of day, local time summer plus March



Taking Figure 1–5 and Figure 3–7 together (i.e. when households are using the most electricity and the same time as the network is under most stress), we consider 3pm to 9pm, local time, as the optimal peak-time period for our new ToU tariff structure.

One of the key questions we needed to consider in choosing this period is whether this might simply "move" the peak to just before or after this 3pm-9pm time period, or for some networks exacerbate peak demand if that tended to occur on the fringes of 3pm-9pm.

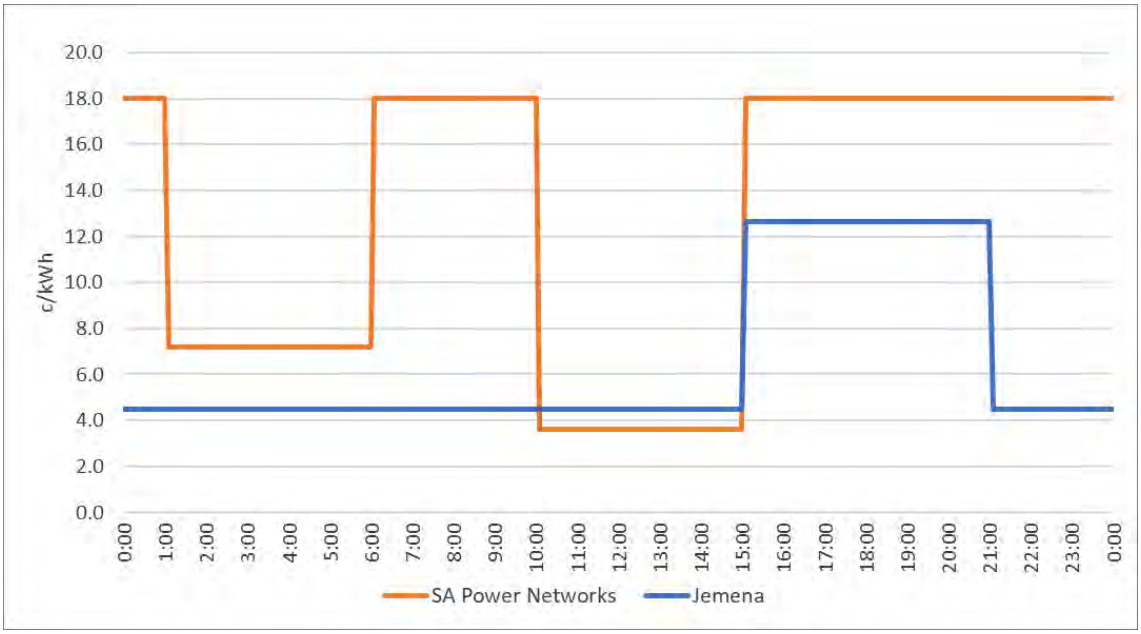
Over the 2021-26 period we don't expect that peak demand will shift outside 3pm-9pm because:

- customers will continue to use air-conditioners on hot afternoons;
- EV take-up is not expected to grow to the extent that they will have a material impact on the load shape over this period;
- to the extent that EV load grows faster than expected, we expect home convenience-charging to be the pre-dominant charging option in the near-term, and this would likely occur as household arrive home from work from 5pm;
- home battery installations are not expected grow to the extent that they will have a material impact on the load shape over this period;
- while solar PV installation penetration is expected to increase, and price signals may encourage more solar panels to be oriented westwards, this is not expected to materially affect demand from 6 pm; and
- minimal impact is expected from customers moving other discretionary load.

We have optimised our new ToU tariff based on demand at the zone substation level of the network, which is the aggregate demand on the low voltage and high voltage network. Whilst we don't expect the aggregate peak to shift from 3pm to 9 pm, in the future localised high solar exports are expected to occur on the low voltage network. If we are to enable these exports, future network investments will be required. Our new ToU tariff with off-peak rates before 3pm and peak rates after 3pm provides incentives to reduce midday solar exports, for instance by installing west-facing solar panels or to use a batteries to charge from their solar panels and discharge when electricity is needed. Therefore our proposed new ToU tariff serves the dual purpose of providing incentives to reduce network demand and to reduce midday solar exports.

SA Power Networks specifically proposed a 'solar sponge' period when network charges are very low. Our new proposed ToU tariff will provide a similar incentive, but with a simpler ToU tariff. Figure 3–8 indicates that our proposed ToU rate around midday is within 1 c/kWh of SAPN's proposed 'solar sponge' rate, but our proposed tariff structure is simpler for customers to understand.

Figure 3–8: Comparison of SA Power networks and JEN's proposed ToU tariffs



3.4.3 Why are we including weekends?

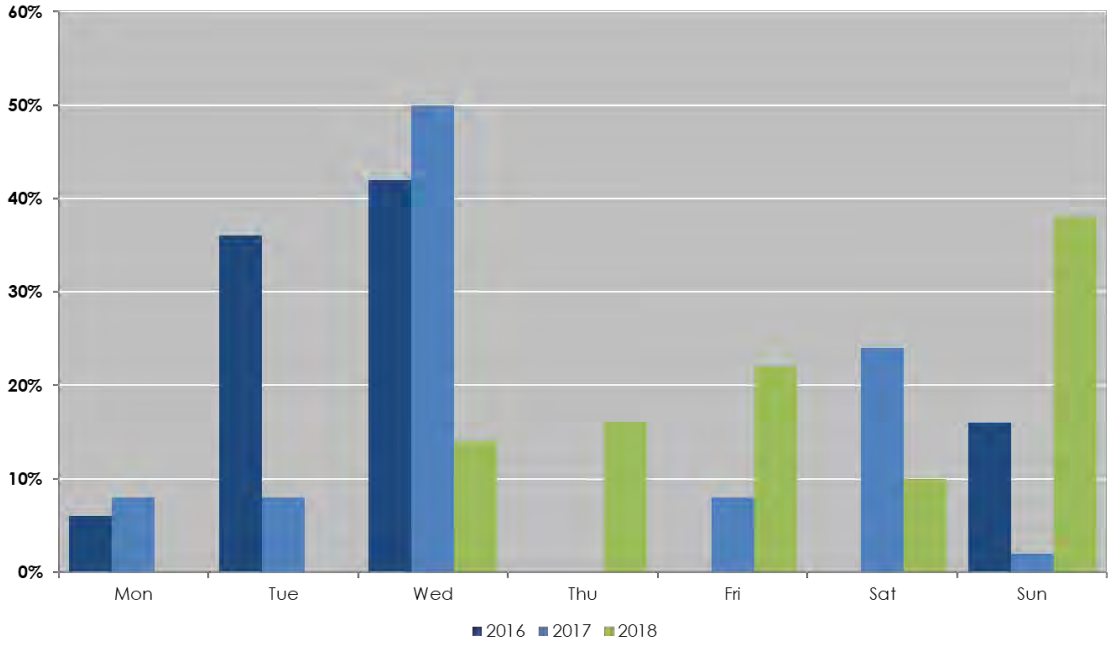
To determine which days to apply the ToU tariff structure for our residential customers we looked at when residential peak loads occur across Victoria, and whether there is any clear pattern to justify including or excluding weekends (104 days of the year) and/or public holidays (13 days of the year).

Residential peaks can and do occur on any day of the week (see Figure 3–9) . This is primarily driven by domestic air-conditioning load on hot summer days. We are therefore proposing to apply the ToU tariff structure on all days of the week, including weekends.

The second question is whether we include public holidays. Most substations peak on a very hot day, and very hot days can logically occur on public holidays (most likely those in summer). We heard a mix of views from stakeholders. Some stakeholders preferred the simplicity provided by having the peak period apply every day of the year--customers can easily understand, remember and behave accordingly. Other stakeholders did not agree that peaks should apply on weekends, which, apart from very hot days, generally have much lower demand.

On balance, and considering the potential for a peak to occur on a summer public holiday, we are therefore proposing to include public holidays.

Figure 3–9: Days on which the top 50 Victorian residential half-hour peaks fell (2016 to 2018)



3.4.4 Should the peak period only apply at certain times of the year?

At most zone substations in Victoria, residential peak load occurs in summer. This has led us to consider whether we just apply the new ToU price during summer, or perhaps the period of daylight savings, or year-round.

Stakeholders did not provide strong views on the time of year to apply the peak period. We therefore propose to apply the same ToU pricing all year around because of its simplicity. It:

- avoids customers having to remember when the pricing period starts and ends;
- may assist customers understand ToU pricing if the tariff structure is seen on every bill received by the customer during the year, rather than just some bills;
- would result in less confusing retail bills as it will avoid potentially two tariff structures appearing on the bills that cover time-periods when the ToU tariff structure does and does not apply; and
- recognises that some zone substations do peak in winter due to electric-heating load.

3.4.5 DER integration

Our demand forecast assumes that by 2026 we will have an additional 110MW of solar PV capacity (to bring us to 320MW) and an additional 9,500 EVs to bring us to around 11,000 EV's connected at our customers' sites. The EV are expected to draw around 14GWh per annum from the network out of our total demand of 4,300GWh per annum.

We consider our new default tariff for residential customers is appropriately designed to ensure correct incentives for these new customer investments.

The 3pm-9pm every day peak window will provide solar PV and battery customers incentives to:

- install west facing solar panels
- charge batteries before 3pm and discharge after 3pm.

The new ToU tariff therefore serves the dual purpose of providing incentives to reduce network demand and to reduce midday solar exports.

We will allocate around 20,000 legacy time of use customers assigned to this new tariff on 1 July 2021. However, assignment after 1 July 2021 will be limited to new connections, customers installing solar and/or batteries, upgrades to 3-phase and potentially customers with EV's or EV with fast chargers. Customers will also be able to opt in to this tariff. We estimate take up to be around 6000 customers per year, which would see around 40,000 – 45,000 customers allocated to the new default tariff by 2026. This is equivalent to around 6 per cent of our residential customers in 2021 and around to 12 per cent by 2026. It does not present a critical mass for sufficient behaviour change to drive materially lower peak demand on our network. We therefore consider our demand forecast to be robust to the tariff arrangements proposed to be in place.

Further, the tariff in itself can not be an alternative to an appropriate program for DER penetration challenges over 2021-26 We consider that our tariff strategy needs complementing by our Future Grid program includes expenditure to develop the information and systems necessary to implement dynamic export constraints for new commercial customers during the next regulatory period and residential customers during the subsequent regulatory period. We provide addition detail on the Future Grid progam and its interaction with tariff strategy and DER integration in section 4 of attachment 04-01 to our revised proposal.

Over the 2021-26 period, we will continue to monitor the feedback loop between tariffs and behaviour change that impacts our demand forecast, DER integration and demand management.

3.4.6 EV tariffs and trials

In it's submission to the AER's consultation on our initial proposal, Energy Consumers Australia (**ECA**) proposed consideration of an 'EV tariff' with an extremely narrow summer peak window. On 15 July 2020, the Victorian DNSPs met with ECA to further understand the proposition.

We consider that this could be developed within the regulatory period and potentially incorporated as a sub-threshold trial tariff.[29] This would provide evidence of it's workability and viability to be offered wider in future periods.Before incorporating a potential new optional trial tariff available to all customers into our current residential tariff structure offerings, we need to consider:

- what are the objectives of the trial and the type of learnings we are seeking to understand to advance our tariff offerings
- the appropriate peak window and engage stakeholders on this—we would want a peak window that is suffient to cover all potential coincident peaks
- consulting more broadly, especially with those stakeholder that support the simple messages our new default ToU tariff provides and the simple state-wide communication that this supports.
- the administrative cost of implementing the trial
- the willingness of customers to participate
- safeguards and protections, particularly for vulnerable customers but also the impact of the trial on Jemena's remaining customers
- opportunities to partner with other DNSPs and/or retailers.

We are not considering this as a trial for 2021-22, however, we will evaluate further within the regulatory period.

[29] This is a tariff that can be introduced within the regulatory period as part of the annual pricing proposal, so long as the forecast revenue from the tariff is under 0.5 per cent of JEN's annual revenue requirement and the total of all sub-threshold tariffs is below one per cent of JEN's annual revenue requirement. Refer NER 6.18.1C.

3.5 Assignment policy and transition

This section outlines:

- our proposed assignment policy
- our reasons for proposing this assignment policy by reference to our pricing objectives, including:
  - the transition options we considered
  - our customer impact analysis
  - applying what we heard from customers and stakeholders
  - our opt out arrangement for households.

3.5.1 Assignment policy

Table 3–3 summarises our proposed assignment and tariff options for customers. That is, from 1 July 2021, new connections, upgrades to three phase metering, new solar or battery installations and all customers on our legacy ToU tariffs will be assigned to the new ToU tariff structure. From the point of a register becoming available, customers with EV's or EV fast chargers would also be assigned to the new ToU tariff structure.

Importantly, new residential customer connections and three-phase upgrade customers that are assigned to the new ToU tariff structure may request to be transferred to the single-rate[30] tariff structure or monthly maximum demand tariff.

Our full assignment policy is detailed within our TSS.

3.5.2 The transition options we considered

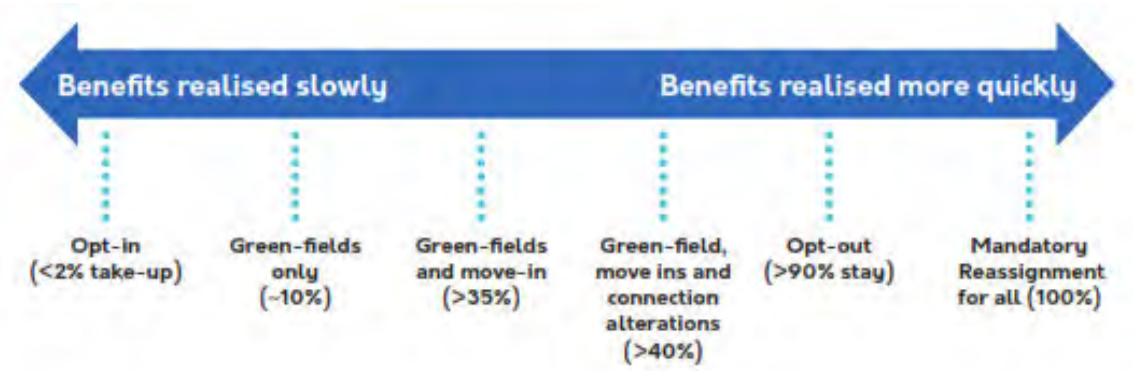
There are a range of transition options to assign customers to the default new ToU tariff structure.

In our September 2018 options paper, we consulted on transition options (which we referred to as "pace of change") as shown in Figure 3–10. At one extreme all customers are assigned immediately onto a new network tariff structure. At the other extreme customers get to self-select by opting into the new network price when they see fit. We acknowledged that the choice might be influenced by whether stakeholders provide greater weight to:

- the collective long term interests of the electricity community, in which case the preference would be to introduce mandatory pricing structure reassignments.
- minimising short term individual customer impacts, in which case a slower pace of change might be preferable.

[30] JEN will comply with any requirement of the Victorian Government's AMI OIC, which may restrict some specifically defined customers from accessing the single-rate tariff. For example, this could be customers who install EV fast chargers after 1 July 2021.

Figure 3–10: Pace of change options



Having received some support in submissions for mandatory assignment, we developed a strawman to test further at our third forum. This included reassigning all customers other than specifically identifiable vulnerable customers on life support or with medical cooling concessions to the new ToU tariff, but allowing all customers to opt out to a single-rate tariff (or opt into a demand tariff).

The strawman was supported as "Okay [with]", "Supported" or "Strongly supported" by 79 per cent of forum participants. Four individuals opposed the transition strategy, while three were in the "Uncertain/need more information" category.[31]

3.5.3 Customer impact analysis for our initial proposal

Victoria's completed roll out of advanced metering infrastructure (smart meters) allows detailed customer impact assessment. It allows us to assess how each individual customers' historical bill would be impacted based on their historical behaviour were we to change our tariff structures and/or tariffs.

Prior to our initial proposal we undertook a broad set of customer impact analysis based on the information available at the time. The section below details our findings at that point in time. Following the AER's draft decision, we had updated information on our likely allowed revenue amounts and therefore updated the customer impact analysis for our legacy ToU customers. This is provided in section 3.5.5. This analysis has driven our revised proposal position outlined above and supercedes some of the conclusions drawn within this section 3.5.3 and section 3.5.4.

The strawman presented at our third form involved moving most[32] customers from a single-rate pricing structure onto a ToU pricing structure.

We modelled how the move would impact every Victorian household customer[33] and provided the distribution of household bill impacts across Victoria shown in Figure 3–11. We have also calculated the customer impacts by individual Victorian Distribution business and have provided JEN's results at Figure 3–12. To undertake this analysis we priced our ToU tariff to ensure that the distributors receive the same total revenue as if all customers were on the current single-rate tariff. [34] These distributional impacts were relatively similar across each distribution network.

31 There was discussion on the merits of not allowing customers to opt-out at all, with varying views presented. Participants generally did not support glide path transitions due to the complexity this creates for communicating change to customers.

32 This included all customers other than those registered as life support customers or those with medical cooling concessions.

33 We used 2018 consumption profiles with 2019 single-rate tariffs. No behaviour change is assumed. We excluded customers consuming under 250kWh per year as they are l kely to have been vacant and those over 40MWh per year as they are more likely to be incorrectly assigned to residential tariffs.

34 This is to ensure revenue neutrality, which is essential to assess customer impacts under the revenue cap form of price control that the Victorian Distributor's are currently regulated under.

Every dot in Figure 3–11 and Figure 3–12 is one household customer. This shows the impacts if we moved all household customers onto the new ToU tariff (including those on legacy ToU tariffs). It shows that there are a significant number of customers with bill increases over 25 per cent and some with much higher increases.

Figure 3–11: Victorian bill impacts of a move of all customers to our new ToU tariff

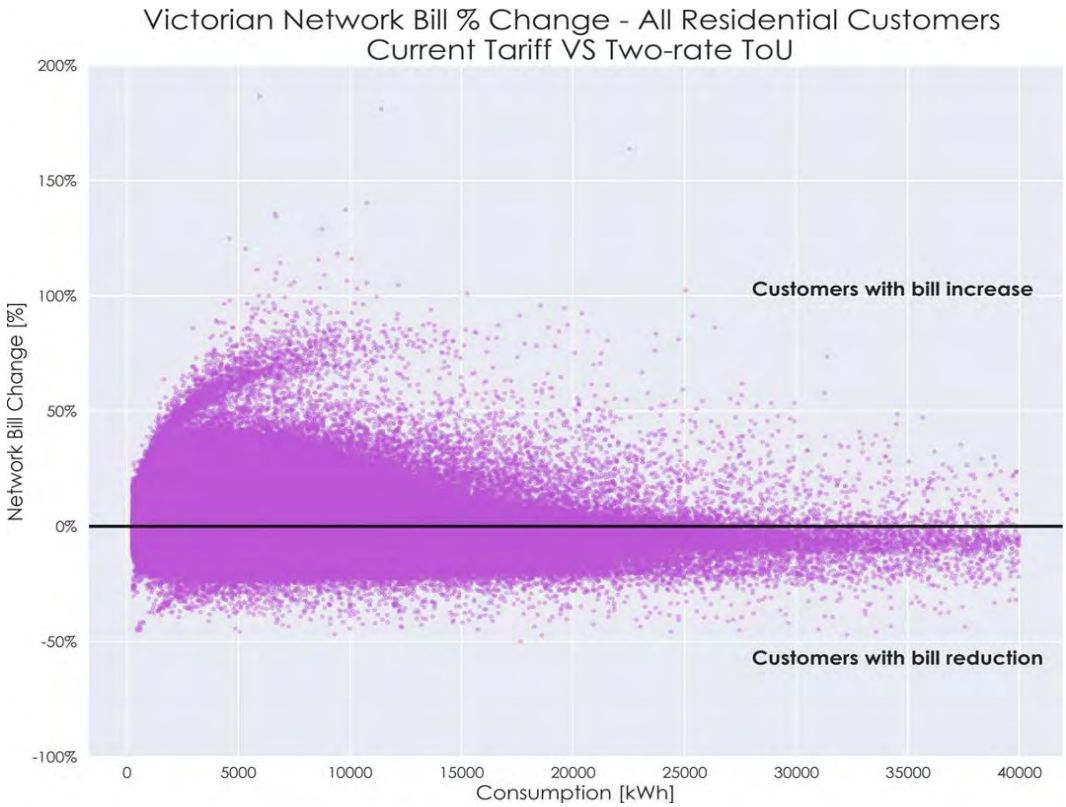


Figure 3–12: JEN bill impacts of a move of all customers to our new ToU tariff

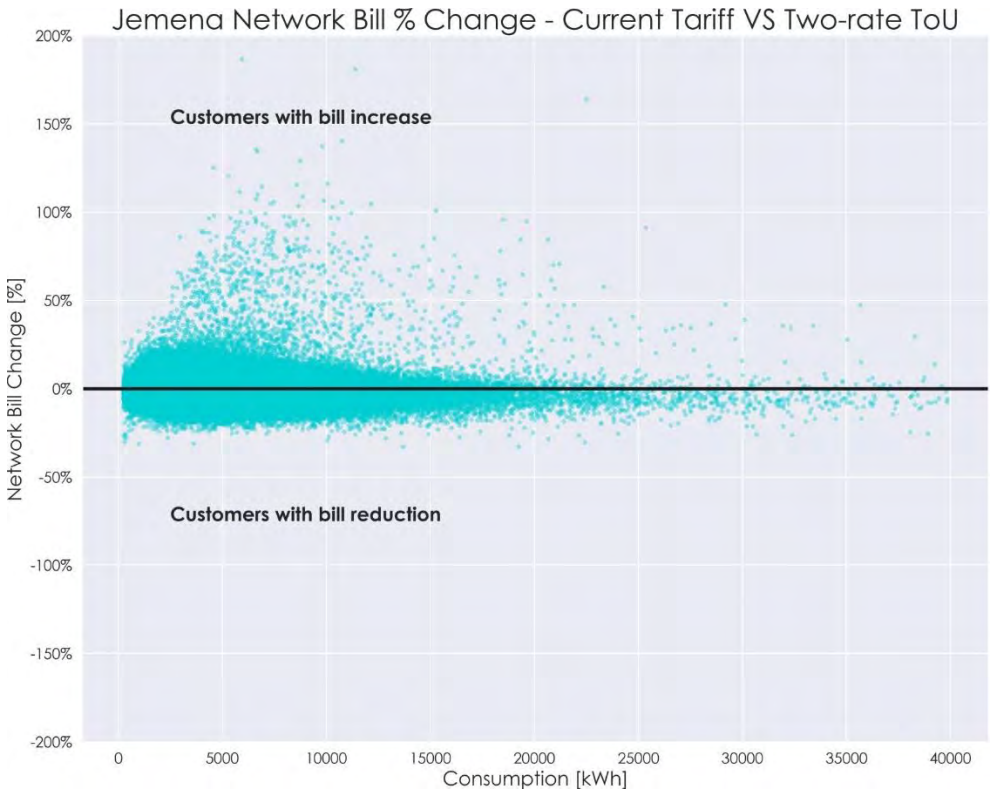


Figure 3–13 shows the impact if instead we only moved single-rate customers and not legacy ToU customers. Figure 3–14 shows the same scenario, but the dollar impacts and Figure 3–15 shows the count of customers that fall within a range of percentages. The result is that 44 per cent of customers would be better off and 56 per cent of customers would be worse off. Of those better off, they would on average be $22 better off and of those with bill increases they would on average see a $17 bill increase. While there are less extreme impacts than if we moved all household customers, there remains a number of customers with bill increases of more than 25 per cent. Around 3 per cent of customers would have a bill increase of $50 or more if they did not change their behaviour.

Figure 3–13: Victorian bill impacts of a move of all single-rate customers to our new ToU tariff

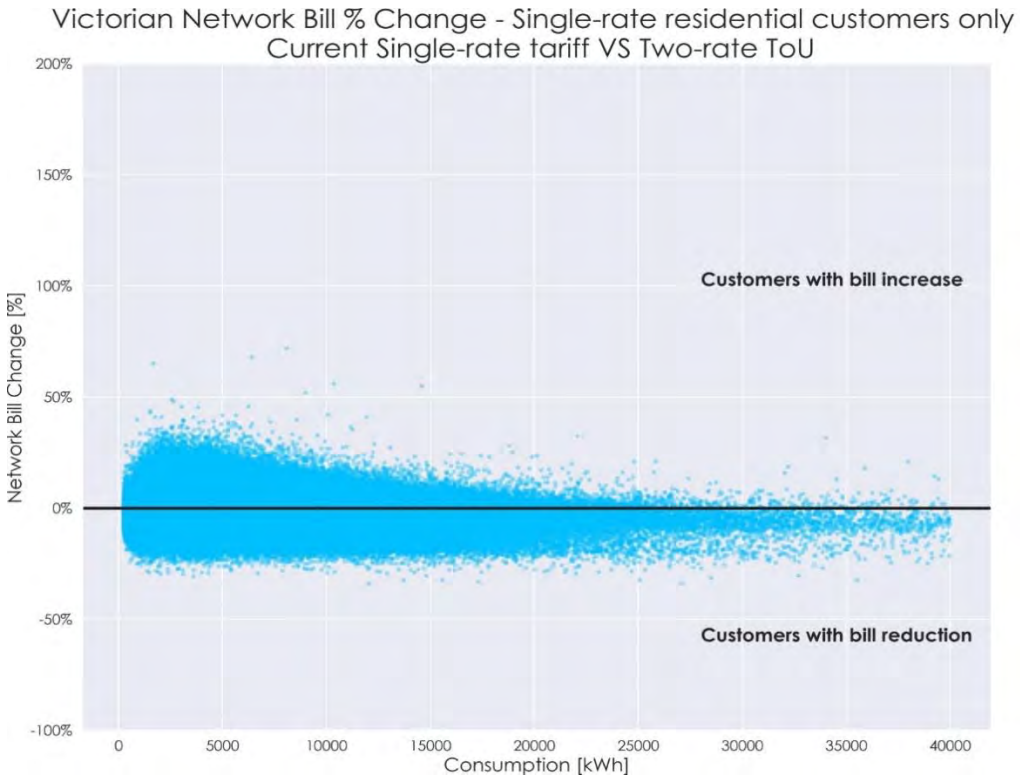


Figure 3–14: Victorian bill impacts of a move of all single-rate customers to our new ToU tariff

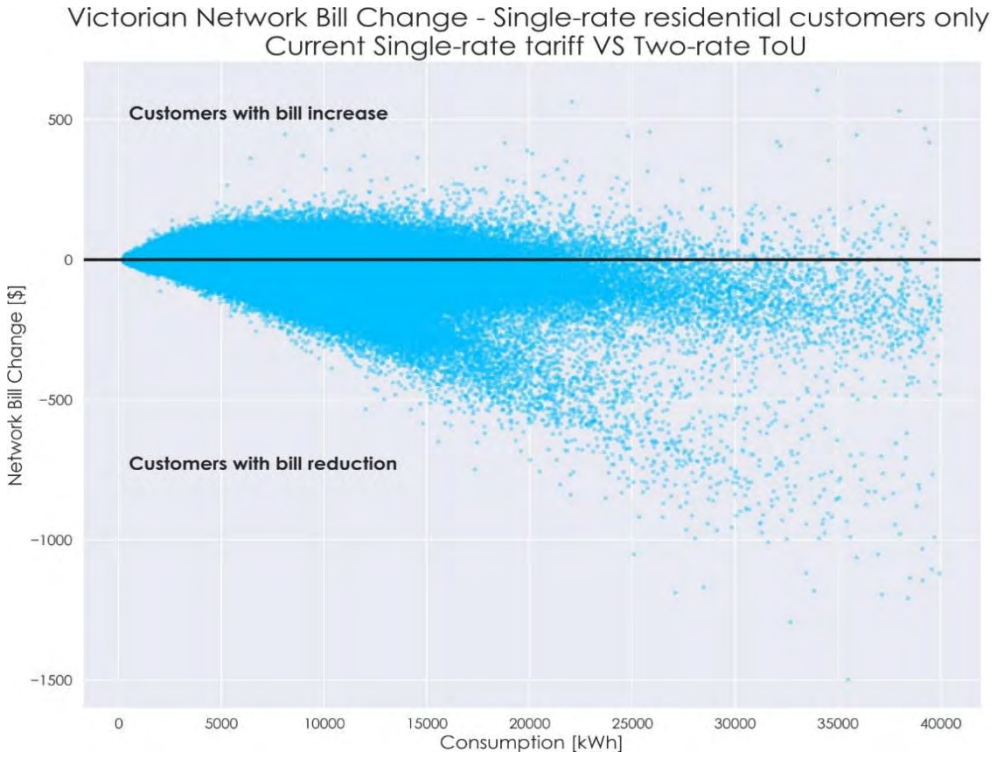
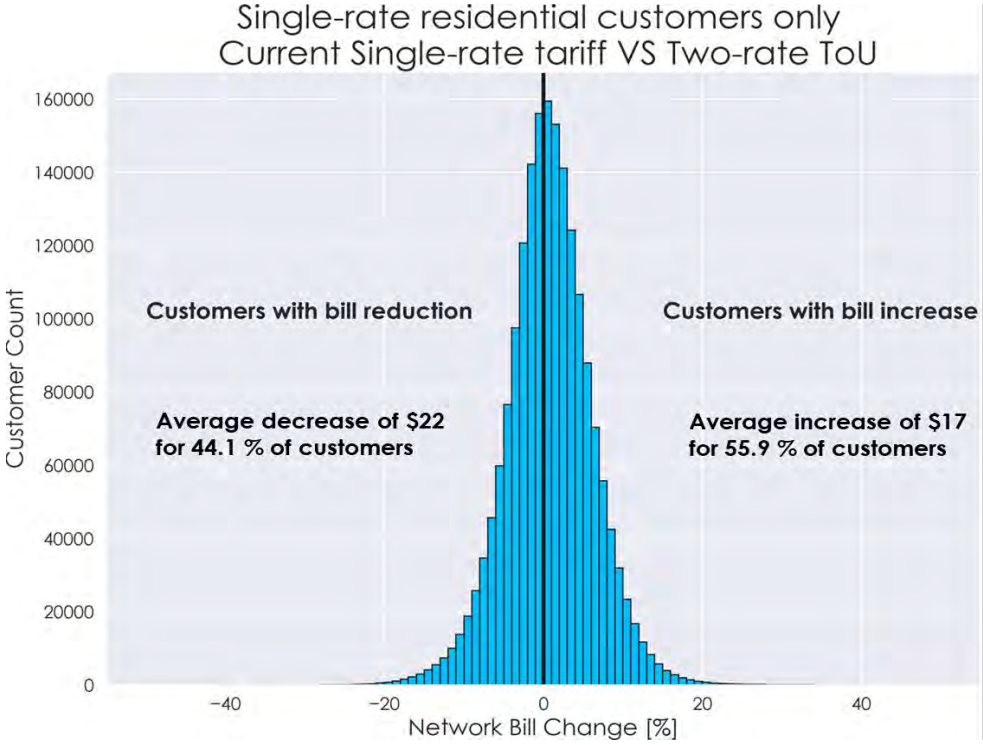


Figure 3–15: Victorian bill impacts of a move of all single-rate customers to our new ToU tariff



3.5.4 Applying what we heard from customers and stakeholders to our proposal

Following the presentation of customer impact analysis at our third forum, some participants noted that there were likely to be vulnerable customers with bill increases not captured by the proposed carve-outs for life support and medical cooling concessions. For example, while we would capture those on life support and with a medical cooling concession, this only amounts to around 1.5 per cent of households. This meant some customers on retailer payment assistant schemes or claiming the mains electricity concession, who we can't identify, could still be negatively impacted by being moved to our proposed new ToU tariff structure. These participants were concerned that vulnerable customers could be made worse-off and may have little understanding of why or how to respond. It was therefore difficult for them to support the transition without understanding the impact on these other vulnerable customer groups.

Following the forum we sought further views on transition and heard that to support change, some stakeholders would need to understand what complementary measures (such as retailer communications, literacy programs, technology rebates, energy efficiency programs and peak time rebates) would be provided to vulnerable customers, both before and after the change occurs. They indicated that without such measures—acknowledging some of which are outside the control of the distribution businesses—they would find it easier to support transition options that only applied the new ToU pricing structure to new connections, solar, EV and residential customers with large usage profiles. Additionally, even with complementary measures, there was also concern that they prove ineffective in reaching those households who do not, or cannot, engage in the energy market.

For our initial proposal, we therefore amended our transition position from the strawman presented at forum three to better target non-vulnerable household cohorts. Based on the feedback we received, we consider that the following customer groups are materially less likely to include vulnerable customers:

- new connections—the Victorian residential customer base grows by about 2.4 per cent per annum (around 52,000 new homes each year)

  - This only includes new homes connecting to the network for the first time, and does not include re-energisations following a de-energisation (e.g. move-in customers, or after a disconnection for debt)

- customers who, from 1 July 2021, choose to upgrade from single-phase to three-phase supply[35]
- customers who, from 1 July 2021, choose to install solar or batteries[36]
- EV or EV fast charger owners.

By the nature of their new requirements, these customers would also have an interaction with their retailer, which provides them an opportunity to discuss and understand the tariff options available to them. We have therefore included the first three as the triggers for reassignment as described in Table 3–3, section 3.5.1 and within our TSS. From the point of a register becoming available, we would also seek to assign customers who purchase EVs or EV fast chargers to the new ToU tariff structure. We have also retained the option for customers to choose a single-rate or demand tariff, which is an option that was widely supported at our third forum.[37]

3.5.5 Consultation on residential fixed charge

With our initial proposal TSS, JEN proposed annual 20 per cent increase in our residential fixed charges as a means to reduce the potential distortion to our peak price signal. This would have resulted in our network use of system fixed charge or around $147 by 2026.

Since our initial proposal, JEN consulted with our Customer Council on what our approach to fixed charges should be.

Over two meetings in June and October 2020, we highlighted and discussed:

- at $59 JEN currently has the second lowest network fixed charge in the National Electricity Market (**NEM**).
- the current tensions for and against higher fixed charges, including that appropriate fixed charges support:
  - fairness – would better reflect the fixed cost nature of our business, especially to DER customers, reducing the likelihood of non-DER customers cross-subsidising them
  - price volatility - Reduces customer price volatility due to revenue cap unders and overs—we've had annual adjustments of up to 5% of revenue
  - a strong network - Customers benefit from a financially healthy network—greater revenue certainty helps our borrowing capacity which ultimately feeds into rate of return calculations
  - price signals - We don't want customers to turn off, or turn down, during peak periods more than is necessary—relatively high usage charges (that are significantly greater than LRMC) over-signal the peak
- that increases to fixed charges have a disproportional impact on small customers as it provides less ability to control their bill through their usage decisions.

JEN initially provided five different options for changes to fixed charges, from applying average price changes through to applying annual increases $12 above the average price change. The latter would result in JEN's fixed charge at around $131 by 2026, which we estimated would put us around the middle of the pack for DNSPs in the NEM.

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35 Large electric motors can need three-phase power and require customers to upgrade their electricity supply. This can occur when customers are installing large air-conditioning systems, kilns, significant power tools (sometimes used in workshops or for home renovations), under floor heating, large pool pumps or a solar panel array above 10kVA The Victorian networks provide around 3,000 supply upgrades per annum.

36 Under its moderate scenario, CSIRO estimate that rooftop solar capacity will increase by about 50 per cent by 2030. CSIRO, *Projections for small-scale embedded technologies*, June 2018, pp35-36. A customer (or their solar installer) installing solar for the first time, or upgrading their solar system is required to inform their distribution network.

37 We understand the Victorian Government is considering customer choice within its potential revisions to the AMI OIC. JEN will comply with the requirements within that Order, which may restrict some specifically defined customers from accessing the single-rate tariff. For example, this could exclude customers who install EV fast chargers after 1 July 2021 from accessing a single rate tariff.

For small, medium and large customers, we also provided both relative bill impacts (based on prices that maintain revenue neutral) and what the customers would notice (comparing CY20 bills to those in the new regulatory period).

- the former showed that smaller than average customers would be relatively worse off under all five options
- the latter showed that only small customers (the smallest quarter) would have been worse in the two options with largest fixed price increases – that being $12 and $9 annual increases above the average price change.

We heard from our Customer Council members at our June 2020 meeting:

- acknowledgement that we demonstrated low flat rate tariffs are currently lower than most DBs, but from a consumer view, they are likely to be regressive
- concern that increasing fixed changes dulls the price signal of TOU proportional to consumption
- it is likely that many more of the large consumers have air conditioning and contribute to peak demand (costs on the network) more than the households who use little energy.

Based on what we heard, we undertook further analysis on how small households contribute to our costs and shared this with the Customer Council at our October 2020 meeting. The analysis showed that:

- the smallest quarter of customers contribute around 11% to our peak demand[38] and contribute around 11.6% of residential revenue
- the largest quarter of customers contribute around % to our peak demand and contribute around 43.6% of residential revenue
- Around 11.3% of our costs for the 2021-26 plan are driven by meeting peak, meaning 88.7% are not. If we were to allocate 11% of the 11.3% peak costs to small residential customers, this would be 1.2% of our costs. If we then allocated an equal share of the remaining 88.7% costs, this would be 22.8%. For a total allocation of 24%.

One interpretation of the NER pricing principles is that residual revenue should be recovered to give effect to 24% of all residential revenue is recovered from the smallest quarter of customers. This, however, would ignore that in previous periods, JEN has had higher augmentation costs and could introduce period on period fixed charge volatility.

Recognsing some stakeholder concern with increasing fixed charges, we tested with our Customer Council at our October 2020 meeting the use of two principles for determining the option to propose increasing our fixed charges over the regulatory period, which we consider would provide a balanced position:

- we need to increase the recovery of residual revenue from fixed charges[39]
- limit fixed charge increases so that a typical small customer's network bill is lower than CY20.

For JEN, this would allow for annual increases in fixed charges being approximately $6 above the average price changes and a fixed charge by 2026 of around $104. This is the position we have taken in our indicative tariff schedule at section 5 of our TSS and is consistent with the middle option first presented to the Customer Council in June 2020.

At the October 2020 Customer Council meeting we heard some members:

- reiterated dislike for higher fixed charges given the lower bill control and are uncomfortable with the general trend across NEM toward higher fixed charges

[38] Measured as the contribution to the top 10 peak half hours used by AEMO for Victoria.

[39] Much like it's now untenable to have no movement toward cost reflective tariffs, it would be untendable to be recovering 11.6% of revenue from a customer class when the pricing principles suggest it could be as much as 24%

- support higher fixed charges given the cross subsidy for DER inherent in current arrangements
- members noted no concern
- considered it might reduce the incentive to move to the ToU tariff, but also recognised that it would not be efficient to over-signal the peak window.

3.5.6 Reassignment customer impact analysis since the AER draft decision

In its draft decision, the AER suggested JEN (and all the other Victorian DNSPs) consider closing the legacy residential ToU tariffs and reassigning those customers to the new time of use and demand tariffs. The AER highlighted that a number of factors support reassignment, including:

- expected reductions in the revenue requirements for all Victorian distribution businesses
- increasing the network tariff peak to off-peak ratios to align with those currently in place
- discounting the cost-reflective options relative to the single rate tariff structure
- customers and their retailers maintaining access to the single rate and demand tariff structures
- how retailers package up network tariffs and create their offers to customers
- victorian Government measures to support vulnerable customers, including the Victorian Default Offer.

We therefore undertook some further analysis of our legacy ToU customers bill impacts. We compared each individual customers expected network bills in 2020 (including AMI) with what they would be in the first year[40] (Year 1) of our new regulatory period when expected revenue reductions would occur.[41] This is shown in Figure 3–16.

JEN's analysis covered the 18,529 customers on our legacy ToU tariffs who have consumption over 250kWh and below 40MWh.[42] Out of these 18,529 customers, JEN has 201 customers (1%) with bill increases, of which:

- 128 customers have a bill increase of less than $10
- 35 have an increase of between $10-$20
- 37 have an increase of between $20-$50
- 1 has an increase over $100
- all are on our A140 legacy ToU tariff (meaning there are no customers with bill increases from our A10X 'flexible' tariff or our A10I ToU tariff).

JEN presented the above analysis to the October 2020 Customer Council, who recognised the low level of year-onear customer impact. They also emphasised that the communication from the retailer to the customer will be important.

Given this extremely low degree of adverse impact, noting the areas highlighted by the AER above and the response from our Customer Council, JEN proposes to reassign all legacy ToU customers onto the new ToU tariff on 1 July 2021 and removing the legacy tariffs from our tariff schedule.

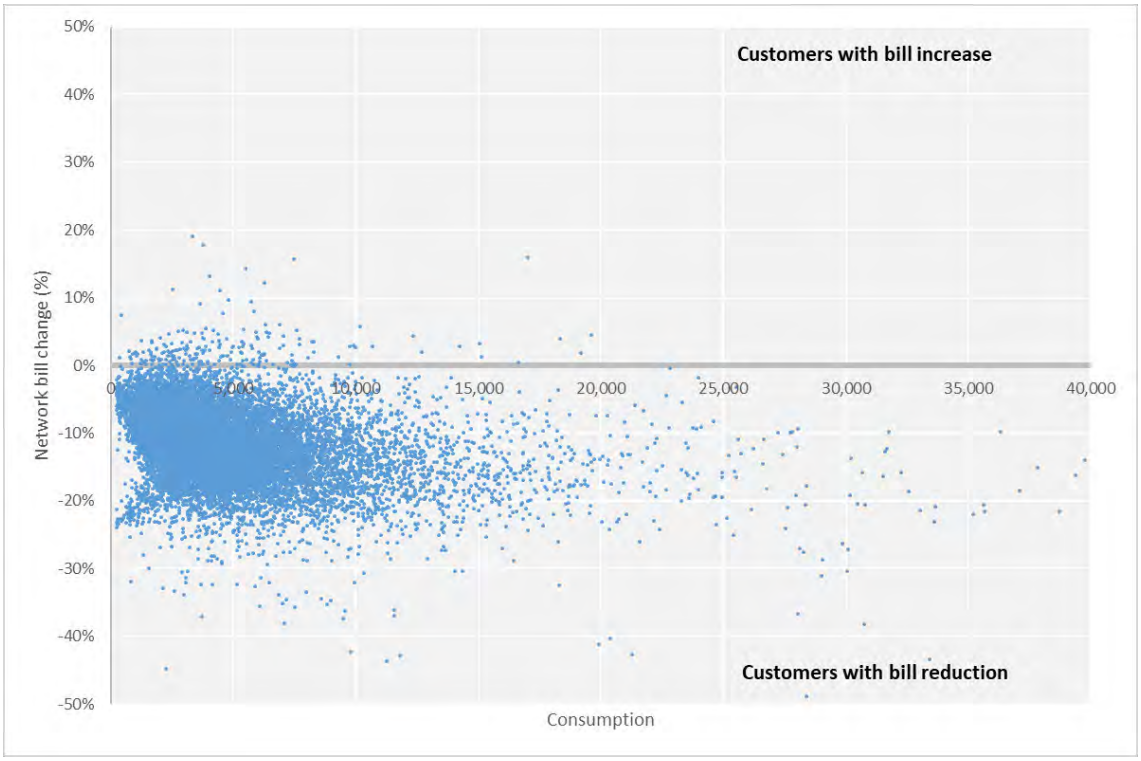
We consider that this transition provides much-needed progress to more cost reflecting tariffs, and should not undermine the support of our stakeholders and customers.

40 This is the year commencing 1 July 2021.

41 We used customers 2019 consumption volumes and applied these to 2020 network prices and estimates of Year 1 prices based on the AER's draft decision.

42 The lower threshold is designed to exclude predominantly vacant homes. The upper threshold is designed to exclude non-residential customers who may inadvertently ended up on a residential tariff.

Figure 3–16: Bill impacts when moving legacy ToU customers onto new ToU tariff



3.5.7 Our opt-out arrangements for households

Stakeholders have told us that it is important for customers to have the choice to opt-out, particularly those that may have difficulty shifting their load.

We have thought carefully about this. Customers that are more likely to opt-out from the new ToU tariff structure expect (or will have experienced) a material increase in their bill as a result of the change. These customers are consuming relatively more electricity during the peak period relative to the off-peak period. From one perspective, this is exactly the consumption that ToU pricing is targeting. ToU pricing is providing these customers with a better signal of the cost impacts of consuming load during the peak period compared to the off-peak period.

However, taking into account stakeholder and customer feedback, we need to be particularly mindful of the impacts on customers who may not have a choice about when to consume electricity for reasons beyond their control. Indeed, some customers may be incentivised to shift load or reduce electricity consumption that, for health reasons, should ideally not be moved.

As a result we have provided the option for households or their retailer to opt-out from the new ToU tariff structure until 30 June 2026. Details of the opt out arrangements are provided in our TSS. In addition, we understand the Victorian Government is considering customer choice within its potential revisions to the AMI OIC. JEN will comply with the requirements within that Order, which may restrict some specifically defined customers from accessing the single-rate tariff. For example, this could exclude customers who install EV fast chargers after 1 July 2021 from accessing a single rate tariff.

3.6 How customers can save

A consistent message we have heard during our engagement is that customers want to know how they can reduce their electricity bills. Under a single-rate tariff structure, the only way to reduce an electricity bill is to use less energy in aggregate. Customers are not rewarded for shifting energy to off peak periods.

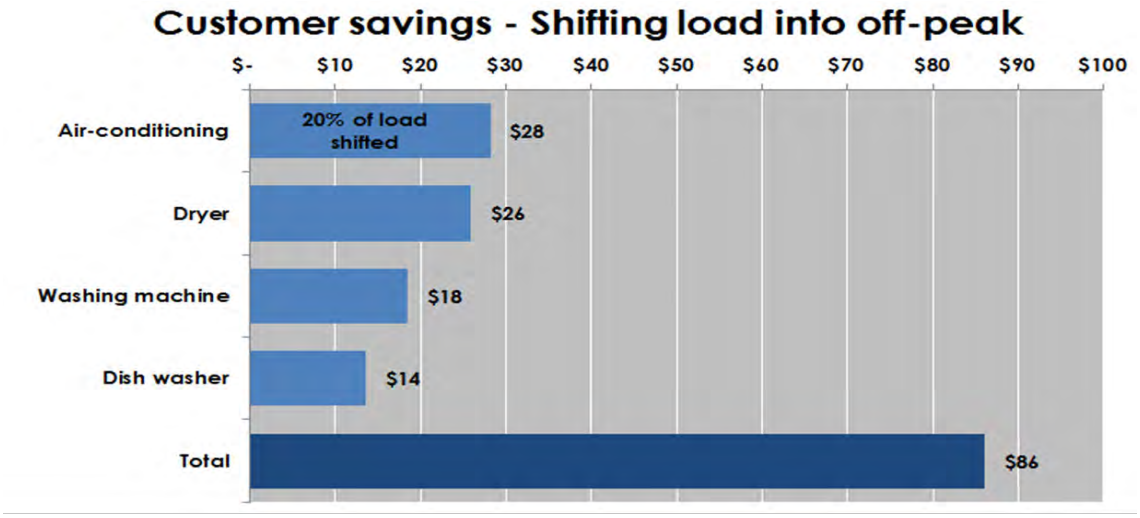
As shown in Figure 3–15, 44.1% of household customers would realise an average saving of $22 per year under the new ToU structure with no change to existing householders' consumption behaviour.

Household customers will be able to reduce their electricity bills more if they move the time that they use appliances to non-peak periods. For example:

- putting washers, driers and dishwashers on a delayed cycle outside of the 3-9pm peak.
- changing the scheduled time for pool pumps
- setting EVs and batteries to charge later at night
- pre-cooling the house on warm days to take advantage of the cheaper off-peak rates

In our engagement sessions, our stakeholders asked us to provide an indication of how much a customer can save by changing the times they use electricity. Figure 3–17 shows an example of how much a typical customer can save in their annual network charges by switching the time they turn on appliances such as dryers and washing machines. The key message is that ToU empower customers to meaningfully save on their electricity bill by using everyday appliances in non-peak times.

Figure 3–17: Savings in network bill from using electricity in non-congestion periods



Based on typical consumption – sourced from http://www.energyrating.gov.au

Total air-conditioning load 1,745 kWh (Powercor Climate Saver customer average)

3.6.1 Assessment against our pricing objectives and the principles in the NER

Table 3–4 summarises why we consider the new two-rate ToU tariff for residential customers best meets the principles established by stakeholders.

Table 3–4: Assessment of ToU tariff structure against principles designed by key stakeholders

Principle	How a ToU tariff structure is consistent with this principle
Simplicity	A two rate ToU tariff structure with peaks occurring every day is simple to communicate and is easy for customers to understand. It provides a clear message that consumption between certain times is more costly than consumption during other periods.
Economic efficiency	Prices are more reflective of network costs than the status quo, reflecting a move towards more cost-reflective pricing. By applying our new ToU tariff structure to new connections, new installations of solar/distributed generation/batteries and legacy ToU customers, and potentially customers with EVs or EV fast chargers, we would ensure that any existing cross subsidies are not exacerbated going forward.
Equity	Compared to the status quo, customers using the network relatively more at peak times will pay more than customers using the network during off-peak periods, moving towards paying a fair share of network costs.
Affordability	Opt-in and opt-out arrangements will support more retail tariff choice so that customers can choose the tariff structure that is most affordable for their circumstances. By allocating network costs to those who incur them, consumers could change their consumption patterns, network investment could be avoided and costs reduced. Over time, this should lead to lower network costs for all consumers.
Adaptability	Introducing a ToU tariff structure as the default tariff structure provides a solid foundation for any potential new tariff structures that may be introduced after 2026. It is uncertain what the network will look like by 2026, and even more uncertain beyond this date. Against this uncertainty, it is unclear what tariff structure will be preferable in the future. The two-rate ToU pricing with fixed pricing periods could evolve into one, or a combination, of the following: • A demand tariff structure with a similar peak window • A ToU tariff structure with an additional critical peak price (or rebate) window nominated by the distributor on a few occasions a year; • A dynamic ToU tariff structure; • A locational ToU (or demand) tariff structure or rebate where the peak/rebate ratio varies depending on the cost/benefit to the network at certain location. Monitoring developments and considering the effectiveness of network pricing with greater cost reflectivity (e.g. demand-based prices) will be a key focus for 2021-26.

Table 3–5 provides an assessment against the pricing principles in the NER and demonstrates our proposed residential tariffs are compliant.

Table 3–5: Assessment of ToU tariff structure against pricing principles

Principle	How a ToU tariff structure is consistent with this principle
Tariff class revenue must lie between stand alone and avoidable cost (6.18.5(e))	We demonstrate this in section 4 of our TSS.

Principle	How a ToU tariff structure is consistent with this principle
Tariff based on LRMC and the method for calculating this cost (6.18.5(f))	We explain how we have chosen the average incremental approach and how we calculate prices in section 4 our TSS. In it's draft decision, the AER suggested continued exploration of including replacement capital expenditure into estimates of LRMC. JEN's position, used to calculate our initial proposal LRMC estimates, is that it is appropriate for LRMC estimates to include the upgrade / replacement of existing assets where these add capacity to the network. We provide supporting reasons in Attachment E.
Recovering efficient costs (6.18.5(g))	Section 4 of our TSS describes how we meet the stand alone and avoidable cost tests. This demonstrates how the revenue for each tariff reflects the total efficient costs of serving the customers in that tariff[43] (Rule 6.18.5(g)(1)). We set our tariff levels to ensure we recover our allowed revenue in each year. This relies on our demand forecasts as we need to know demand and prices to obtain our allowed revenue. We demonstrate we only recover our efficient costs in our annual pricing proposals.[44] These must demonstrate our total forecast revenue for each year is equal to our allowed revenue (plus any allowed adjustments). Further, to ensure we align our LRMC calculation with our method for recording residential and small business customers demand levels[45], we have converted our LRMC estimates into single rate, peak usage rate and demand charge components as set out in section 4 of our TSS. We are also required to recover our efficient costs in a way that minimises distortions to price signals.[46] Peak usage and demand charge component price signals are kept most pure when observable to customers, which leaves fixed charges as the best component to adjust to recover residual costs. Our LRMC estimates have decreased since the 2016-20 regulatory period. As our required revenues have not decreased by the same proportion, this leaves a greater "residual" cost to be collected. We have therefore indicated in our TSS our intent to increase fixed charges and decrease usage charges. Our TSS indicative prices include a $6 above average annual increase in fixed charges (with offsetting decreases in usage charges) to move us toward a greater proportion of residual revenue being recovered from the fixed charge.
Customer impact principle relating to transition, choice and ability to mitigate impact (6.18.5(h)), and understandability of the tariff structure (6.18.5(i))	The customer impact principle has driven much of the work and outcomes described in this Section 3. In particular, the simple new default ToU tariff design and assignment approach (including ability to choose tariffs other than the default) are a result of the significant customer and stakeholder engagement we have undertaken and is targeted at ensuring we make progress on reform in a way that is acceptable to stakeholders. The updated customer impact analysis for our legacy customers supports reassignment on 1 July 2021 and will contribute to an accelerated take up of our default cost reflective tariff. In addition, we have developed our position on fixed charge movements in response to stakeholder feedback to limit the increases we propose in our indicate tariff schedule.

43 NER 6.18.5(g)(1),

44 NER 6.18.5(g)(2),

45 That is, as maximum demand occurring between 3pm and 9pm workdays for residential customers, and 10am-8pm work days for small business customers.

46 NER 6.18.5(g)(3).

Principle	How a ToU tariff structure is consistent with this principle
Jurisdictional principle (6.18.5(j))	Legislation made by the Victorian Government—by way of an 'order in council'—sets out certain requirements for network tariffs that expire on 31 December 2020 (or potentially extended to 30 June 2021). Our TSS has been developed on the basis that requirements around the flexible tariff (A10X) will then cease. We understand that the Victorian Government will be reviewing the order in council during 2020-21 and this TSS may need revisions as part of the AER's final decision to comply with those requirements.

3.6.1.1 Consideration of other tariff structures

In our September 2018 consultation, we sought stakeholder views on four different pricing options, including single-rate, ToU, peak usage subscription[47] and demand. We also sought views on peak time rebates.[48]

In addition we outline in our assessment of adaptability in Table 3–4 some of the other costs reflective tariff structures we could consider (for example, a critical peak tariff). These are more complex for customers to understand. For the success of tariff reform, it is critical that cost-reflective tariffs are capable of garnering and retaining customer support. We have heard customer and stakeholder preference for simple tariffs, which indicates there would be an advantage in further embedding ToU tariffs to increase understanding and acceptance before contemplating more complex structures.

We continue to offer our monthly maximum demand tariffs, which were the preference of some of our stakeholders. However, this preference was not unanimous for a number of reasons including:

- the higher level of complexity
- wariness of tariffs where single consumption decisions can adversely impact customer bills, and especially how this might impact vulnerable customers.
- we consider that there is more work for us and the industry as a whole to develop understandable and acceptable tariffs that are more cost-reflective. This remains the case even if such tariffs were to be targeted to retailers rather than customers.
- our current view is that a transition to even more cost-reflective tariffs (than ToU) should only be contemplated after a period of bedding down ToU tariffs. This is supported by stakeholders who seek simple and clear messaging. Future developments may include making the monthly maximum demand tariff the default tariff for new connections and other reassignments.

3.6.1.2 Consideration of locational tariffs

Locational tariffs may potentially improve cost-reflectivity by enabling sharper signals to be provided in areas where capacity is scarce. At this stage, however, we are not considering the introduction of locational network tariffs. We recognise in the current environment that the added complexity this would introduce is undesirable for customers and may risk undermining current levels of support for reform.

However, locational signals do occur via:

- different prices for each Victorian network that reflect our individual costs to provide network services.
- how we can seek localised demand management solutions.

[47] This option applies a fixed charge for each customer based on pre-defined peak period usage band.

[48] Peak time rebates involve paying customers in a particular local area (depending on the local of a constrain) a rebate for using less electricity than they were intending to at the time we called an electricity network peak event.

4. Small business

The purpose of this chapter is explain:

- who are our small business customers and our existing network tariffs
- our customer and stakeholder engagement
- our proposed changes for small business network tariff structures and assignment policy, as set out in our TSS
- why we consider our proposed changes best meets the needs of our customers and stakeholders, taking account of our consultation process, our pricing objectives and the NER requirements.

Across the Victorian DNSPs, the classification of a small business customers are treated differently. In JEN's distribution region, a small business customer can be any business customer who consumes under 400MWh per annum, whilst the remaining Victorian electricity distributors classifies a small business customer as one who consumes under 160MWh per annum.

For small business customers consuming greater than 40MWh per year, the Victorian electricity distributors have different tariffs. For small business customers consuming less than 40MWh per year, we have taken a common Victorian approach because:

- a key stakeholder view is to drive simplicity by increasing the level of State-wide tariff commonality
- the Victorian definition of a 'small customer' includes both all residential customers and those businesses who consume under 40MWh per year.
- our collaborative engagement also covered business customers consuming under 40MWh per annum.

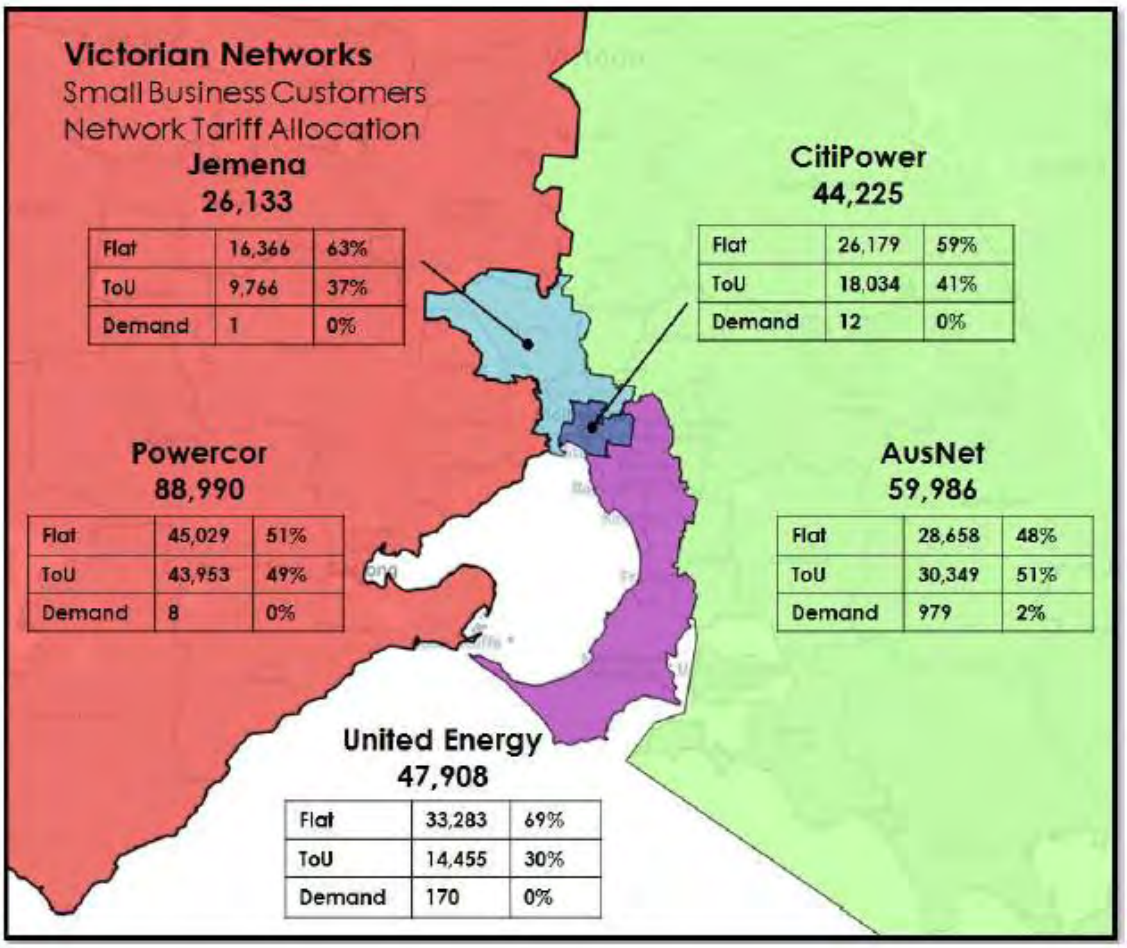
As each distributor's approach differ for business customers above the 40MWh per year, we have therefore separated out the proposed changes and reasons for:

- the common Victorian approach for customers consuming under 40MWh per year
- JEN's approach for customers consuming over 40MWh per year.

4.1 Our small business customers

We have a diverse range of businesses on our network, including retail, real estate, construction, health, professional services and transport. Figure 4–1 shows the number of small businesses in each Victorian network on single rate, ToU and demand pricing structures.

Figure 4–1: Number of Victorian small business customers on various network tariff structures



There are three main types of small business network pricing structures in Victoria, which are the same as for households, as shown in Figure 3–2.

Almost all small business customers are either on single rate or ToU tariffs. There are 31 different small business ToU tariffs across Victoria, which can make tariffs more time consuming and complicated than they need to be for customers, although most have a peak pricing period of 7am to 11pm weekdays.

We recognise that energy bills are a large operating cost component for many small businesses in Victoria. We also acknowledge that while some small businesses may have the ability to shift their consumption, others will have limited flexibility (for example, shops open during business hours or restaurants that open during meal times). When considering what network tariff and tariff structure to apply to small business, we need to take into account and balance a number of different principles.

Of particular relevance is the extent to which small businesses can change their electricity usage in response to a new tariff structure.[49] We are particularly mindful of the potential impact on small businesses who may have limited choice about when to consume electricity in order to carry out their business and serve their customers. There may be other small businesses with greater ability to move their electricity use—for example pre-heating or cooling. However, this will depend on:

- the length of the peak period.
- whether the peak period applies only on certain days, months or year round.

[49] NER, clause 6.18.5(h).

The longer the peak period and the more of the year it applies, the harder it becomes for a small business to shift usage to off-peak times. Given the above issues, the starting point for our proposed changes to tariffs was to listen to the concerns and feedback of small businesses.

4.2 Our small business customer and stakeholder engagement

Our small business engagement mirrors that for our household customers. Our first two pricing forums and September 2018 consultation paper covered our approach to small businesses under 40MWh. What we heard is therefore predominantly captured in section 3.2. In addition we published a small business options paper for consultation in October 2019, where we set out what we had heard to date and our preferred approach. Although we did not receive formal submissions to this paper, each Victorian distributor gained specific feedback through other engagements including a number of one-on-one and small group meetings undertaken. This included small business surveys, which for example, told us:

- electricity is their third-highest expense, behind mortgage/rent and salaries/wages
- almost all businesses surveyed are open during the 3 pm to 6 pm peak during the week, and of those, only a small number felt it was possible for them to reduce their demand in the peak period. The remainder said their electricity use was essential to their supply of goods and services.

4.3 Proposed changes for customers consuming under 40MWh per year

In the 2021-26 period, in response to stakeholder feedback for simple and uniform pricing across Victoria, for small business customers consuming under 40MWh per year, we propose to:

- change the default tariff from the current single-rate tariff to a two-rate ToU tariff with a peak period of 9am-9pm local time on weekdays.[50]
- move all legacy ToU tariff customers (consuming under 40MWh per year) onto the new default ToU tariff on 1 July 2026.
- remove the legacy ToU tariff (for customers consuming under 40MWh per year) from our tariff schedule.

Table 4–1 summarises our proposed tariff assignment and reassignment, including those customers who would trigger reassignment to the default ToU tariff.

Table 4–1: Small business consuming under 40MWh per annum assignment and tariff options from 1 July 2021

Proposed tariffs	Proposed assignment	Tariff options (upon request from retailer)
Default ToU	New connections Supply upgrades to three-phase Businesses installing solar or battery Existing legacy ToU customers	Single-rate[51] or demand
Single-rate	All existing customers remain	Default ToU or demand
Demand	All existing customers remain	Single-rate[25] or default ToU

50 For JEN this is given effect via narrowing the peak window of our existing two-rate tariff (A210) and converting this to local time.

51 We understand the Victorian Government is considering customer choice within its potential revisions to the AMI OIC. JEN will comply with the requirements within that Order, which may restrict some specifically defined customers from accessing the single-rate tariff. For example, this could exclude customers who install EV fast chargers after 1 July 2021 from accessing a single rate tariff..

4.4 How the default tariff structure meets our principles objectives

Given stakeholder preference for consistent and simple pricing structures across Victoria, we considered the following options for small business tariffs:

- two-rate or three-rate tariffs?
- what hours to set the peak window?
- should the peak apply to weekends?
- should the peak apply year round?

4.4.1 Two-rate or three-rate?

We propose a single two-rate tariff (peak and off-peak) for the same reasons provided for household customers (see section 3.4.1).

4.4.2 What hours to set the peak window?

We have proposed that the peak period for small businesses consuming under 40MWh per year should occur between 9am to 9pm local time. We have proposed to make this tariff in local time, rather than AEST, (which is common for many of our legacy ToU tariffs) to make tariff calculation simpler for customers.

We have considered how small business peak may contribute to overall peak demand on the network as well as the specific peak demand for small businesses (to ensure we do not create localised peak issues on certain distribution substations).

Because we are seeking to have a consistent pricing structure across the Victorian DNSPs, we first considered how the networks are used across Victoria. Figure 1–5 shows when our (approximately) 230 zone substations are under most stress. Most zone substations are peaking between 2pm and 8pm (local time). There are also "tails" to this period, with a number of substations peaking between 11am and 9pm local time.

While there appear to be few peaks between 10am to 2pm across all networks, this is not the case for Citipower who cover the Melbourne CBD (see Figure 4–2). We have taken this information into account in determining a single peak period for Victorian small business customers.

Figure 4–2: Citipower zone substation peaks by hour of day (2015-17)

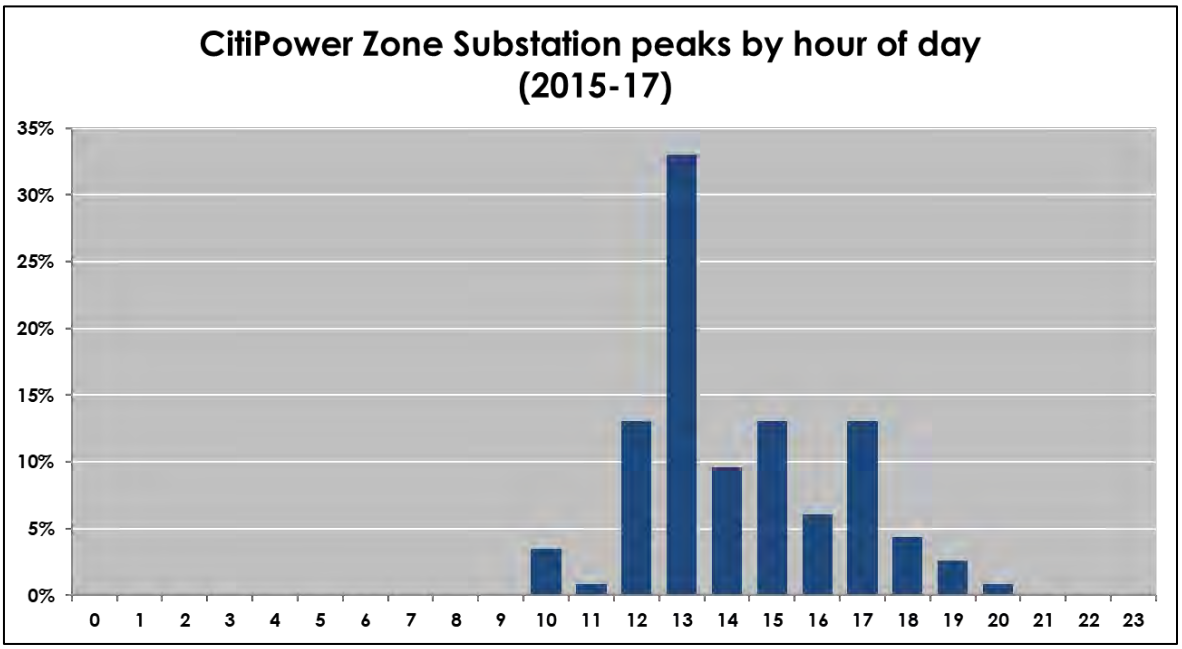
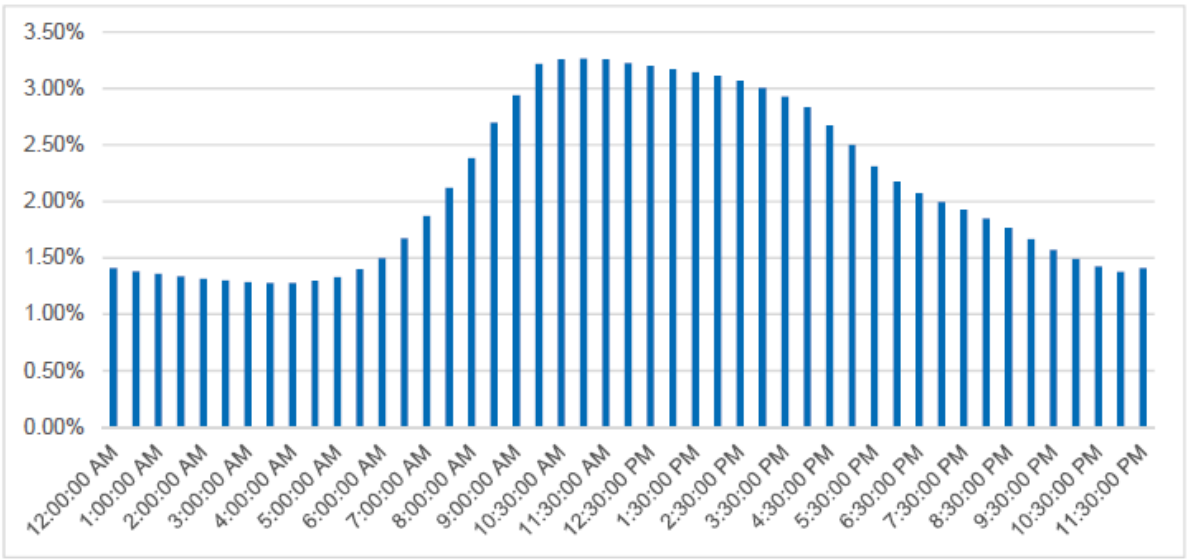


Figure 4–3, shows small businesses weekday consumption profile, with consumption rising rapidly between 5am and 9am, peaking between 10am and 12pm and then declining, with accelerated declines from around 4pm into the evening as businesses shut down. This indicates that the current 7am to 11 pm peak pricing window is too wide, and that narrowing it is likely to be more reflective of how small businesses impact our network.

Figure 4–3: Small business weekday load by time of day, AEST, 2017-18



In particular, we can see that small business peaks (around 10am to 12pm) are earlier than coincident peak (around 2pm to 8pm). We need to consider both:

- the benefit of providing incentives that reduce the coincident peak
- the small business peak to ensure we do not provide localised peak issues on certain substations.

The peak period chosen can have a large influence on the resulting customer impacts. We therefore tested the impacts of a peak period of 10am to 6pm, and another of 9am to 9pm. Importantly, these both seek to narrow the existing predominant peak period of 7am to 11pm. This analysis is shown as part of our transition options shown in section 4.5.

Given the analysis above and in section 4.5, we consider that:

- absent customer impacts, a 10am to 6pm timeframe would provide a best-fit Victoria-wide small business peak period
- taking into account customer impacts, a 9am to 9pm peak period is appropriate, given a significant amount of small business customers have limited ability to adjust their consumption behaviour due to the need to use energy at certain times that support the services they provide to their customers.

While still relatively wide, a peak pricing period of 9am to 9pm (local time):

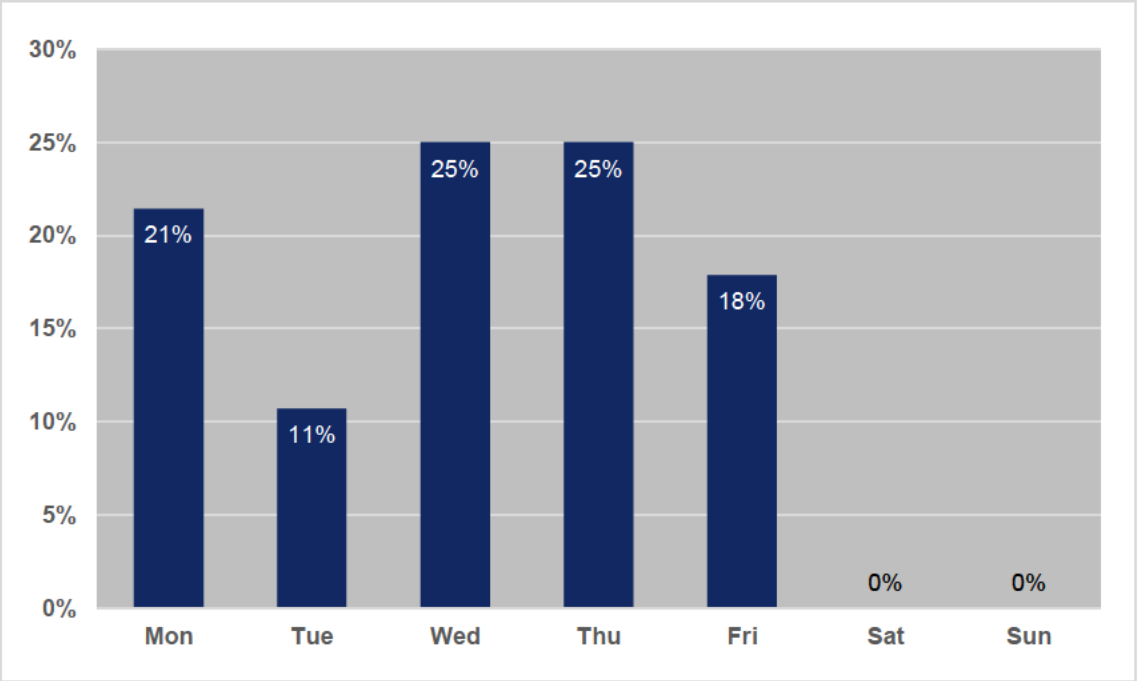
- is more cost-reflective than the existing 7am-11pm (AEST) used for the majority of our legacy ToU tariffs
- is simpler for customers to understand, as the time is 'local time' rather than AEST.
- from the analysis in section 4.5, it is preferred to a 10am to 6pm peak which would have an adverse impact on some customers. We are also aware that ending the peak period at 6pm may have resulted in a shift in load to commence at 6pm, which may exacerbate wider network peaks.

4.4.3 Should the peak apply to weekends?

We have looked at when small business peak loads occur across Victoria, and whether there is any clear pattern to justify including or excluding weekends (104 days of the year).

Small business peaks have not occurred on weekends (see Figure 4–4). This is primarily due to small business operating hours falling on weekdays. Therefore, we do not propose to apply the ToU pricing structure on weekends.

Figure 4–4: Victorian small business peaks 2018 – top 200 half hours (occurring on 28 days)



4.4.4 Should the peak apply year round?

We propose to apply the pricing structure throughout the year. This is for the same reasons as provided for households in section 3.4.4.

4.5 Assignment policy and transition (customers consuming less than 40MWh per year)

This section outlines:

- our proposed assignment policy
- ur reasons for proposing this assignment policy by reference to our pricing objectives, including:
  - the transition options we considered and our customer impact analysis
  - applying what we heard from customers and stakeholders
  - why are we retaining opt-out for small business customers under 40MWh per year?

4.5.1 Assignment policy

Table 4–1 summarises our proposed assignment and tariff options for small business customers consuming under 40MWh per year. That is, from 1 July 2021, new connections, upgrades to three phase metering and new solar or battery installations will be assigned to the new default tariff structure.

Importantly, new small business customer connections (under 40MWh per year) and three-phase upgrade customers (under 40MWh per year) that are assigned to the default ToU tariff structure may request to be transferred to the single-rate tariff structure or demand tariff.[52]

[52] We understand the Victorian Government is considering customer choice within its potential revisions to the AMI OIC. JEN will comply with the requirements within that Order, which may restrict some specifically defined customers from accessing the single-rate tariff. For example, this could exclude customers who install EV fast chargers after 1 July 2021 from accessing a single rate tariff.

Our full assignment policies are detailed in each distributor's TSS.

4.5.2 The transition options we considered

We assessed three transition and tariff combination options for small businesses consuming under 40MWh per annum. These are summarised in Table 4–2.

Table 4–2: Description of options

Feature	Option 1. A two-rate ToU tariff for all customers	Option 2. A two rate tariff with a wider peak period reduces customer impact	Option 3. Replace existing ToU tariffs for one simple and more cost reflective two-rate ToU tariff (PROPOSED)
Peak period	10am – 6pm on weekdays (year round).	9am – 9pm on weekdays (year round).	9am – 9pm on weekdays (year round).
Transition	Assign all new customer connections and reassign all single rate customers to new ToU tariff on 1 July 2021. Close legacy ToU tariff to new entrants but do not reassign customers currently on them.[53]	Assign all new customer connections and reassign all single rate and legacy ToU customers on 1 July 2021. Remove legacy ToU tariffs.	Assign all new customer connections, new solar installations and those requesting upgrade to 3 phase metering to the new ToU tariff. Reassign all legacy ToU customers to the new ToU tariff on 1 July 2021. Remove legacy ToU tariffs.
Choice	Retailers can opt a small business customer (who consumes under 40MWh per annum) out of the ToU network tariff to a single rate or demand network tariff.[54] Customers on existing legacy ToU can opt into the new ToU network tariff.	Retailers can opt a small business customer (who consumes under 40MWh per annum) out of the ToU network tariff to a single rate or demand network tariff.	Retailers can request that a small business (who consumes under 40MWh per annum) customer be assigned to a single rate, ToU or demand network tariff. Customers on existing single rate tariffs can opt into the new ToU network tariff.

Figure 4–5, Figure 4–6 and Figure 4–7 respectively show the Victoria-wide impact of Option 1 to Option 3. Each dot on the scatterplot is one of our small business customers. Table 4–3 provides summary results. We replicate these for JEN in Figure 4–8, Figure 4–9, and Figure 4–10, with the summary in Table 4–4. This demonstrates that the impacts and conclusions drawn at a Victoria-wide level can also be applied to JEN.

[53] A closed tariff means no customer can be assigned to the tariff but current customers can remain on the tariff.

[54] We would generally expect this to occur following a request from the customer to the retailer.

Figure 4–5: Individual customer impacts of moving single rate small business customers to new 10am -6pm weekday ToU tariff – Option 1, Victoria

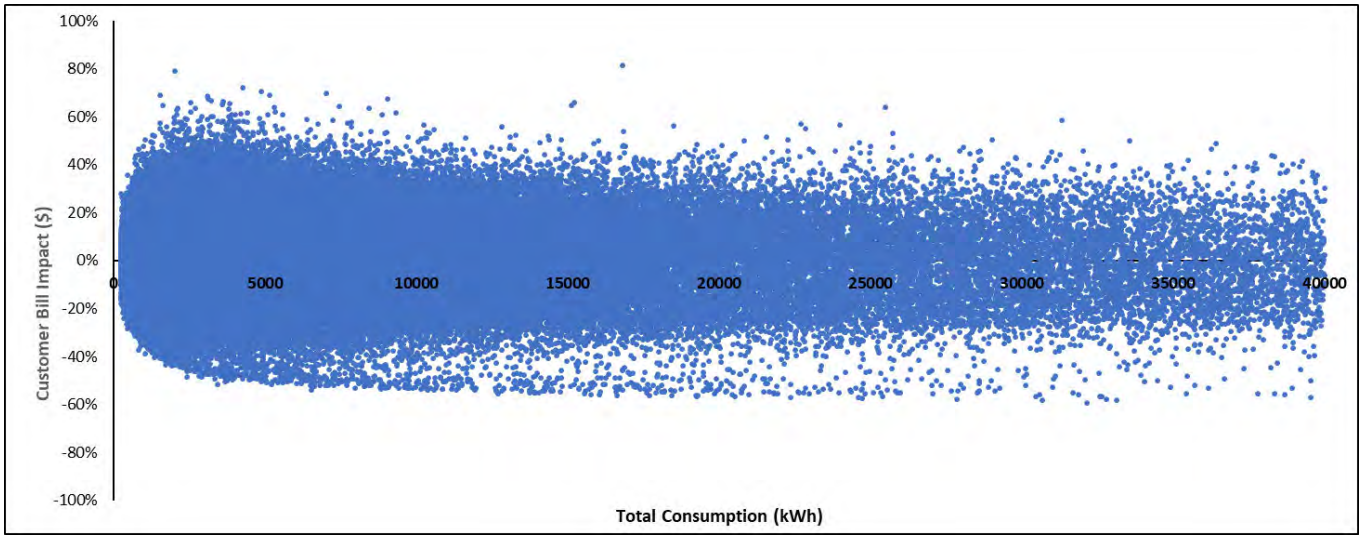


Figure 4–6: Individual customer impacts of moving single rate and legacy ToU small business customers to new 9am-9pm ToU tariff – Option 2, Victoria

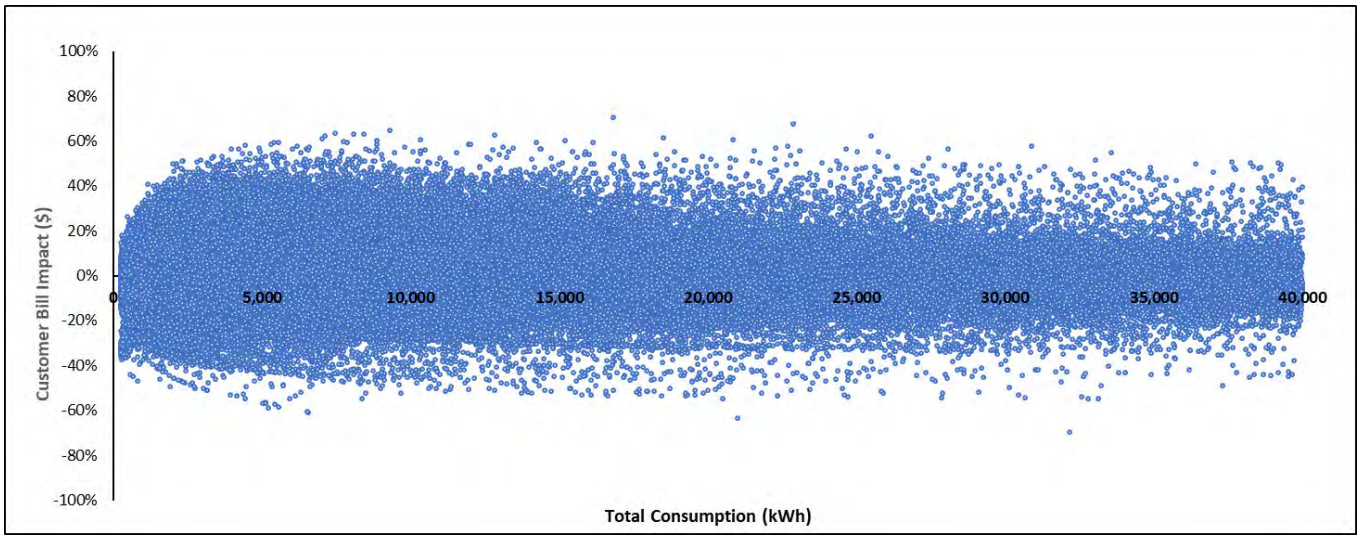


Figure 4–7: Individual customer impacts of moving legacy ToU small business customers to new 9am-9pm ToU tariff – Option 3, Victoria

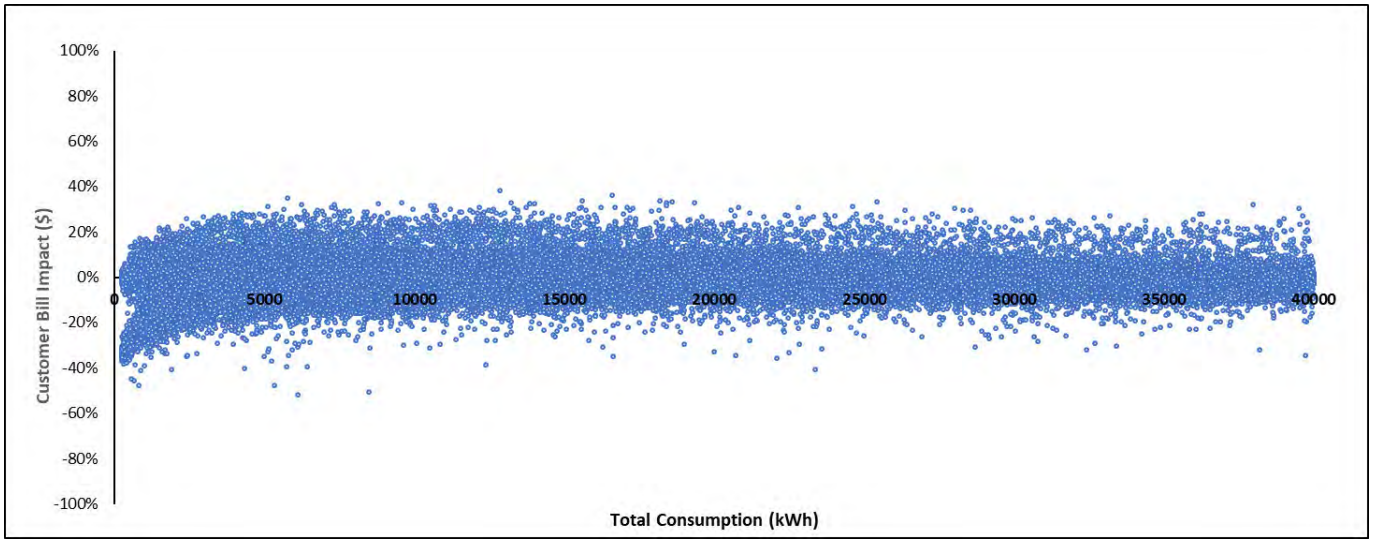


Table 4–3: Small business customer impacts - Victoria

	Per cent of customers who would have a bill decrease	Per cent of customers who would have a bill increase	Customers worse off by more than 10%	Customers worse off by more than 20%
Option 1	49	51	30	14
Option 2	51	49	20	6
Option 3 (proposed)	49	51	5	1

Figure 4–8: Individual customer impacts of moving single rate small business customers to new 10am -6pm weekday ToU tariff – Option 1, JEN

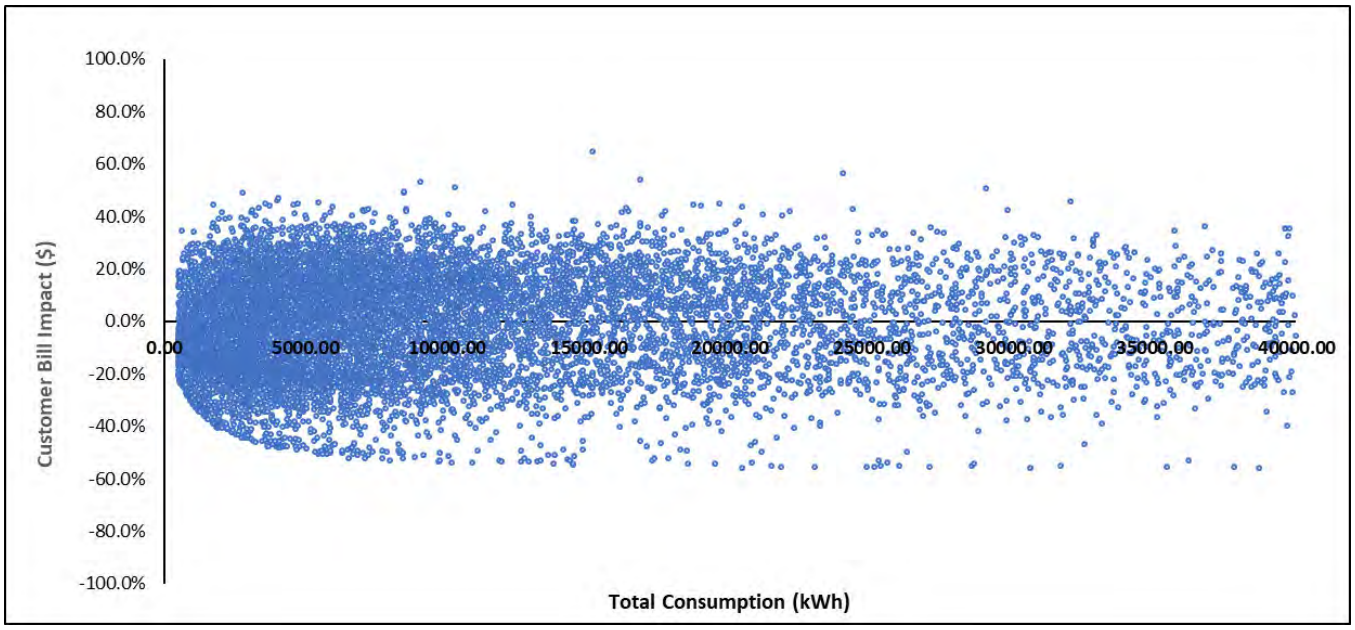


Figure 4–9: Individual customer impacts of moving single rate and legacy ToU small business customers to new 9am-9pm ToU tariff – Option 2, JEN

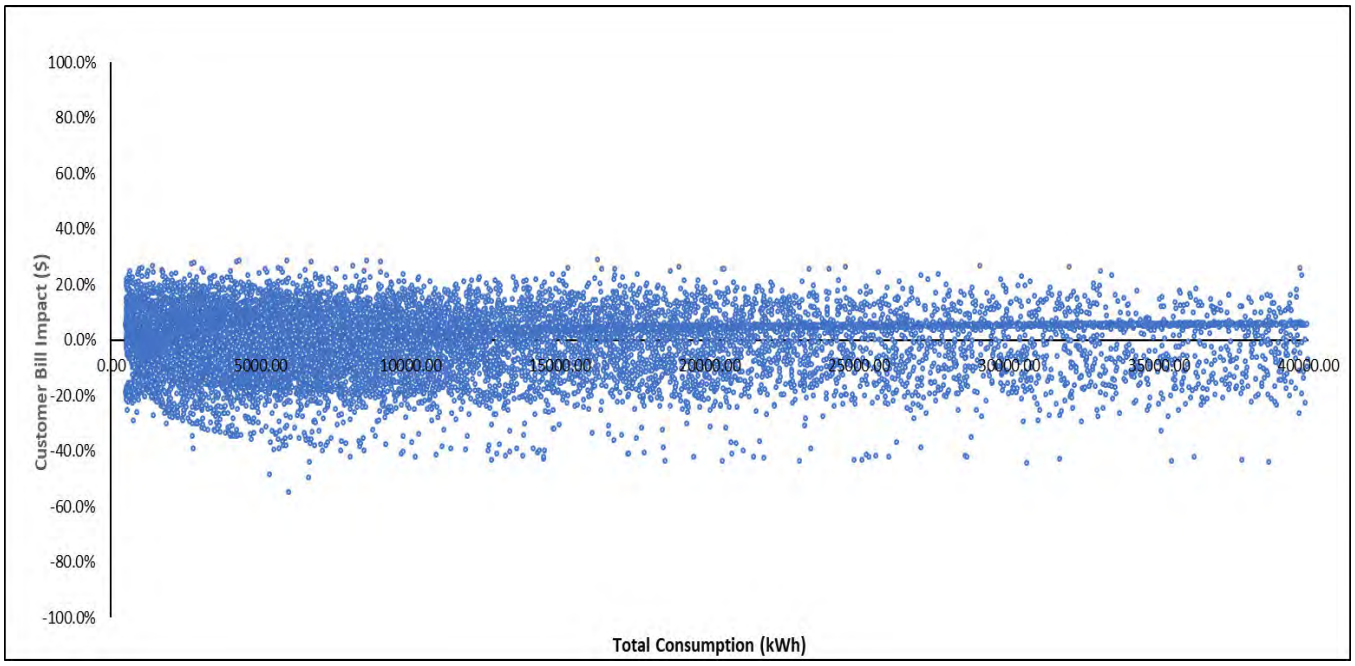


Figure 4–10: Individual customer impacts of moving legacy ToU small business customers to new 9am-9pm ToU tariff – Option 3, JEN

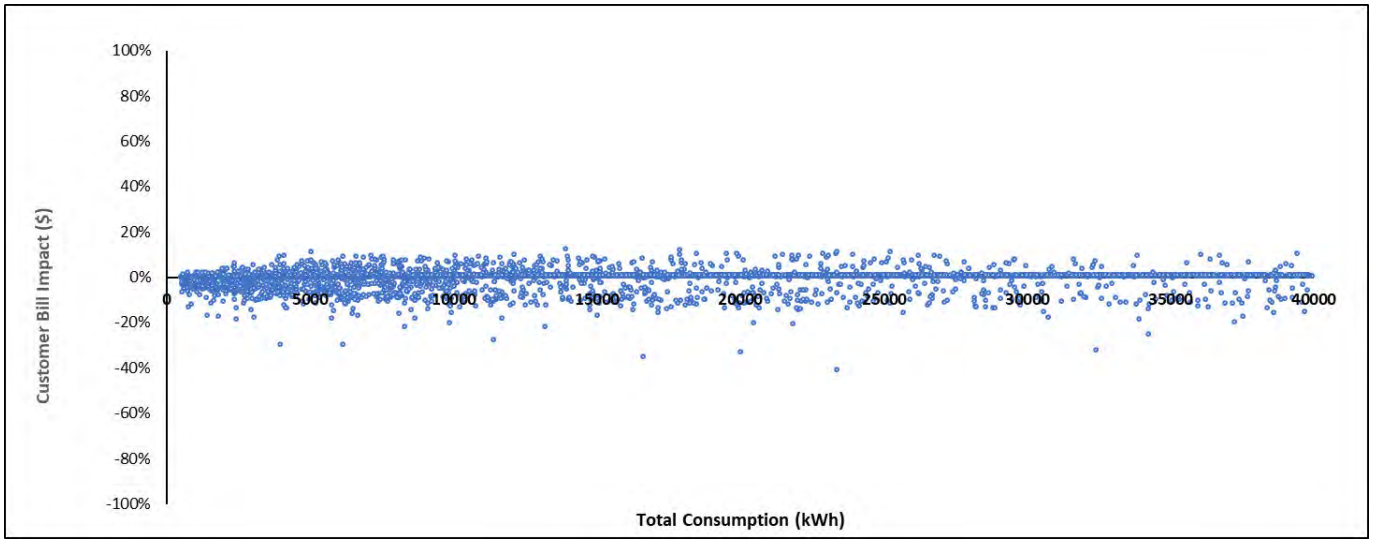


Table 4–4: Small business customer impacts - JEN

	Per cent of customers who would have a bill decrease	Per cent of customers who would have a bill increase	Customers worse off by more than 10%	Customers worse off by more than 20%
Option 1	48	52	31	13
Option 2	54	46	12	1
Option 3 (proposed)	83	17	0	0

4.5.3 How the customer impacts have influenced our proposal

Across the Victorian DNSPs, we already have around 30-50 per cent of small business customers on some form of ToU tariff. On average, small businesses are therefore more likely to respond in line with efficient network investment than our residential customers—of which only around 17 per cent of customers are on ToU tariffs. Nevertheless, we consider it is important to continue to make progress on tariff reform whilst having regard to customer impacts.

We can see from the analysis of Option 1 that assigning all small business single rate customers to a ToU tariff creates a relatively high proportion of customers impacted by more than 10% across all networks. We cannot be confident that we would avoid capturing a significant number of customers who have very limited ability to move their electricity usage outside of the 10am to 6pm peak period. This risks creating customer impacts that individual customers may not be able to mitigate through adjusting their usage.

Additionally, we have not seen evidence that small business customer engagement in the electricity industry is sufficient to rely on them actively requesting to opt out when they are unable to mitigate through their usage decisions. This supports an assignment regime predicated on either already being a ToU customer or having a pre-existing reason to contact the retailer – for example, upgrade to 3 phase metering, a new customer connection or a solar installation.

Option 2 and Option 3 seek to reduce the customer impact compared to Option 1 by widening the peak to a 9am-9pm weekday window. The lower impact is because both the peak and off peak prices are both lower under Option 2 and Option 3 (this is a result of our revenue cap and the peak price applying for longer). While a 10am-6pm peak period would cover most small business demand peaks, we consider that the customer impacts are better mitigated by a 9am-9pm peak period. This would put us on a path to further reductions in the length of the peak window after 2026.

The key difference between Option 2 and Option 3 is whether we move all single rate customers onto the new tariff as at 1 July 2021. As this still creates significant impacts for some customers, who may be those with limited ability to respond to the price signal, we do not consider it would be appropriate to undertake this change at this time. We therefore consider Option 3 to be most appropriate. This is consistent with our position for households, but provides additional movement toward cost-reflective tariffs by also moving legacy ToU customers onto the new ToU tariff.

4.5.4 Why we are retaining opt-out for small business customers consuming under 40MWh per year?

Our reasons for retaining opt-out for small businesses consuming under 40MWh per year are the same as for Households (see section 3.5.7)

4.5.5 Jemena-specific proposed changes for small businesses consuming under 40MWh per year

Consistent with and in addition to the joint Victorian position above, JEN proposes the following improvements for small business customers consuming under 40MWh per annum:

1. Consistent with the Victorian position, Jemena will reassign customers from the legacy “time of use extended” tariff (tariff code A250, F250 and T250) tariff to the amended time of use weekdays tariff (A210 or F210) and remove the time of use extended tariff from our tariff schedule.
2. Open the small business tariff class to embedded network customers—Electricity embedded network solutions are becoming more common and are occurring at smaller levels that would normally fit within the small business criteria (under 120kVA and 400MWh per year). Currently, an embedded network customer is only eligible for our large business tariffs, meaning customers are charged minimum demand levels above their actual requirements. During the current period we have had a small number of requests for customers to be reassigned to an applicable small business tariff, which we consider is reasonable. We will therefore amend our assignment policy to enable embedded customers onto the small business tariff class.
3. For demand tariffs, change how demand is measured from ratcheting demand to rolling demand (see description in section 5.4.1)
4. For simplicity and consistency, all times of day for peak periods will be expressed in local time rather than Australian Eastern Standard time.

4.6 Proposed changes for small business customers consuming over 40MWh per year

We currently have three tariffs for small business customers consuming over 40MWh per year:

- Time of use weekdays – demand (default tariff)
- Time of use (opt out)
- Time of use extended – demand (closed to new entrants[55]).

[55] A closed tariff means no customer can be assigned onto the tariff but current customers can remain on the tariff.

We have not looked to further refine these tariffs other than to:

- allow embedded network customers onto the open tariffs
- for demand tariffs, change how demand is measured from ratcheting demand to rolling demand (see description in section 5.4.1)
- for simplicity and consistency, all times of day for peak periods will be expressed in local time rather than Australian Eastern Standard Time (AEST).

4.7 Assessment against our principles objectives and the principles in the NER

Table 4–5 summarises our approach for small businesses consuming under 40MWh per year against the principles agreed by our stakeholders at our 2017 forum.

Table 4–5: Assessment against principles designed by key stakeholders

Principle	How our approach is consistent with this principle
Simplicity	Improves simplicity by having only one TOU tariff for all small business (compared to 31 ToU tariffs across the Victorian DNSPs currently). Compared to other options (such as demand pricing), it is easier for customers to understand that consumption at certain times of the day is more costly than consumption during other periods.
Economic efficiency	Prices are more reflective of network costs than the status quo, which means that the proposed change will provide more cost reflective tariffs.
Equity	Consolidating legacy ToU customers onto a single ToU tariff will mean consistency on the rates and times by which customers are charged. Compared to the status quo, we will have more customers on ToU tariffs meaning customers using the network relatively more at peak times will pay more than customers using the network during off-peak periods, moving towards paying a fair share of network costs. Those assigned to the ToU tariff without the ability to move their consumption can opt out, although this would require a level of active engagement by the customer.
Affordability	Compared to the status quo, the narrower peak window allows customers more opportunity to save by shifting consumption. The move to a 9am-9pm peak window and only moving legacy ToU tariffs mitigates customer impact.
Adaptability	Changing our default tariff structure to a ToU tariff structure provides a solid foundation for any potential new tariff structures that may be introduced after 2026. It is uncertain what the network will look like by 2026, and even more uncertain beyond this date. Against this uncertainty, it is unclear what tariff structure will be preferable in the future. The two-rate ToU pricing with fixed pricing periods could evolve into one, or a combination, of the following tariff structures: • A demand pricing tariff structure with a similar peak window • A ToU pricing tariff structure with an additional critical peak price (or rebate) window nominated by the distributor on a few occasions a year; • A dynamic ToU pricing tariff structure; • A locational ToU (or demand) pricing tariff structure or rebate where the peak/rebate ratio varies depending on the cost/benefit to the network at certain location. We will continue to monitor consumption patterns during 2021-26 and consider the case for further tariff changes in future, including whether the peak period should be

Principle	How our approach is consistent with this principle
	redefined. It is noted that consolidating the existing tariffs is a key step toward future adaptability and agility.

Our consideration of other tariff structures and locational tariffs for small business customers is consistent with that provided for small households (see sections 3.6.1.1and 3.6.1.2).

Table 4–6 provides an assessment against the pricing principles in the NER and demonstrates our proposed small business tariffs are compliant.

Table 4–6: Assessment of ToU tariff structure against pricing principles

Principle	How a ToU tariff structure is consistent with this principle
Tariff class revenue must lie between stand alone and avoidable cost (6.18.5(e))	We demonstrate this in section 4 of our TSS.
Tariff based on LRMC and the method for calculating this cost (6.18.5(f))	We explain how we have chosen the average incremental approach and how we calculate prices in section 4 our TSS. In it's draft decision, the AER suggested continued exploration of including replacement capital expenditure into estimates of LRMC. JEN's position, used to calculate our initial proposal LRMC estimates, is that it is appropriate for LRMC estimates to include the upgrade / replacement of existing assets where these add capacity to the network. We provide supporting reasons in Attachment E.
Recovering efficient costs (6.18.5(g))	Section 4 of our TSS describes how we meet the stand alone and avoidable cost tests. This demonstrates how the revenue for each tariff reflects the total efficient costs of serving the customers in that tariff[56] (Rule 6.18.5(g)(1)). We set our tariff levels to ensure we recover our allowed revenue in each year. This relies on our demand forecasts as we need to know demand and prices to obtain our allowed revenue. We demonstrate we only recover our efficient costs in our annual pricing proposals.[57] These must demonstrate our total forecast revenue for each year is equal to our allowed revenue (plus any allowed adjustments). Further, to ensure we align our LRMC calculation with our method for recording residential and small business customers demand levels[58], we have converted our LRMC estimates into single rate, peak usage rate and demand charge components as set out in section 4 of our TSS. We are also required to recover our efficient costs in a way that minimises distortions to price signals.[59] Peak usage and demand charge component price signals are kept most pure when observable to customers, which leaves fixed charges as the best component to adjust to recover residual costs. Our indicative prices in our TSS show how our fixed charges for small business will move to increasingly recover this residual.
Customer impact principle relating to transition, choice and ability to mitigate impact (6.18.5(h)), and understandability of the tariff structure (6.18.5(i))	The customer impact principle has driven much of the work and outcomes described in this Section 4. In particular, the ability to mitigate impact has led to our proposed approach for assignment and reassignment.

56 NER 6.18.5(g)(1),

57 NER 6.18.5(g)(2),

58 That is, as maximum demand occurring between 3pm and 9pm workdays for residential customers, and 10am-8pm work days for small business customers.

59 NER 6.18.5(g)(3).

Principle	How a ToU tariff structure is consistent with this principle
Jurisdictional principle (6.18.5(j))	Legislation made by the Victorian Government—by way of an 'order in council'—sets out certain requirements for network tariffs that expire on 31 December 2020 (or potentially extended to 30 June 2021). We understand that the Victorian Government will be reviewing the order in council during 2020-21 and this TSS may need revisions as part of the AER's final decision to comply with those requirements.

5. Large business

Our proposed changes to tariffs for our large commercial and industrial business customers aims to give them more options to reduce their electricity bill. We have focused on improving cost reflectivity through changes to the charging windows. We have not developed ICCs and set out our reasons for this in section 5.4.8.

5.1 Our large commercial and industrial business customers

We have over 1,500 large commercial or industrial business customers. While large businesses consume more than 50 per cent of the electricity that flows through our network, they make up less than 1 per cent of our customers.

For the 2016-20 period, all of our large business customers were on a demand tariff with the following components:

- standing charge ($ per annum)
- demand charge (with a minimum chargeable demand level) ($/kVA)
- peak consumption charge (7am – 11pm AEST) (c/kWh)
- off peak consumption charge (c/kWh).

Our large businesses' are more likely to have regular interactions with JEN. The volume of electricity they consume means that these customers are generally knowledgeable and very clear on what they need from the electricity network.

5.2 AER draft decision

In its draft decision of our large business tariffs, the AER:

- approved
  - our change to how demand is measured from ratheting demand to rolling demand (see section 5.4.1)
  - our new tariff for customers with multiple feeders[60] (see section 5.4.2)
  - changing how reserve feeder prices are charged from $/kW to $/kVA[61]
  - expressing peak periods in local time rather than AEST
- required JEN to introduce tariff choice in the form of ICC tariffs
- suggested JEN consider amending peak charging windows to potentially make these more targeted.

We have considered these issues within the window available for submitting this revised proposal. We have engaged our Customer Council, sought Large Business views via a survey and investigated ICC tariffs provided by DNSPs in other jurisdictions.

[60] This is to improve the cost-reflectivity of our suite of large business tariffs and align these to how our customers use our network

[61] In our 2016-20 TSS we made the change to price all demand components as $/kVA from 2017 to better reflect the additional costs a poor power factor, or savings an improved power factor, has on the system. An equivalent change for the reserve feeder (from $/kW to $/kVA) was inadvertently omitted from the 2016-20 process and will be included from 1 July 2021. This aids simplicity and consistency.

5.3 What our large business customers have told us

5.3.1 Engagement prior to initial proposal

We engaged with large business customers through a series of sessions with a small but representative number. These sessions coincided with our regular account management meetings, which was how these customers had requested to be engaged during our initial focus groups.

We had direct conversations with several customers in the following industries:

- transport
- data storage
- property development
- medical
- food manufacturing.

On 4 September 2019 we held a well-attended "Understanding network tariffs" session to help large business customers understand their network tariffs, how to seek tariff reassignment and what measures they could take that could impact their bills.

Our large business customers noted that affordability was a key concern and urged us to reconsider how demand is calculated. They were also interested in what energy-saving measures they could undertake.

We have also heard that some potential new large customers are interested in tariff structures and tariffs that reflect benefits they can have for the network. For example, customers with large-scale batteries might be able to provide localised network support or demand management.

We discuss our engagement since in section 5.4.5.

5.4 Our proposed changes

In addition to the items approved by the AER, JEN is proposing to:

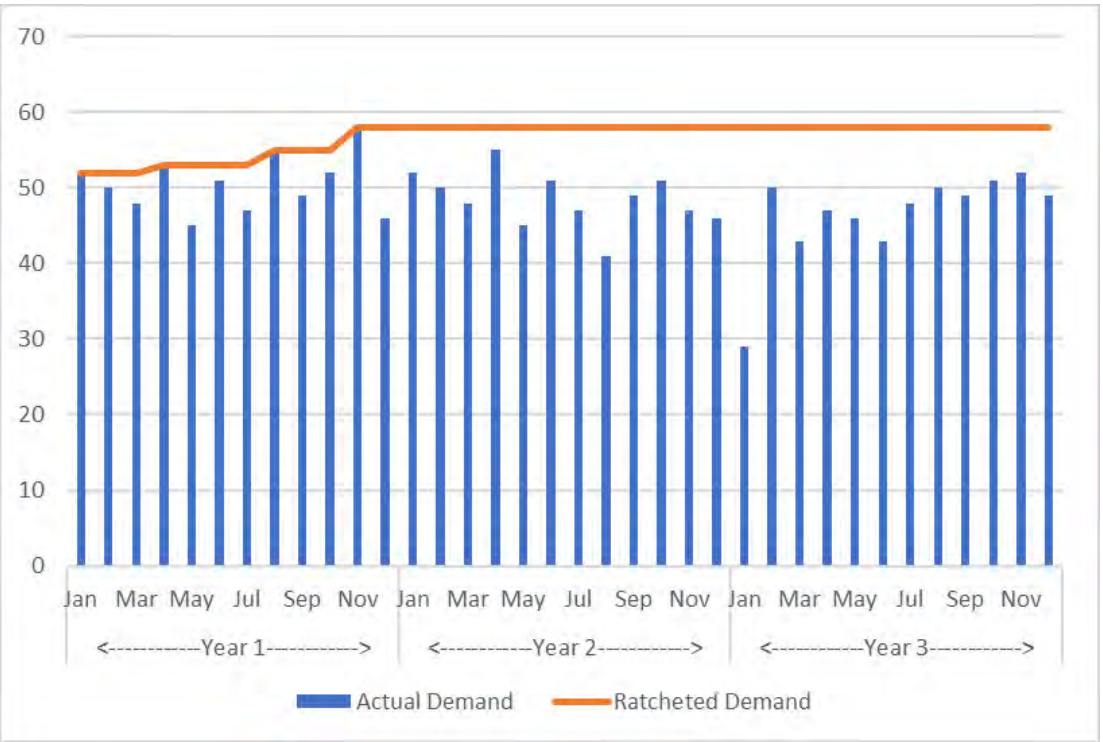
- reduce our peak window for our usage charges and for setting maximum demand for our demand charge to 8am-8pm weekdays
- introduce a new tariff component—the summer demand incentive charge (**SDIC**) with a 4pm-7pm workday peak window over summer months—to better target our summer peaks
- transition to cost reflective SDIC price levels over 5 years to mitigate relative customer impacts, especially given the current economic situation faced by customers due to the pandemic
- provide the option for customers to immediately choose a tariff with cost reflective SDIC price levels.

We had previously indicated that we would investigate how we might design a new tariff for those large customers who can and are willing to provide network benefits. We consider that our proposal to reduce the peak windows to improve cost reflectivity will provide lower network bills for those customers who's consumption behaviour provides these benefits.

5.4.1 Change to how demand is measured for billing

Our large business customers (and small business customers on demand tariffs) currently have their demand measured as the higher of: the maximum demand recorded for a month and the billed demand for the previous month. This results in a ratcheting effect where their billed demand level will either stay the same or increase (see Figure 5–1). The rationale for this approach is that historic billed demand reflects an estimate the potential demand requirements of the customer, and so the capacity the network needs to provide to accommodate the particularly customer into the future.

Figure 5–1: Demonstrating ratcheting demand – billed demand can only increase



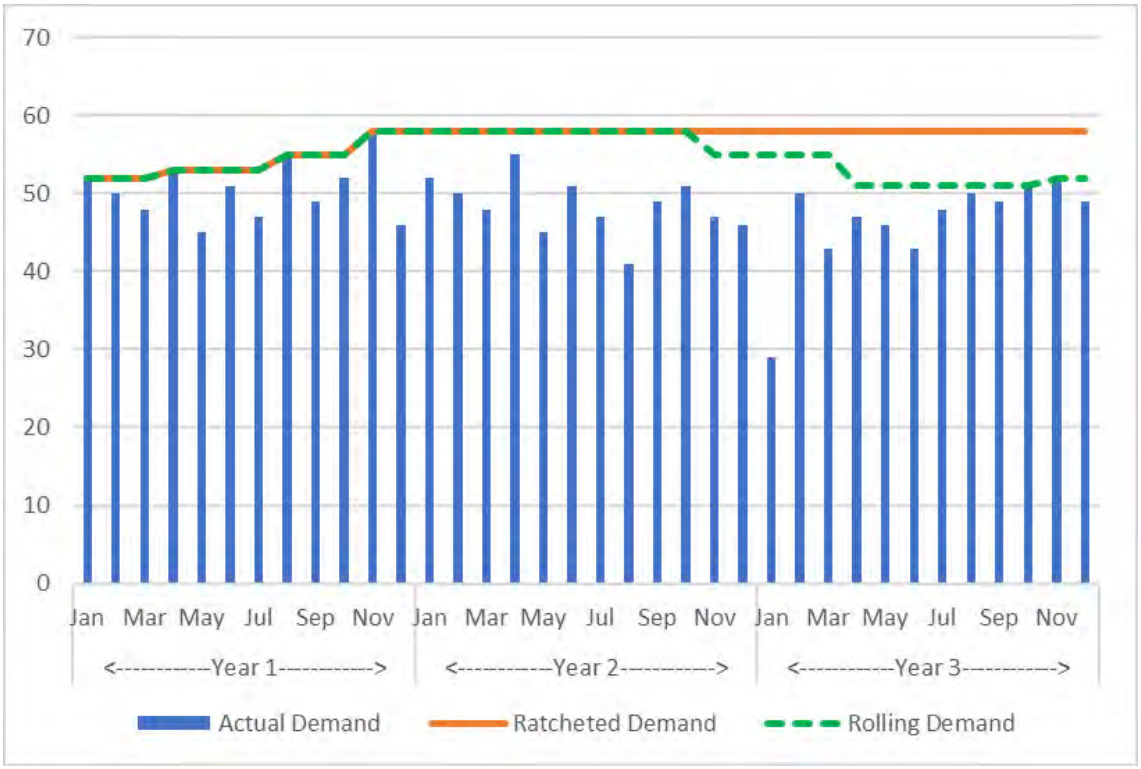
Individually, customers can formally ask for their billed demand to be reviewed and, where they provide sufficient supporting documentation to support a demand decrease, this can be reset at a lower level.

Customers told us that this approach results in a number of less engaged businesses ending up being charged based on historical demand levels that no longer represent their impact on our localised capacity requirements. Customers prefer solutions that automatically determine an appropriate demand level rather than requiring them to formally engage in the demand reset process.

We want to charge customers fairly, based on demand levels that represent the current and most recent capacity we are required to provide them. While historical demand levels are relevant (as we were required to provide that capacity), we consider that automatically recognising freed-up capacity has benefit for customers. We therefore consider it appropriate to change how we calculate demand for large business customers (and small business customers on a demand tariff) to automatically set maximum demand levels as the highest demand in the last 12 months only.[62] Figure 5–2 illustrates the difference between rolling and ratcheting demand approaches.

[62] For the avoidance of doubt, the maximum demand would only be recorded in the 8am-10pm demand charging window for the A20D tariff.

Figure 5–2: Demonstrating rolling demand



Under rolling demand, customers will still be able to request a demand reset to reflect other circumstantial changes. For example, where they have installed equipment that will reduce their demand or moved into a new premises.

An impact of this change is that large business customers billed demand levels will have a one-off fall on the 1 July 2021 implementation date. We have incorporated this into our demand forecast used for setting year 1 prices as well as for our indicative prices.

5.4.2 New subtransmission multiple feeder tariff

This tariff would apply where two independent subtransmission connections provide supply to the same customer's electrical installation at the same address, and operate such that both provide supply to that installation concurrently, but where each individual connection has a separate National Meter Identifier (**NMI**). The requirement for separate NMIs for contestable customers with standby supply is under the Australian Energy Market Operators NMI Procedure.[63]

As our tariffs apply per NMI, a second NMI for such a single customers would mean that they would be subject to two standing charges and two minimum chargeable demand amounts of 15,000kVA (effectively a 30,000kVA minimum). This is regardless of whether this customer requires this level of capacity or not.

The new tariff will ensure cost-reflectivity, and consistency with other sub-transmission tariffs, by applying:

- price rates that are based on the "sub-transmission tariff" for the relevant regulatory year.
- adjustments to the demand rate according to the actual power factor of the two connections. This assessment of the power factor will be undertaken at the implementation of the tariff and subsequently, on an annual basis.
- the standing charge for each connection.

[63] AEMO, National Metering Identifier Procedure, August 2009, p. 67.

- a combined demand for each connection point will be subject to a single minimum chargeable demand of 15,000 kVA. In the event that the customers electricity usage exceeds the applicable minimum demand, its chargeable demand will increase to that demand requirement.

These customers would continue to pay the applicable reserve feeder ancillary charge.

5.4.3 Reducing the peak window

We have proposed that the peak period for large businesses should occur between 8am to 8pm weekdays local time. This would apply to our usage charges and when billed demand is set for our annual demand charge.[64]

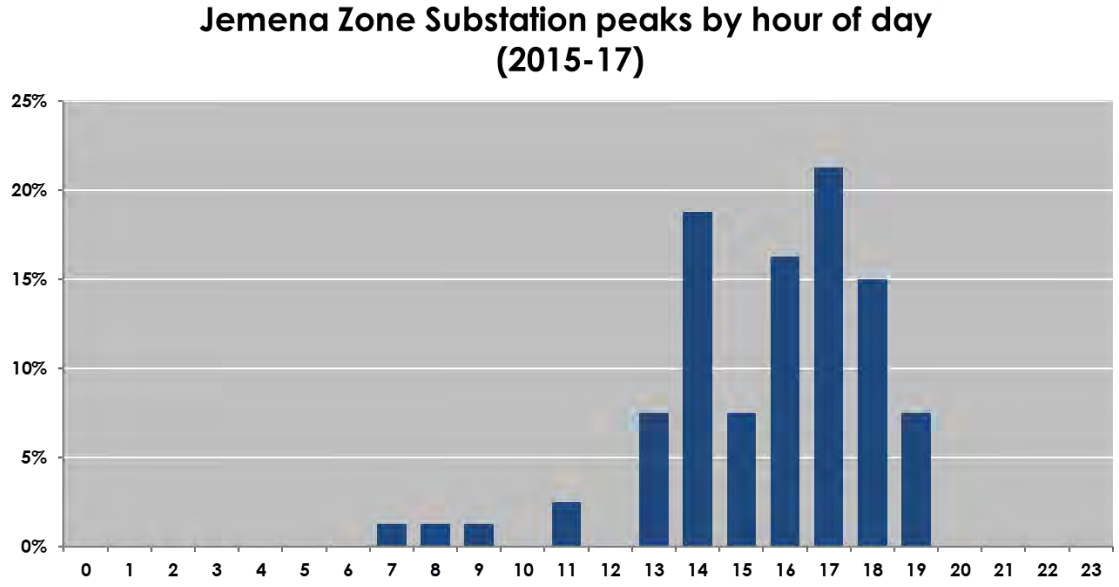
We have also proposed to introduce a new summer demand incentive charge tariff component where demand would be set between 4pm-7pm workdays.[65] This would only apply in the summer months of December to March.

We have considered how large business peak may contribute to overall peak demand on the network as well as the specific peak demand for large businesses (to ensure we do not create localised peak issues on certain distribution substations).

Figure 5–3 shows when Jemena Zone substations have historically peaked. This shows there can be peaks from 7am in the morning until 8pm at night. However, these peak predominantly occur between 1pm and 8pm.

Figure 5–4 shows our most recent summer coincident peak which occurred on 31 January 2020. It shows that our network peak occured between 4pm and 8pm (local time), whereas large business peaked for a steady period of time from around 9am until it begins to decline from around 3pm (local time).

Figure 5–3: Jemena zone substation peaks by hour of day (2015-17)

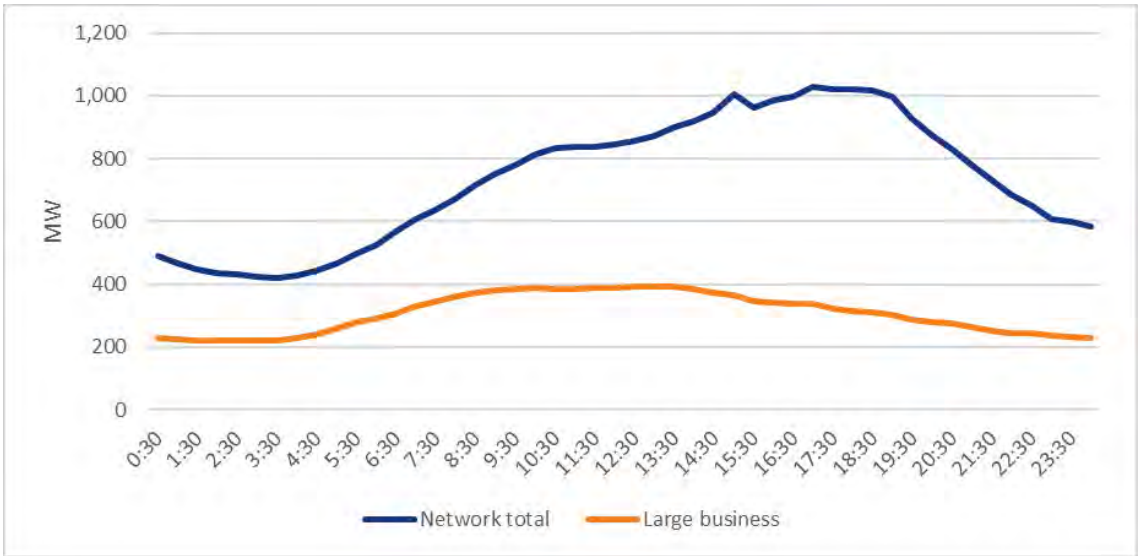


64 Billed demand for the demand charge is measured as maximum of:

- initial contract demand
- minimum chargeable demand for the tariff (see tariff schedule)
- highest demand achieved in the past 12 months within the applicable peak period (set 8am - 8pm Mon – Fri).

65 Billed demand for the SDIC is measured as maximum demand achieved in the month within the 4pm-7pm workday period. It is only charged in summer months (December to March).

Figure 5–4: Jemena peak day maximum demand, 31 Jan 2020 (AEST)



We need to consider both:

- the benefit of providing incentives that reduce the coincident peak
- the large business peak to ensure we do not provide localised peak issues on certain substations.

This indicates that the current 7am to 11pm peak pricing window could be reduced, and that narrowing it is likely to be more reflective of how large businesses impact our network.

It also supports splitting the demand charge into two to create the SDIC. This would mean that we can better target the coincident peak with the 4pm-7pm SDIC window yet still retain some annual incentive to reduce demand between 8am-8pm to avoid the unintended creation of new locational or coincident peaks.

The peak period chosen can have a large influence on the resulting customer impacts. We therefore tested the impacts of our proposal against the status quo, but also simply reducing the peak period of 8am to 8pm without a SDIC. This analysis and what we heard from our engagement is shown in section 5.4.5.

5.4.4 Should the peak apply to weekends?

We have looked at when large business peak loads occur across our network, and whether there is any clear pattern to justify including or excluding weekends (104 days of the year).

Large business peaks have not occurred on weekends due to operating hours falling on primarily on weekdays. Figure 5–5 shows the difference between weekend and weekday large business customer loads. This shows weekend peak loads at less than a third of weekday loads. We therefore do not propose to apply peak periods on weekends.

Figure 5–5: Large business average demand 2019

5.4.5 Tariff structure options considered

Following the AER's draft decision, JEN considered the following options to narrow the peak windows:

- **Option 1** – No change – i.e. a peak window for consumption charges ($kWh) of 7am-11pm weekdays with demand ($/kVA) set at anytime
- **Option 2** - We change our peak window for consumption charges ($/kWh) and when customers can set their billable demand level ($/kVA) to 8am-8pm weekdays.
- **Option 3 (proposed)** – As per Option 2, but also introduce another "summer demand incentive" charge ($kVA) that is set 4pm-7pm workdays during Dec-Mar. The demand level recorded between 4pm-7pm each month is used for billing for that month but then resets to zero for the next month.

5.4.5.1 Customer impact analysis

JEN undertook analysis of each large business customers' network bill if moving from Option 1 to either Option 2 or Option 3. The analysis was undertaken based on establishing prices that ensure JEN is revenue neutrality. It does not include the impact of expected price decreases from 1 July 2021.

Figure 5–6 shows the impact of moving to Option 2 and Figure 5–7 shows the impact of moving to Option 3. Option 2 has more customers with bill increases than Option 3, but the degree of the impact is smaller.

Figure 5–6: Option 2 large business customer impacts

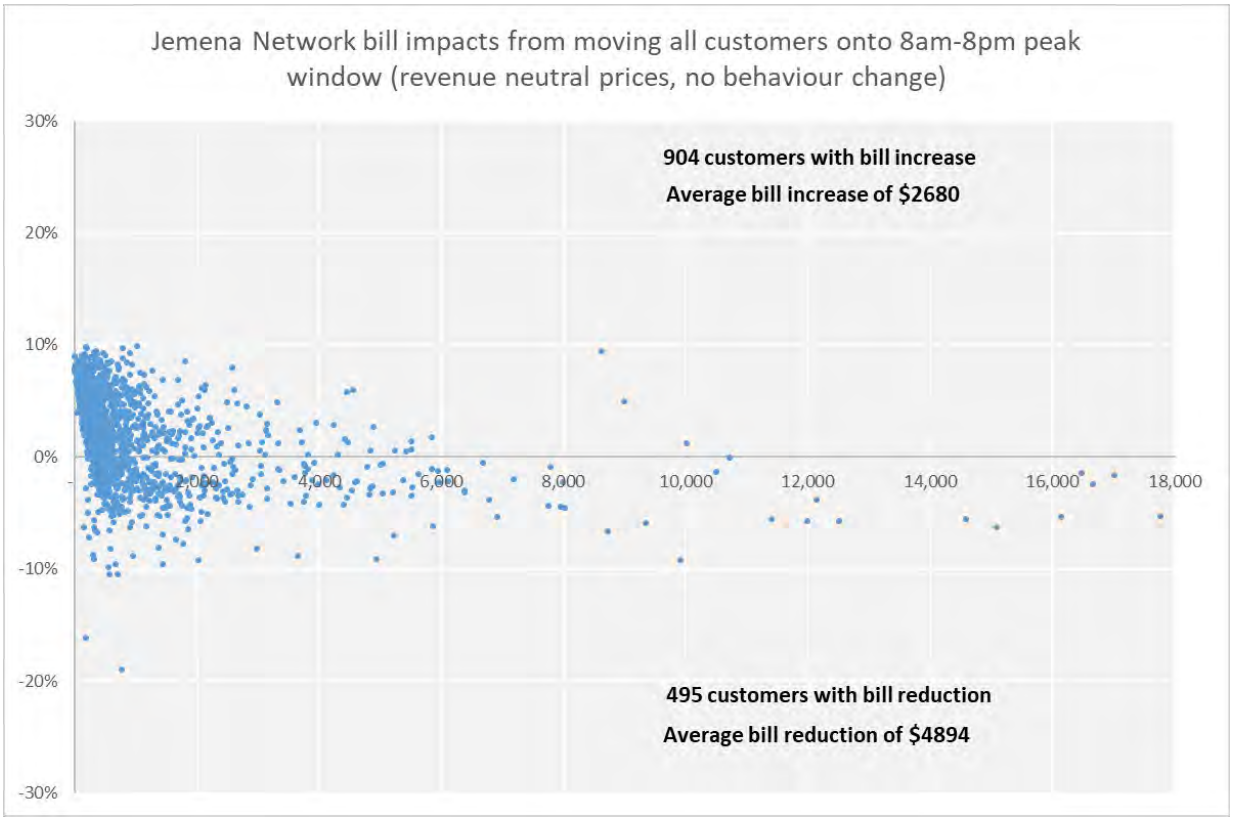
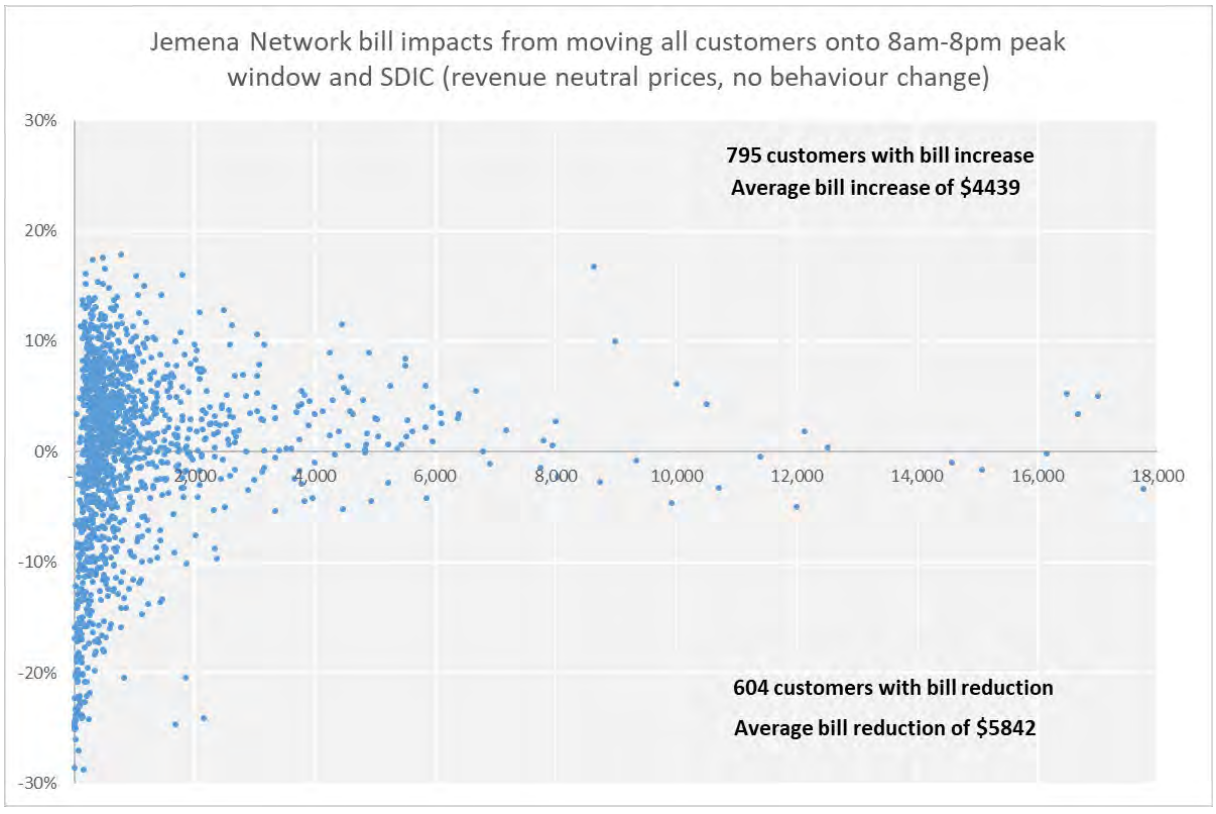


Figure 5–7: Option 3 large business customer bill impacts



5.4.5.2 Engagement

JEN shared the large business tariff options with our Customer Council in October. We heard:

- general support for sharper signals to create sufficient incentive for behaviour change or investment. In particular, there was greater support for the sharper signal provided by Option 3, with some concern raised that Option 2 would not be sufficient to illicit a response.
- some concern that 2021-22 is going to be a challenging time for manufacturing businesses and it's not ideal to add to that by making some relatively worse off given they might currently have reduced ability to invest in efficiency measures to reduce their bills.

To widen our engagement, JEN also conducted a short survey of around 40 of our largest customers on their Option preference and also whether they would prefer to transition prices in the new structure or immediately move to cost reflective price levels. We received five responses, which included:

- two preferences for no change (Option 1), One preference for each of Option 2 and two preferences for Option 3.
- those that preferred no change did so because they considered their load profile would result in higher bills and current sensitivity to cost increases due to the pandemic. One customer sought tariff choice so that they could select the one to meet their needs
- the customer who preferred Option 2 did so because it is a imple structure with fewer tariff components and a peak time that coincides more with their business hours.
- those that preferred Option 3 did so because they considered it most consistent with times of network constraint, which should drive customer behaviours/investment to support the network..
- of the four responses, three preferred that we move to cost reflective price levels straight away, noting that:
  - gradual change will introduce unecessary administration in managing the task as well as diluting the price signal
  - there was a preference to set our plant operation according to tariff especially the prestart of the plant.
- two customers preferred a transition to cost reflective tariffs over the 2021-26 period with one noting that this would ease the cost pressures they currently face, including those due to the pandemic. Having viewed the customer impacts under the options, another was mindful of other parts of the business community, noting that COVID-19 impacts had been quite severe and there is an expectation that the legacy will be one that businesses will be dealing with for years to come. Businesses are likely to be seeking cost certainty in the short term.

5.4.6 Transitional arrangements

We have concerns that introducing tariff options for our large business customers would lead to customers self-selecting their cheapest tariff. This has no associated behavioural change benefit and would be lead to other customers paying more.

However, due the concern raised by customers and the short window (between the AER's draft decision and submitting our revised proposal) to engage wider, we consider a transition to the cost reflective SDIC price level is appropriate.

We will therefore:

- for all tariffs, transition to cost-reflective SDIC by increasing the price by twenty five percent of cost reflective level each year from 2022-23 to be fully cost reflective by 2025-26 (**the 'transitional tariff'**). For 2021-22 the SDIC would be priced at zero
- provide a fully cost-reflective tariff as an option from 1 July 2021 (but include restrictions on when this can be opted into and out of given the seasonal element).

5.4.6.1 Assignment and reassignment

All large business tariffs will have the new SDIC component included into their tariff structure. This tariff will become the transitional tariff as described above.

All large business customers[66] will be able to choose their equivalent network tariff with the SDIC priced at cost reflective levels. This will have a lower priced demand charge. However, due to the seasonality of the tariff creating potential for bill optimising behaviour, we have the following conditions:

- when a tariff reassignment to the fully cost reflective tariff is approved, it will apply from the later of:
  - the first day of the next billing cycle following the date of application; or
  - 1 July 2021.
- if a customer subsequently wants to opt out of the fully cost reflective tariff back to the transitional tariff within the 12 month period of being initially reassigned, all the network bills issued after the tariff change to the fully cost reflective tariff would be reversed and reissued based on the transitional tariff. The customer can only opt out to the transitional tariff they were previously assigned.
- customers can only opt in or opt out of the fully cost reflective tariff once in any 12 month period. This does not prevent the customer from applying to be reassigned between cost reflective tariffs as long as they meet the relevant criteria for the tariff.
- for a customer who wants to be reassigned to, and qualifies for, another large business cost reflective tariff, then there would not be any recalculating of historical network bills.

This process is described in our Assignment and Reassignment Policy at Attachment A to our TSS.

5.4.7 EV charging tariffs and trials

In their submissions to the AER, the Electric Vehicle Council (**EVC**) and Evie Networks highlighted their concern regarding the cost reflectivity of all Victorian DNSPs large business network tariffs and are seeking tariffs that better suit the load profile of EV charging stations.[67]

We consider that our proposal for large business customers will better target summer coincident peaks and de-emphasise the capacity used by customers at other times and customers will be able to choose this most cost-reflective option from 1 July 2021. This should reduce concern about customer bills being influenced by behaviour outside coincident peak. However, JEN has not been party to an previous discussion that EVC or Evie Networks have had with DNSPs on potential tariff structure options that EVC or Evie Networks would consider more appropriate. We are open to having these discussions with a view to introducing a tariff trial should an agreeable structure be found.

We consider that this could be developed within the regulatory period and potentially incorporated as a sub-threshold trial tariff.[68] This would provide evidence of it's workability and viability to be offered wider in future periods. Before entering a trial JEN would need to consider:

- what are the objectives of the trial and the type of learnings we are seeking to understand to advance our tariff offerings
- whether the tariff is sufficiently reflective of our costs, including whether peak windows sufficiently cover both the potential for local and coincident peaks
- the administrative cost of implementing the trial

66 This will exclude the new tariff A50M as there is no need to transition a tariff without any customers on it yet.

67 Electric Vehicle Council, Submission on Victorian Electricity Revenue Proposals 2021-26, p. 2; Evie, Networks, AER issues paper - Victorian electricity determination 2021-2026: electricity tariff structures, 3 June 2020, p. 2.

68 This is a tariff that can be introduced within the regulatory period as part of the annual pricing proposal, so long as the forecast revenue from the tariff is under 0.5 per cent of JEN's annual revenue requirement and the total of all sub-threshold tariffs is below one per cent of JEN's annual revenue requirement. Refer NER 6.18.1C.

- The willingness of customers to participate
- the impact of the trial on Jemena's remaining customers
- opportunities to partner with other DNSPs and/or retailers.

We are not considering this as a trial for 2021-22, however, we will evaluate further within the regulatory period.

5.4.8 Why we have not proposed ICCs

JEN's initial position was that our large business tariffs were sufficiently cost reflective. For our revised proposal we have focused on improving these as described in the above sections.

We discussed the concept raised by the AER of passing through locational transmission use of system (**TUoS**) charges as suggested by the AER with our Customer Council in October 2020. We heard they:

- were generally not persuaded by the opportunity despite one perspective that sharper signals can be preferred by some customers
- considered locational TUoS being an odd-mid point between what we have currently and ICC tariffs. ie. it's effectively asking those within a zone to rally and work together to minimise their impact on peak.

In addition to the stakeholder views received we consider ICC tariffs provide limited additional benefit from our proposed position given:

- we consider our proposed tariff structures to be an improvement on our initial proposal, which better target our summer peaks, and that these are compliant with the pricing principles in the NER (see section 5.5)
- the threshold used by other distribution networks with ICC tariffs is 40GWh pa or 10MVA—we only have eight large customers that this might apply to. These customers are generally on purpose-specific tariffs[69]
- there are practical and administrative difficulties to commit to ICCs for the revised proposal, including appropriate consultation, building/licensing/running a new locational pricing model, developing a negotiating framework and increasing internal resources to administer
- we have concerns about making this optional, leading to customers self-selecting the cheapest tariff, which has no associated behavioural change benefit.

5.5 Assessment against the pricing principles in the NER

Table 5–1 provides an assessment against the pricing principles in the NER and demonstrates our large business tariff proposal is compliant.

Table 5–1: Assessment of ToU tariff structure against pricing principles

Principle	How a ToU tariff structure is consistent with this principle
Tariff class revenue must lie between stand alone and avoidable cost (6.18.5(e))	We demonstrate this in section 4 of our TSS.

[69] For example, we currently have four sub-transmission customers across 3 sub-transmission tariffs, with two of those specifying the electrical loops (locations) that apply to the tariff.

Principle	How a ToU tariff structure is consistent with this principle
Tariff based on LRMC and the method for calculating this cost (6.18.5(f))	We explain how we have chosen the average incremental approach and how we calculate prices in section 4 our TSS. In it's draft decision, the AER suggested continued exploration of including replacement capital expenditure into estimates of LRMC. JEN's position, used to calculate our initial proposal LRMC estimates, is that it is appropriate for LRMC estimates to include the upgrade / replacement of existing assets where these add capacity to the network. We provide supporting reasons in Attachment E.
Recovering efficient costs (6.18.5(g))	Section 4 of our TSS describes how we meet the stand alone and avoidable cost tests. This demonstrates how the revenue for each tariff reflects the total efficient costs of serving the customers in that tariff[70] (Rule 6.18.5(g)(1)). We set our tariff levels to ensure we recover our allowed revenue in each year. This relies on our demand forecasts as we need to know demand and prices to obtain our allowed revenue. We demonstrate we only recover our efficient costs in our annual pricing proposals.[71] These must demonstrate our total forecast revenue for each year is equal to our allowed revenue (plus any allowed adjustments). Our new SDIC tariff component better targets our summer coincident peak and de-emphasises the capacity used by customers outside these times. We are also required to recover our efficient costs in a way that minimises distortions to price signals.[72] Peak usage and demand charge component price signals are kept most pure when observable to customers, which leaves fixed charges as the best component to adjust to recover residual costs. Our indicative prices in our TSS show how our fixed charges for large business will move to increasingly recover this residual.
Customer impact principle relating to transition, choice and ability to mitigate impact (6.18.5(h)), and understandability of the tariff structure (6.18.5(i))	Our proposed transition recognises the challenges presented by the pandemic and resulting economic impacts. It provides customers additional time to understand the tariff and develop behavioral or investment responses. The optionality to choose the fully cost reflective tariff helps to aid transition.
Jurisdictional principle (6.18.5(j))	There are currently no amendments to large business tariffs from those that comply with rule 6.18.5(e) to 6.18.5(g) required to give effect to jurisdictional requirements.

70 NER 6.18.5(g)(1),

71 NER 6.18.5(g)(2),

72 NER 6.18.5(g)(3).

Attachment A
Seed Advisory, Victorian Electricity Future Forum Report, 20 March 2018

Jemena
bringing energy to life

Seed Advisory

Victorian Electricity Future Forum: Household Network Pricing

Report on Forum, 20 March 2019

2 April 2019

Contents

1. EXECUTIVE SUMMARY 2

2. BUILDING ON EARLIER OUTCOMES: THE THIRD FORUM 5

2.1. Introduction 5

2.2. Format of the forum 5

2.3. Building on earlier outcomes 8

2.4. Questions for third forum 11

3. OUTCOMES AND INSIGHTS FROM THE FORUM SESSIONS 12

3.1. Summary 12

3.2. Workshop 1: Views of proposed ToU Pricing Structure 13

3.3. Workshop 2: Views of Transition Proposal 17

3.4. Workshop 3: Views on Communication Program Proposal 20

3.5. Other matters raised 23

3.6. The Forum: Participant ratings 25

A. FORUM AGENDA 27

B. PRE-READING 30

C. PARTICIPANTS ATTENDING THE WORKSHOP 56

D. PARTICIPANT FEEDBACK 58

D.1 What respondents want to hear more about 60

D.2 Respondents' expectations of the forum 62

D.3 What went well? Respondents' evaluation of the forum 63

1. Executive Summary

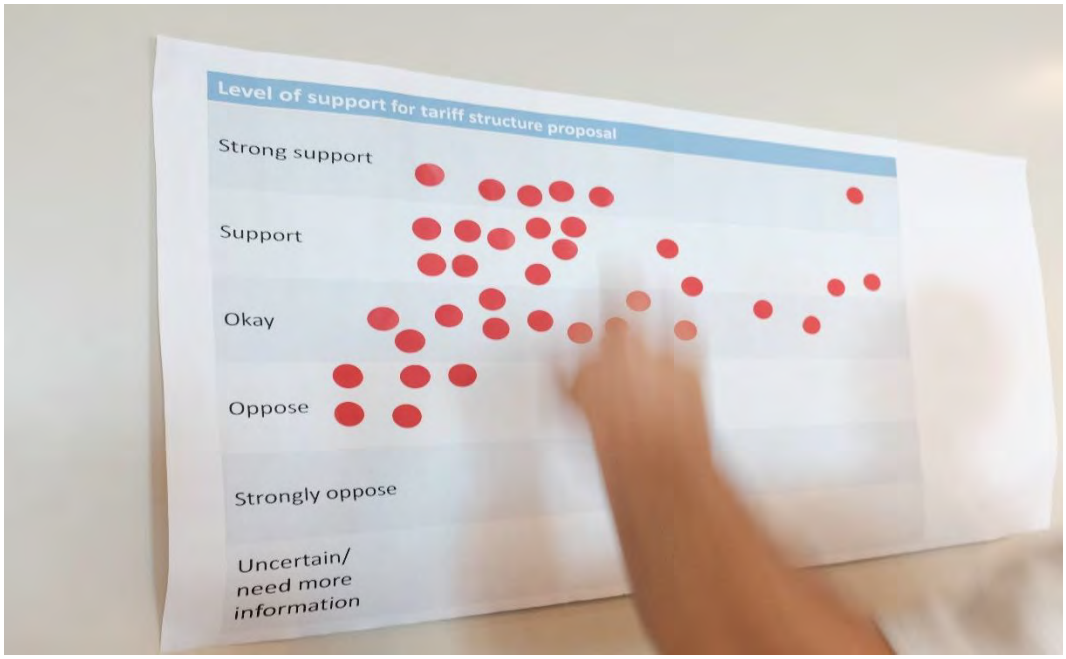
The Victorian Electricity Distributors held the *Victorian Electricity Future Forum: Household Network Pricing,* on Wednesday 20 March at Southbank, Melbourne, bringing together 40 customer representatives, retailers, government and regulatory stakeholders to respond to the distributors' household tariff proposals. As part of the design of the forum, participants were assigned to tables to ensure diverse perspectives were represented during breakout activities discussing the proposals.

The forum began with the case for change from the current dominant household network pricing structure, a single rate flat price. The Victorian electricity distributors are proposing a shift to a Victoria-wide two-rate Time of Use (ToU) household network price in place of the status quo. The case for changing the tariff structure looks forward to the uncertainties characterising the environment for future electricity consumption patterns and the corresponding need to move to a network pricing structure more responsive to changing customer consumption patterns now and into the future.

The proposals, or "strawmen", contained in the pre-reading distributed to potential attendees and presented on the day by the Victorian electricity distributors, included:

- A new Time of Use (ToU) household network tariff
- A transition strategy for the assignment of customers to the proposed new tariff
- The development of a communications strategy to support the introduction of the proposed new household network ToU tariffs.

Presentations were followed by Q&A. Table participants discussed the proposals and were asked about their level of support for the proposals. Participants voted to show their individual support for the new household ToU tariff and the transition strategy.



There was strong consensus support by participants for both proposals by the Victorian electricity distribution businesses. At the end of Workshop 1, 32 of the 40 attendees, (80 percent), said they were “Okay [with]”, “Supported” or “Strongly supported” the tariff structure proposal. Six participants opposed the tariff structure proposal, and one participant split their vote between “Strongly opposed” and “Uncertain/need more information”.

At the end of Workshop 2, 79 percent of the 31 participants in Workshop 2 (24.5 votes, counting split votes where participants had shared their votes between two categories) said they were “Okay [with]”, “Supported” or “Strongly supported” the proposed transition strategy. Three votes, reflecting four individuals, opposed the transition strategy, while two and half were in the “Uncertain/need more information” category.

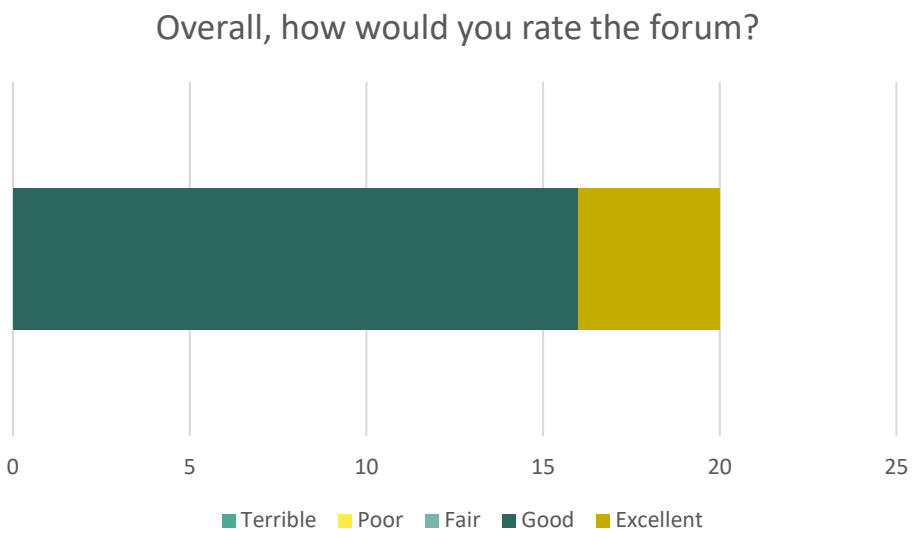
The strong ratings given to the forum in the feedback survey at the end of the day are consistent with the strong consensus support shown in the voting on Workshops 1 and 2 (Section 3.6). Feedback from tables to the broader forum showed that where participants’ support for the proposals was low, or participants opposed the proposals, the need to better understand the impact on vulnerable customers was key. Participants’ views on the value of the forum was reflected in the spirit of collaboration shown on the day.

There's still work to be done. Importantly, table discussions, notes by table facilitators and the voting reveal:

- A key task for increasing and strengthening support for the transition proposal is helping interested participants understand the differences between the model results for all Victorian households and specific vulnerable groups.
  - There is a need for interested participants to understand how the ACIL Allen work on vulnerable customers and the overall modelling results for all households relate to each other. In some cases, participants are also keen to understand the implications for specific sub-groups among all households, such as the small number of households on existing ToU network tariffs.
- Investigating and communicating the results of the modeling on household electricity bills for vulnerable customers who lack the capacity for adaption.
  - This group of households – lacking both the means and the ability for adaption to the incentives to shift consumption presented by the proposed network tariff – is critical to some participants' evaluation of the proposal.
  - The communication could take the form of a targeted workshop going through the methodologies and results of both sets of modelling.

Overall, the forum was very successful. Participants were asked their overall rating of the forum on their feedback forms. Of the 20 responses received, 4 people rated the forum Excellent and 16 Good (Figure 1.1).

Figure 1.1 Forum Rating: Overall Rating, number of responses by rating



2. Building on earlier outcomes: The third forum

2.1. Introduction

The Victorian Electricity Distributors held the *Victorian Electricity Future Forum: Household Network Pricing,* on Wednesday 20 March at Southbank, Melbourne, bringing together 40 customer representatives, retailers, government and regulatory stakeholders to respond to the distributors' initial proposals. The forum agenda is included as Appendix A. As part of the design of the forum, participants were assigned to tables to ensure diverse perspectives were represented during breakout activities discussing the proposals.

2.2. Format of the forum

At the beginning of the forum, Alistair Parker, AusNet Services, presented the case for change on behalf of the Victorian electricity distribution businesses, looking at the uncertainties characterising the environment in which the electricity distributors are developing their pricing proposals and the need to move to a network pricing structure that was more responsive to changing customer consumption patterns now and into the future.

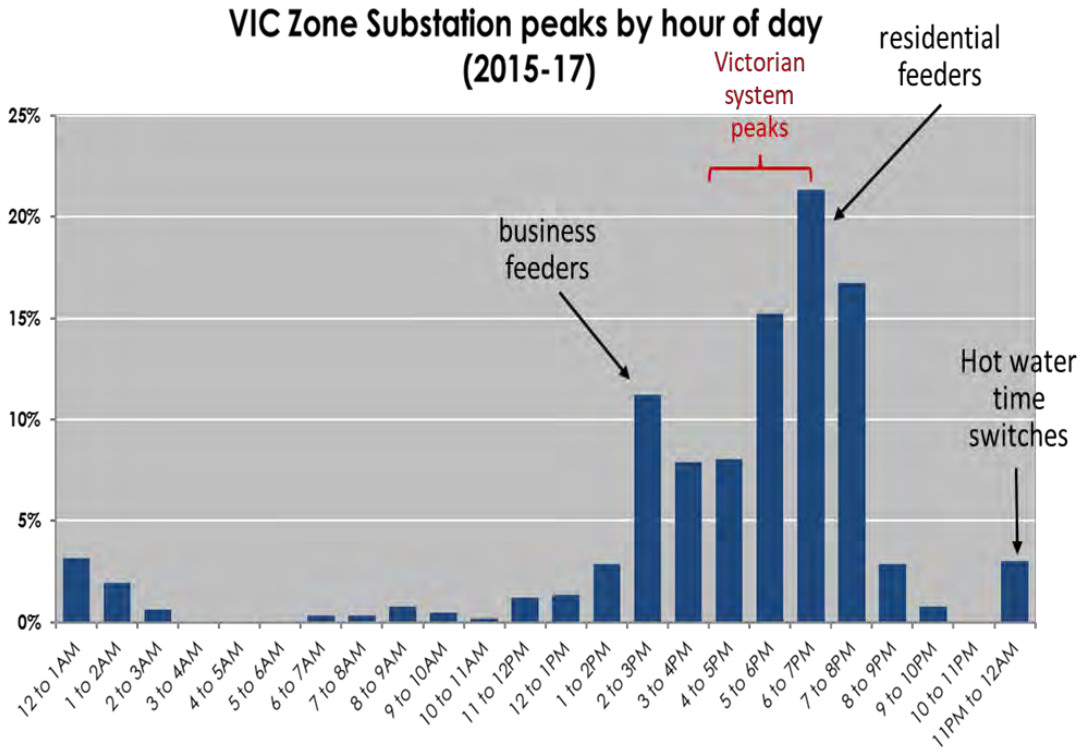
The initial proposals, or "strawmen", contained in the pre-reading distributed to potential attendees (Appendix B) and presented on the day by the Victorian electricity distributors, included:

- A new household Time of Use (ToU) tariff (discussed at Workshop 1)
- A transition strategy for the uptake of the proposed new tariff structures (Workshop 2)
- The development of a communications strategy to support the introduction of the proposed new household network ToU tariffs (Workshop 3).

The session immediately following the presentation of the case for change discussed the ToU tariff proposal put forward by the Victorian electricity distributors. This presentation also

presented information on distribution assets affected by peak consumption by hour of the day (Figure 2.1), day of the week and season. The household usage profile by time of day, day of the week and in summer was also shown. A Q&A session and Workshop 1 followed.

Figure 2.1 Victorian Zone Substation peaks by hour of day: excerpt from tariff proposal presentation



Before the transition strategy proposal was presented:

- Lynne Gallagher from Energy Consumers Australia presented an overview of recent measures in other Australian jurisdictions to begin the shift to electricity distribution network cost-reflective pricing, including commentary on the level of customer acceptance and the extent of uptake experienced when up-take is voluntary (opt-in).
  - In summary, experience elsewhere in Australia supports simplicity of design, strong customer communications and common distribution pricing structures across a jurisdiction, minimising customer confusion and unintended adverse effects on retailers.
- ACIL Allen presented the preliminary results of their assessment of the potential impact of the Victorian electricity distributors' tariff reform proposal on a variety of vulnerable customers.
  - Table 2.1 is taken from ACIL Allen's presentation to the forum. It shows the proportion of their survey respondents and the estimated annual bill change, assuming the proposed network tariff was passed through in full by the retailer. The vulnerable group in this table represents a sub-set of their survey respondents, made up of those respondents who would be unable to meet an unexpected $400

expense from their savings and who had experienced difficulty in paying a utility bill in the previous 12 months.

Table 2.1 ACIL Allen survey results: Bill impact, Highly vulnerable customers, annual bill change[1]

	VULNERABLE	OTHER
Proportion of customers with bill decrease	32%	19%
Proportion of customers with no change (=/- $10 p.a.)	41%	41%
Proportion of customers with bill increase	27%	40%
Sample size	293	1658

Source: ACIL Allen presentation, 20 March 2019

The proposed transition strategy was introduced after ACIL Allen's presentation. The proposal covered: the basis for the transition strategy proposed; additional information on the impact of the proposed tariff structure on all customers by usage; and on the anticipated impact on customers' bills, assuming retailer pass-through and no behaviour changes (Figure 2.2). A Q&A session and Workshop 2 followed.

Shifting the focus to all customers, while appropriate and necessary for transparency, gave rise to a number of questions about how the ACIL Allen's work and the results shown in this presentation could be reconciled. There were a number of comments on the relationship between the two sets of data recorded in the discussion in Workshop 2 and discussed in Section 3.3.

[1] Assuming no behavioural change by the customer and full retailer pass through

Finally, the Victorian electricity distribution businesses put forward a very high-level plan for developing and implementing customer communications. The plan covered the period from July 2019 until the introduction of the proposed ToU tariff. Workshop 3 followed.

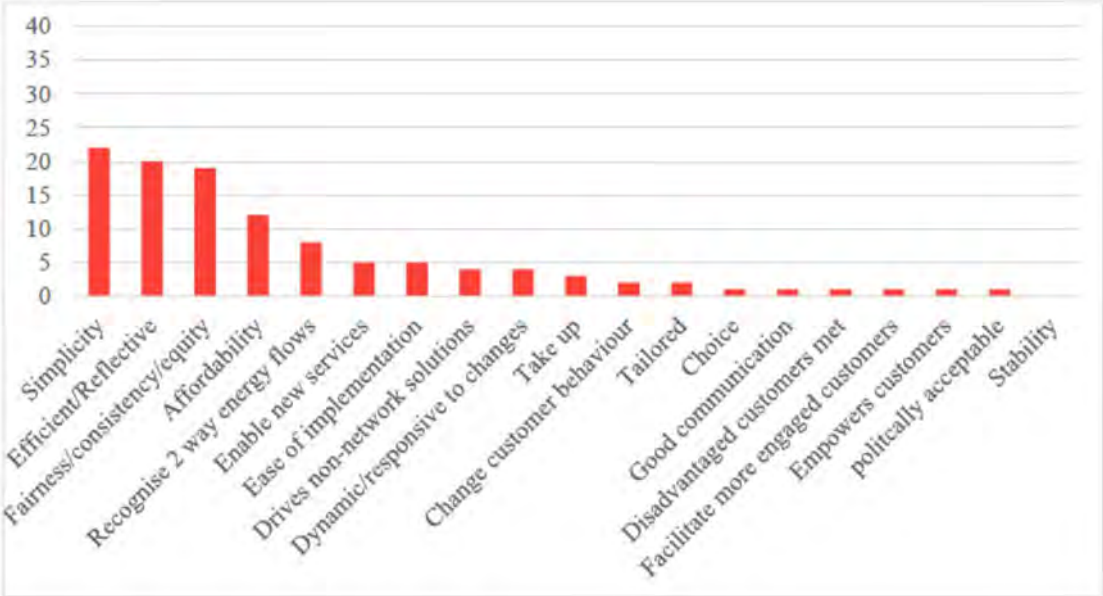
Tom Hallam, AusNet Services, closing the forum, thanked participants for their contributions to the day's success.

2.3. Building on earlier outcomes

This forum was the third of three forums over 18 months engaging with a wide range of stakeholders on the potential for new more cost-reflective household network tariffs. The third forum built on the outcomes of earlier forums and extensive bilateral stakeholder consultations throughout the period.

The first forum, in November 2017, found significant majority agreement among the attendees with the proposition that some change to the structure of Victorian household network tariffs was either necessary or desirable.[2] Forum participants also chose five clearly preferred criteria for assessing the acceptability of potential new household network tariffs from a large set of potential criteria. These criteria were used to inform the five objectives guiding the design of household network pricing – simplicity, economic efficiency, adaptability, affordability and equity.

Figure 2.1 Forum 1: Objectives for Household Network Pricing, participant votes



Source: Essential Media, 2018[3]

[2] WSP, *Victorian Electricity Future Forum: Household Network Pricing, Consultation Report December 2017*, AUSNET SERVICES, JEMENA, CITIPOWER, POWERCOR AND UNITED ENERGY

[3] Essential Media *Victorian Electricity Future Forum: Household Network Pricing, 18 April 2018*, AUSNET SERVICES, JEMENA, CITIPOWER, POWERCOR AND UNITED ENERGY, p.7.

In this forum, the Victorian electricity distribution businesses reflected the guiding objectives and stakeholder feedback in the tariff proposal put forward – a year-round, two period Time of Use Tariff, with a peak period from 3pm to 9pm every day of the year.

In the second forum, on 18 April 2018, the attendees arrived at a consensus that network tariff design should straddle both retailers and customers, being *designed for the retailer with the customer in mind*.[4] Forum participants preferred familiar to less familiar new tariff pricing structures, but also thought efficient and complex structures were preferable to simple but inefficient structures in discussing potential tariff structures.

- The choice of tariff put forward in this forum – Time of Use in preference to a Demand tariff – reflected the agreement at the second forum that familiar pricing structures were preferable to less familiar. Peak and off-peak pricing are pricing structures customers are very familiar from other industries.
- In making specific design choices – year-round vs. seasonal and every day of the year vs. excluding weekends and holidays, for example – the electricity distributors preferenced simple structures over complex.

In the second forum, reflecting a widely shared concern that changes to household network pricing changes should not adversely impact vulnerable people, participants identified a range of complementary measures that could be considered alongside any change to the household network tariffs. The complementary measures included proposals relating to:

- Assistance to vulnerable customers
- Consumer education
- Consumer access to data
- Demand response programs
- Energy Efficiency programs
- Support for greater access to new technology and other products and services
- Other measures to support all consumers
- Tariff assignment policy.[5]

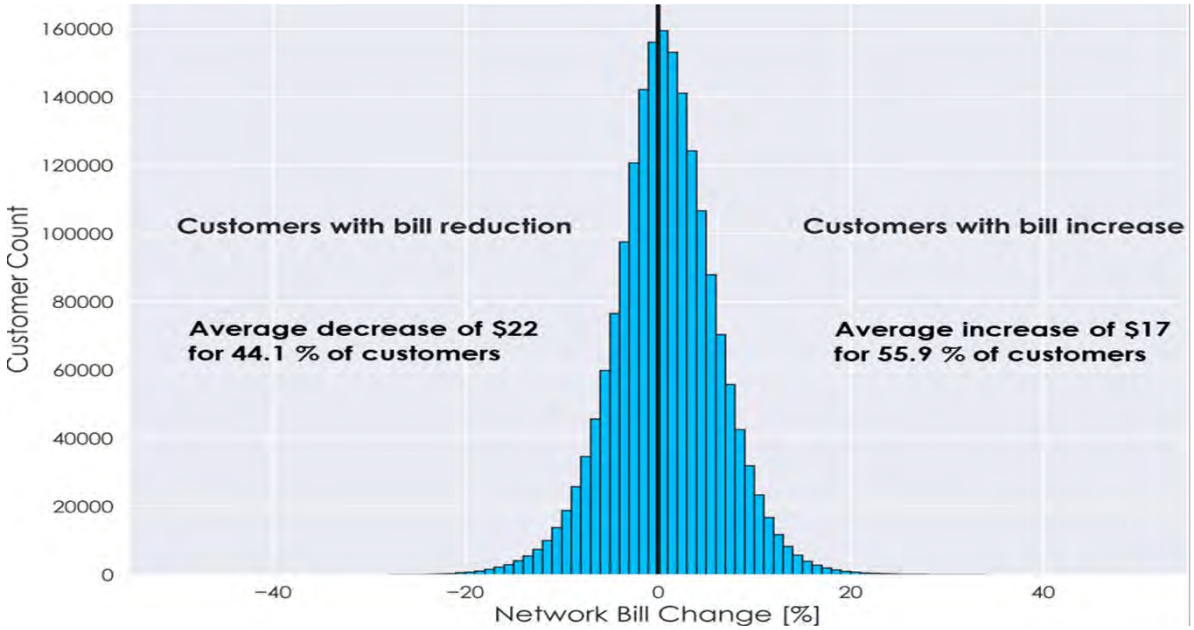
In Workshop Two in this forum, the impacts on specific groups of vulnerable customers, consumer education and the tariff assignment policy – all complementary measures directly within the Victorian distributors' control – were discussed.

- Estimates were presented of the impact of the proposed price changes on customers' electricity bills, assuming the network tariff changes flowed directly through to customers' electricity bills.

[4] Essential Media, *2018*

[5] Essential Media *2018, p.20*

Figure 2.2 Households currently paying flat rate tariff vs. proposed ToU network tariff: Estimated change in network bill, annual bill, dollars



  - Figure 2.2 shows the distributors' estimate of the annual impact on households' network bill charges for all current flat rate household customers. Relative to ACIL Allen's estimate of the impact on highly vulnerable customers from their survey, a higher proportion of all customers pay would an annual increase in network charges, assuming no change to behaviour.
  - The efficiency gains from higher complexity may be limited in any case: the evidence presented by the Victorian electricity distribution businesses on the frequency, and day of the week and seasonal incidence of peak demands suggests that more focused tariff designs risk excluding peak demand events, limiting the payoff from the incentives to changed behaviour presented by the proposed new tariff structure.

- ACIL Allen was asked to look at the impacts on customers' total electricity bills, based on a sample of customers skewed strongly towards vulnerable people. The ACIL Allen study, with the customer's permission, used those customers' electricity consumption profiles, again assuming full pass through of the network pricing structure into customers' electricity bills. This analysis recognised concerns about the potential impacts of changes to tariff design on vulnerable people, expressed in the second forum.
- The proposed tariff assignment policy was outlined. The tariff assignment policy proposed excluding customers on Life-support and customers with Medical Cooling Concessions from the proposed transition. In addition, over the first five-year period, any customer could opt out of the proposed ToU tariff. Customers on payment assistance programs were excluded from the transition proposal on the basis that the customer's retailer was better placed to assess the appropriate electricity product, including the distribution tariff, for the customer's needs.

In Workshop Three in this forum:

- The presentation focused on the timing, composition and focus of a communications program to go with new tariff structures, assuming the ToU tariff proposal was accepted. This focus reflected the timeline for distributors' tariff proposals and the need for customer communications found by the second forum.

2.4. Questions for third forum

The three questions put to this forum reflected the distribution businesses' program of work since the second forum, taking the outcomes of previous forums and bilateral consultations into account.

On *the ToU pricing structure*, participants were asked to record their support, or lack of support for the following tariff reform proposal:

- Household ToU network tariff made up of only two daily pricing periods – peak and off-peak
- Network tariff peak window would be 3pm to 9pm local time
- Network household ToU peak/off-peak tariff would apply to weekdays, weekends and public holidays identically
- Network household ToU peak/off-peak tariff would apply year-round with no seasonal pricing differences.

On *the proposed transition strategy,* participants were asked to record their support, or lack of support for the following transition proposal:

- Households (or their retailer) have the right to opt-out from the new ToU pricing structure for five years
- Life-support households and households claiming the Medical Cooling Concession should not be reassigned to the new ToU pricing structure.

On the proposed communications plan, participants were asked:

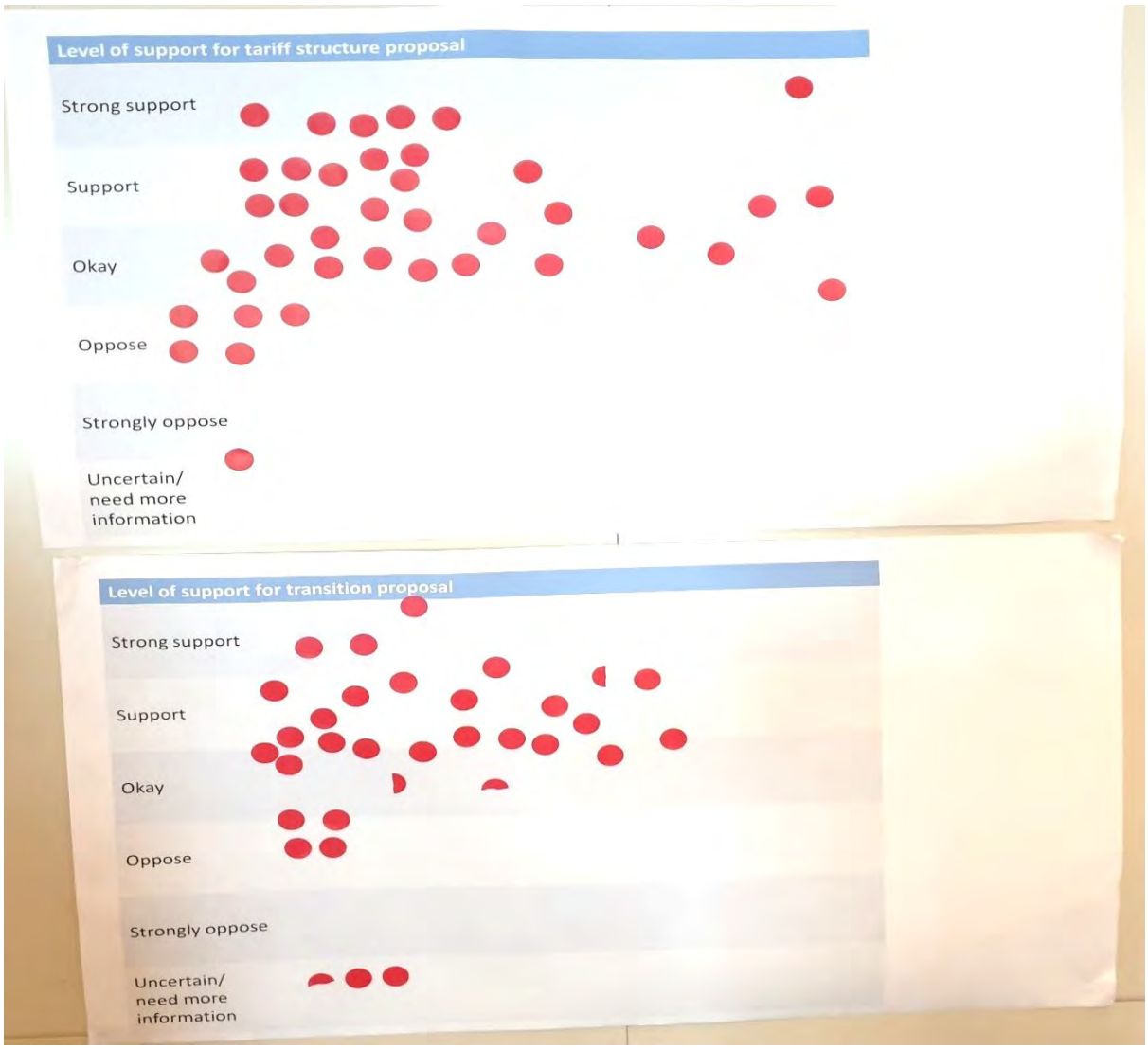
- Whether the proposal looked like a plan, that is, was possible? Was the phasing appropriate? The timing?
- Who should lead the communication process?
- What is the most important thing in communicating change?

The following section discusses participants' responses to these questions and issues raised across the forum.

3. Outcomes and Insights from the Forum Sessions

3.1. Summary

The photo of the individual votes recording participants' support for the tariff structure proposal (top panel) and the transition proposal (bottom panel) shows there was strong consensus support by participants for both proposals by the Victorian electricity distribution businesses.



At the end of Workshop 1, 32 of the 40 participants, (80 percent), said they were "Okay [with]", "Supported" or "Strongly supported" the tariff structure proposal.[6] Six participants opposed the tariff structure proposal, and one participant split their vote between "Strongly opposed" and "Uncertain/need more information".

At the end of Workshop 2, 24.5 of the 31 participants in Workshop 2 (79 percent) said they were "Okay [with]", "Supported" or "Strongly supported" the proposed transition strategy. Three votes, reflecting four individuals, opposed the transition strategy, while two and half were in the "Uncertain/need more information" category.

Unlike the first two questions put to participants, the discussion in Workshop 3 of the high-level communication plan put forward wasn't subject to a vote. The results of Workshop 3 are discussed below (Section 3.4).

The strong consensus support was underlined by the strong ratings given to the forum by participants completing the feedback survey at the end of the day (Section 3.6; Appendix D). Participants' strong feedback about the value of the forum was also shown by behaviour on the day. Although in two cases the feedback forms mention the difficulties of discussion in a relatively crowded room, discussions were respectful of individuals, relatively quiet and allowed all table members to contribute.[7]

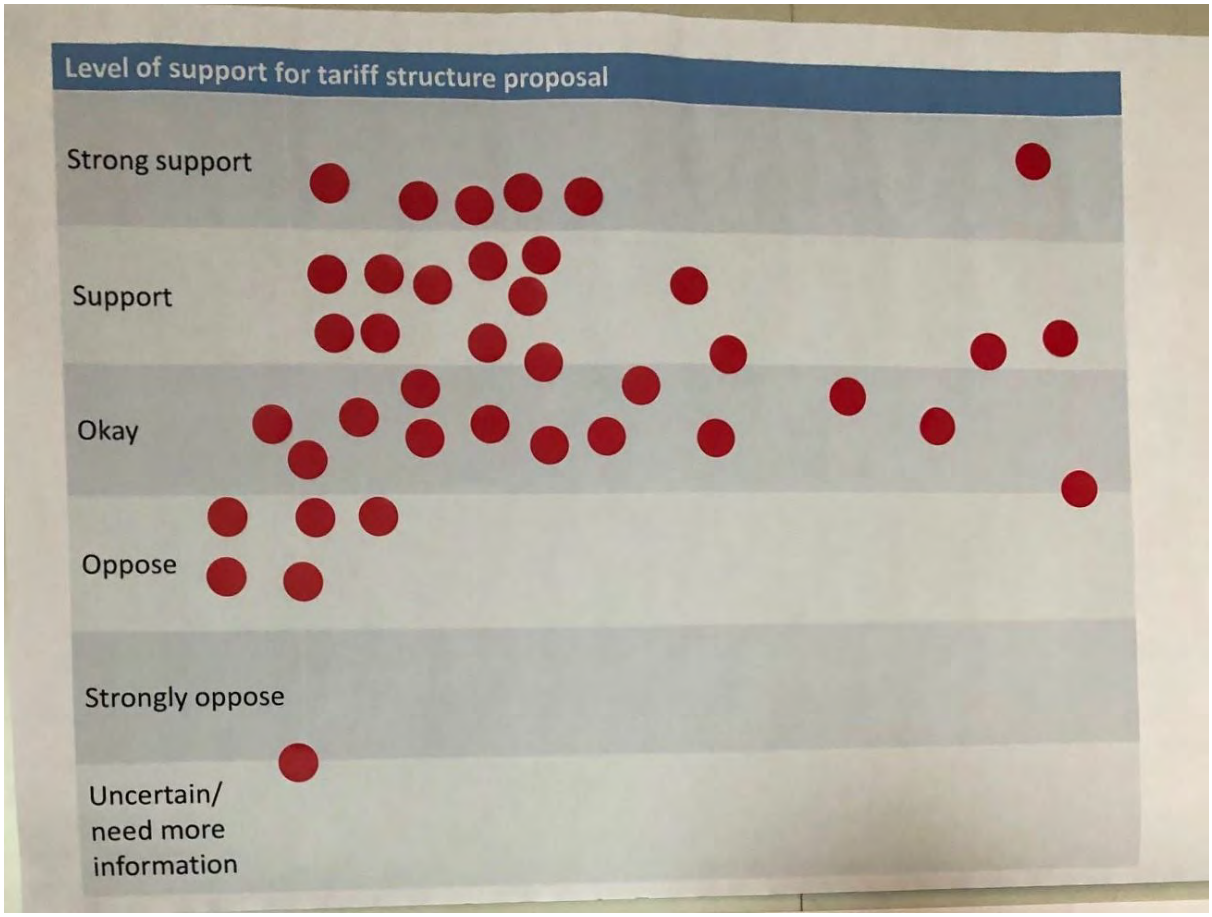
3.2. Workshop 1: Views of proposed ToU Pricing Structure

The strong support shown for the tariff structure proposal followed the presentation by the Victorian electricity businesses on the proposal, a Q&A session and discussions at the individual tables canvassing general views around the table, table participants' ratings, changes to participants' ratings in the course of the discussion, and, where additional information was required, what additional information was needed.

Thirty-two of the 40 attendees, (80 percent), said they were "Okay [with]", "Supported" or "Strongly supported" the tariff structure proposal. Six participants opposed the tariff structure proposal, and one participant split their vote between "Strongly opposed" and "Uncertain/need more information". Notes on the discussions at the tables suggested that with more information on the design choices (two-rate or more, year-round or seasonal) and, in some cases, more information on the effects on specific customer groupings, participants' ratings would have increased, from "Okay" to "Support" in several cases.

[6] In counting the votes, ambiguous votes, that is, votes spanning two contiguous categories have been classified in the lower category, unless it's clear that the intention was ambiguous. In the case of the tariff reform proposal, this shifts one vote from the "Okay" into the "Oppose" category. In the second Workshop, some participants clearly intended to vote in more than one category, the count reflects those participants' clear intentions.

[7] Late acceptances to the forum exceeded the anticipated number of attendees based on previous forums' experience and early indications of attendance, meaning that the room booked was adequate, but not spacious, in the sessions before lunch. After lunch, as is typical, a number of participants apologised and left.



The Q&A session raised several questions about the proposed design, including:

- Why seasonal pricing was not proposed
- Whether there should be separate charges for peaks on weekends, possibly taking the form of "carrots" (rebates, for example) rather than "sticks" (peak pricing)
- Whether, reflecting lower business weekend demand, weekend household pricing couldn't be cross-subsidised from network hosting capacity provided for business.

Other than questions relating to implementation (deferred to the next session), questions in the general Q&A session asked about the interaction of the proposal with the proposed Victorian Default Offer (VDO), and about the economically correct treatment of sunk costs and new investments under the tariff proposal. The issues raised by this question and other questions from industry insiders/specialists during the workshops are discussed in Section 3.5.3.

Simplicity – the two rate, year-round structure proposed – and coverage right across Victoria were strong arguments why participants supported the proposal in their table discussions. Retailers were strong advocates for simplicity over complexity, based on their interactions with customers and, in some cases, their systems' capabilities.

Participants raised questions around the details of the proposal, including:

- The length of the proposed peak window from 3pm to 9pm
- The absence of a seasonal pattern to the proposed structure
- The "blunt nature" of the signal sent by the proposed network tariff – that is, the potential for a more sculpted approach would provide better incentives to customers to shift their behaviour.

At several tables there were questions about the impacts on specific groups, particularly the vulnerable who also lack the ability for adaption to the incentives presented by the new tariff. Some stakeholders standing for groups that might benefit from more sculpted/complex household network tariffs (for example, "more highly engaged customers" or electric vehicle owners) were keen to understand the benefits of network tariffs based on the anticipated behaviours of these customer classes.

The word cloud on the following page was formed from table facilitators' notes on Workshop 1 and the reports from the tables on the discussions. The word cloud content shows a very strong focus on the design characteristics of the tariff proposal – peak pricing, seasonality and simplicity – and all customers. It also shows the debate around the complex, targeted tariff approach vs. the simpler approach put forward at the forum (Section 3.5.3).[8]

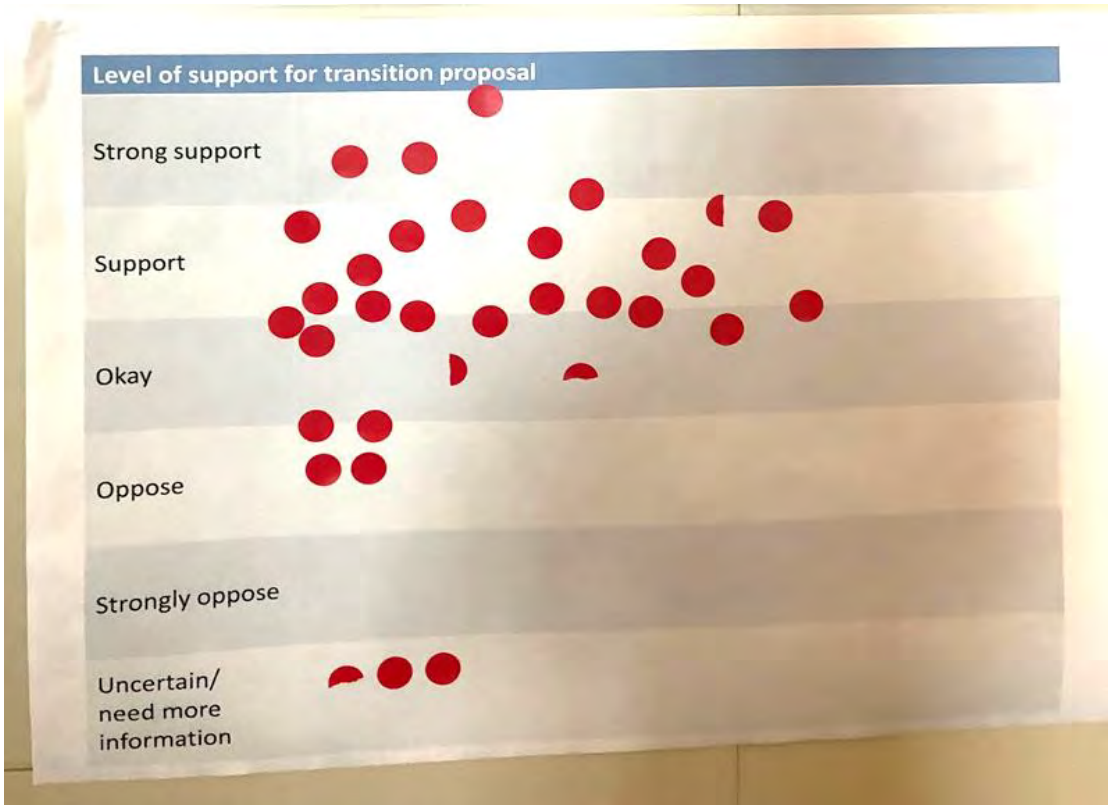
The voting outcomes shown took place after the table discussions. Table spokespeople shared the content of those discussions with the room. Notes on the table discussions suggest no material changes to participants' opinions in the course of those discussions. If anything, the votes suggest a slightly higher level of overall support than the details of the table discussion might have led an observer to predict.

[8] To identify when vulnerable customers was the key source of concern in Workshops 1 and 2, the text of the table reports was reviewed and references to "vulnerable customers" and other related variants were altered to form a single word, distinguishing these discussions from discussions relating to "customers'.

Figure 3.1 Workshop 1: Table Discussion, Word Cloud, top 100 words

3.3. Workshop 2: Views of Transition Proposal

The strong support shown for the transition proposal followed the presentation by the Victorian electricity businesses, a Q&A session and discussions at the individual tables. Table discussions canvassed general views around the table, table participants' ratings, changes to participants' ratings in the course of the discussion, and, where additional information was required, what was needed.



Twenty-four and a half of the 31 participants in Workshop 2 (79 percent) said they were "Okay [with]", "Supported" or "Strongly supported" the proposed transition strategy. Three votes, reflecting four individuals, opposed the transition strategy, while two and half were in the "Uncertain/need more information" category.

The Q&A session following the presentation raised questions about the proposed design, including:

- The effects on the relatively small number of customers other than those on flat-rate network tariffs, such as customers on existing ToU tariffs
- The comparative merits of mandatory assignment *without opt-out*, vs. mandatory assignment *with opt-out* as proposed, vs. a glide path
- The larger benefits for larger customers relative to smaller customers, and whether this reflected a desirable outcome of the design.

These questions followed the questions directed to ACIL Allen after their presentation. Those questions focused on details of the analysis presented, including:

- The desire for a more detailed dive into the underlying calculations of the relative losses and gains of customers with specific characteristics
- Questions about the relative gains of specific groups – city-based customers and rural customers, larger and smaller customers, vulnerable customers not members of specific programs (not on Medical Cooling Program, for example)
- Questions about potential perverse or unintended consequences, such as the impact on usage. For example, the possibility that vulnerable customers could limit their energy use at times when there could be negative health consequences was raised at one table.

As with Workshop 1, discussion at the tables raised questions about the treatment of specific groups not addressed in the proposal, particularly but not exclusively a broadly defined group of vulnerable customers who also lack the capacity for adaption. There was a strong desire to reconcile the materials presented by ACIL Allen on the modelling of the impacts on vulnerable customers and those presented by the Victorian electricity distributors on all household customers. There was also a desire to understand the impacts on very specific customer groups – smaller vulnerable customers, for example, or households on existing network ToU tariffs.

As with Workshop 1, the details of the discussion at the tables suggest higher levels of uncertainty around the proposal/greater desire for further information than the voting shows. The results of Workshop 2 suggest less comfort with the proposal than with the tariff structure proposal in Workshop 1. Relative to Workshop 1, the proportion of participants voting in the "Uncertain/need more information" category increased strongly as a proportion of all participants at that session and absolutely relative to Workshop 1's outcomes. This increase occurred at the expense of two groups of participants – the proportion of participants strongly supporting the proposal fell to 10 percent from 15 percent in Workshop 1 and the proportion of participants in the strongly opposed category similarly fell from 15 percent to 10 percent.

The word cloud on the following page was formed from table facilitators' notes on Workshop 2 and the reports from the tables on the discussions. The word cloud content shows a very strong focus on the details of the transition strategy, particularly for vulnerable customers, and reflects the requirement for additional information expressed by participants in the discussions (Section 3.5.1).

The voting outcomes shown above took place after the table discussions and the sharing of that discussion with the forum. Notes on the table discussions suggest no material changes to participants' opinions following those discussions. The table discussions suggest participants built on questions about the treatment of individual groups and questions about the modelling methodology, raising a larger number of issues than could have been dealt with in the forum's presentations. Those questions, however, did not prevent most of the participants supporting the transition proposal.

Figure 3.2 Workshop 2: Table Discussion, Word Cloud, top 100 words

3.4. Workshop 3: Views on Communication Program Proposal

The word cloud on the following page was formed from table facilitators' notes on Workshop 3 and the reports from the tables on the discussions. The word cloud content shows a very strong focus on *the need for a communications plan to support the introduction of new tariffs, the role of the retailers in the implementation* and an equally strong focus on the *need for the plan to communicate meaningfully to customers.* The table (Table 3.1) that follows looks at selective representative comments from those recorded on the day by table in these categories.

Whether you are approaching the communication plan from a practical implementation approach (can it be done in the time available?) or from a desire to ensure that the communication plan maximises customer uptake by ensuring customers get the right information at the right time, the messages from the table feedback are very similar.

- Cross-industry co-operation is critical to the successful delivery of the message and implementation of the proposed new tariff.
- Given the timelines some retailers outlined in their discussion of the lead time for tariff changes (systems, personnel training, call centre scripts, etc.), the timeline described is at best barely adequate and could be unmanageable if delays occur during 2020 in the wider decision-making processes.
- Reports on the table discussions raised the issue that January and specifically 1 January may not be the best date for introducing a new tariff (not in the comments recorded). On the one hand, 1 January is consistent with the (probable) timing of the introduction of new network tariffs. On the other, it's a time of year with traditionally low personnel numbers at call centers, which could affect the introduction of the proposed tariffs adversely if customers call retailers. The beginning of January also may be associated with a high bill period.
  - Both could be arguments for deferral, but there's also an argument for leaving the date at 1 January, given that customers' largest bill may arrive after the end of the summer and customers with electric heating receive larger bills later in the year.

Most participants support cross-industry participation. Given this is desirable, then the communications exercise is more complex than the high-level proposal put to the forum. A detailed communications plan is needed, according to participants. The plan should be directed towards responding to customers' expected concerns and should grapple with content, outcomes, timing and responsibilities in detail.

Figure 3.3 Workshop 3: Table Discussion, Word Cloud, top 100 words

Table 3.1 Workshop 3: Communications Plan, representative comments, sample

Category	Sample Comments
Need for a plan	Timing [put forward in presentation] makes sense as can't communicate until a decision is made.
	May not be enough time between final decision by AER and implementation, retailers may need to update systems
	Need to make sure everyone is across it. Coordinate with retailers, communicate with community groups and councils.
	Support a working group/Reference group
Role of retailers	retailers need to work as a collective to avoid conflicting messaging. Customers should always be referred to the retailer. Industry should work together on market comments. It is vital that we understand how retailers might respond – 'what's actually being communicated is determined largely by how retailers might respond'.
	should be retailer led.
	If it doesn't pass through at a retailer level is it worth doing the comms - the waters get muddier with the retailer (this was raised in an earlier workshop not in the workshop session)
	Retailers must be involved but also a role for consumer groups. A suggestion that they could reach their customers although it was queried if they have access to the full mass market.
	Feedback the process to regulators/Government/advocates. Let people know how we are approaching it and what is being done. If the advocates know what is going how they can support those comms with their interactions.
	Comms from retailers come with heightened response from customers.
	Fixed terms from a retail perspective and changes the process for a communications perspective. Might take longer for retailers to make the change or communicate. Could be legal implications.
	Government and industry are a good starting point for communications at a high level. Then move to a retailer level, as retailers get the complaints.
	Level of trust is important with the communication. Trust in retailers is considered low. Has to be a collaborative approach.
	We need a high-profile champion
	Retailers are regulated in terms of their communications with customers
	mostly government communications campaigns are terrible
Must be meaningful to customers	Consumer focused stuff is important. Has to contain why we are doing it - what the broader benefit to community/customers [don't want a similar issue to what happened with smart meter roll out where people think the benefit is all to the distributor]. What are the constraints for us as a distributor and why are we looking at this? [need Government to take similar approach to Gillard and the carbon tax - "yes we put it in, but we

Category	Sample Comments
	are also giving you money to manage it"]
	That something goes to the end-users earlier rather than later so that they have time to understand. They need time to seek out the additional resources required if they want to engage.
	Need Clear comms for when things go wrong/managing complaints – this is seen as a critical contact point. Explain what has changed, explain customer options.
	Need to communicate the case for change – do customers understand the need for the change? Discussion of whose role it is to do this (retailers, networks, government). Also, discussed that opt-out arrangements and variations in retailer tariff structures could complicate messaging.
	are there lessons to be learned from AMI roll-out in terms of comms that worked and what didn't?
	Need to explain the WHY? As well as the WHAT?
	Communicating the why is very important - the role for government (VCOSS).
	Explain that for most customers there will be minimal impact
	Explain that this is a modest improvement and need to explain the vision for the future on pricing reform.
	Leave out technical stuff

3.5. Other matters raised

The discussions at and following the forum and the notes from the table discussions and participant feedback highlight some significant issues that the Victorian electricity distribution businesses need to consider. These issues may need further responses in proposing their tariff structure proposal and the associated transition.

3.5.1. Understanding the impacts on Vulnerable Customers

Different timelines for completing the tariff analysis work and sending out the pre-reading meant that, unfortunately, the detailed modelling of general impacts and specific impacts on vulnerable customer groups was available only on the day. There's some unhappiness with the absence of pre-reading expressed in the feedback and table comments, although no suggestion of any lack of good faith by the Victorian electricity distributors. People appear to have recognised the difficulties of juggling complex analyses to a strict timeline.

There were two very important threads to the table discussions:

- There is a need for interested participants to understand how the ACIL Allen work on vulnerable customers and the overall modelling results for all households relate to each other. In some cases, participants are also keen to understand the implications for specific sub-groups among all households, such as the relatively small number of households on existing ToU network tariffs.
  - Eight of the 20 feedback forms specifically mentioned customer impacts as a basis for future work, more than any other individual topic mentioned. Reconciling the two sets of modelling results presented, understanding the differences between the results for the population and the specific vulnerable groups, is a key task for increasing and strengthening support for the transition proposal.
- A need for interested participants to understand the results for vulnerable customers who also lack the ability for adaption, a key coupling of the customer and the customer's circumstances for some of the participants. This could take the form of a targeted workshop going through the methodologies and results of both sets of modelling.
  - As a first step, specific categories of vulnerable customers need to be defined and agreed with concerned stakeholders and the expected outcome for representatives of that class of vulnerable customer modelled. For example, aged pensioners in rental housing combine a (potential) reluctance to change with an inability to affect their heating choices.
  - In addition, in presenting the wider results on vulnerable customer classes (for example, renting vs. mortgage, or with/out gas), what needs to be presented is an explanation for what were seen, rightly or wrongly, as counter-intuitive outcomes from the modelling.

How can the models support answering questions about the outcome for other defined vulnerable groups? Asking for priorities in advance of any further workshop is a possibility. Any analysis, however, will be limited by the coverage of the survey. Assumptions will need to be made in accepting survey participants as representative of specific customer classes.

3.5.2. What about customers on other tariffs? Understanding the impacts on other tariff classes

Feedback forms mentioned a need to better understand the impact on other household tariff classes. This concern also occurred several times in table discussions. Reviewing the materials suggests that there are specific transition issues raised by existing ToU customers' treatment, as well as some interest groups looking forward to future tariff design changes on their business proposition – batteries, EV's, possibly some solar installers. The first of these is more important than the second for the immediate work program and is related to the issues around identifying winners and losers more clearly, discussed in Section 3.5.1.

3.5.3. Simplicity and coverage vs. "better targeted" tariff design: a discussion for insiders?

Tables during Workshop 1 debated the arguments for more complex, better targeted, "carrot vs. stick" designs put forwards against the arguments in favor of simplicity, ease of customer messaging and better uptake. The table notes and discussions on the day suggest there is a group of (largely industry expert) participants not deterred by complexity and with a strong preference for "better targeted" outcomes. Customer advocates and retailers, on the other

hand, strongly favor simplicity. At least one (small) retailer attending made the point that its billing and pricing systems could not support some of the more complex offerings proposed in table discussions.

The argument in favor of ease of implementation (opt-out, not opt-in) and a relatively low bar for the price differential between peak and off-peak should be specifically contextualized against Victoria's and other jurisdictions' experiences in introducing new network tariff structures. Better something that, once successfully introduced, can be refined over time than nothing at all.

3.5.4. Smaller retailers: Pricing and communication requirements

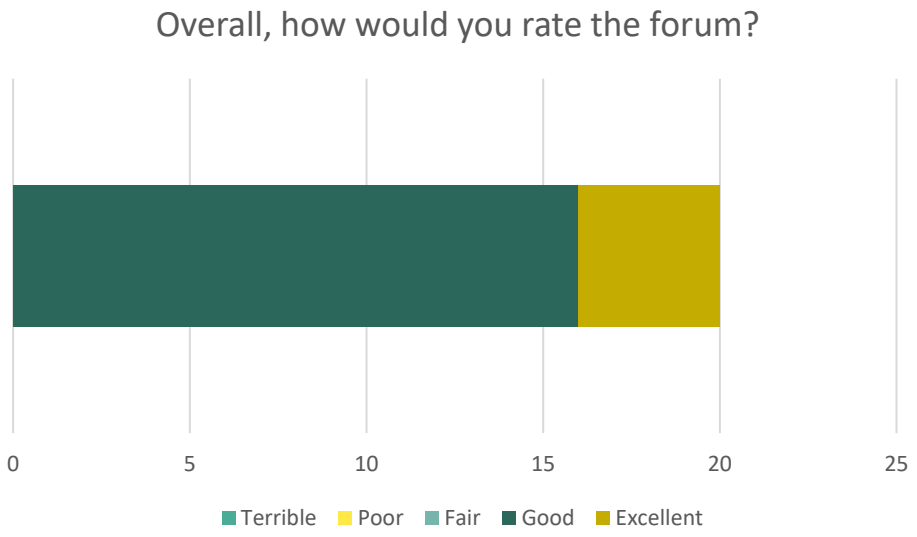
More than one of the retailers present claimed their lead times for the introduction of new household tariffs were longer than the three-month window after the outcome is known presented in the communication plan proposal.

If, as the discussion of the communication plan suggests, retailer participation is critical to the successful implementation of new tariff structures, retailers' capabilities could present a significant barrier to future pricing design. As it stands, retailers without flexible billing and pricing infrastructure may be at a disadvantage when it comes to more complex versions of the current tariff reform proposal, or more complex versions (wider opt-out, or complex forms of glide-path pricing adjustments) of the transition path. A view of the base level retailer capability required will be an important component of adjustments to the current proposals as the proposals move forward.

3.6. The Forum: Participant ratings

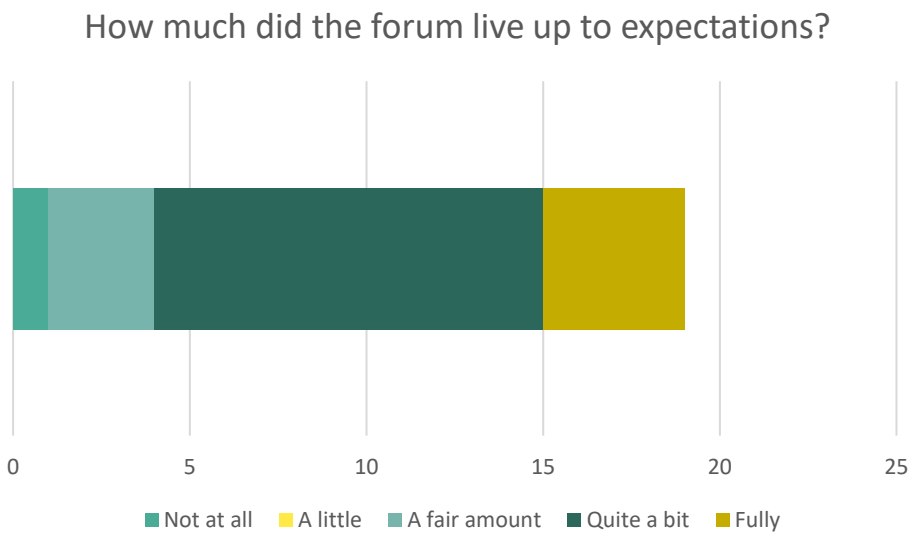
Twenty of the 40 attendees filled in feedback forms on the day. Although participants were offered an email address for later feedback, no other feedback has been received. Strictly, since feedback forms were distributed at the end of the day, the return rate was around two thirds, that is, 20 of the 31 participants staying after the morning's sessions.

Figure 3.4 Forum Rating: Overall Rating, number of responses by rating



Among other questions, participants were asked to rate the forum overall. Of the 20 responses received, 4 people rated the forum Excellent and 16 Good (Figure 3.4).

Figure 3.5 Forum Rating: Living up to expectations, number of responses by rating



Having been asked to describe their expectations on the day, participants were asked to assess whether the forum had lived up to those expectations (Figure 3.5). Fifteen participants responded Fully (4) or Quite a bit (11), while only one participant responded Not at all. However, that participant's feedback form indicated that his/her incoming expectation was that the forum "was going to be about demand implementation. Glad it is not!!", suggesting no unhappiness with the content or coverage of the forum.

Generally, participants who rated the overall experience as Excellent or Good also believed the forum met their expectations Fully or Quite a Bit. Thirteen of the 20 respondents had a common (high) score for both their rating of the forum and their evaluation of the extent to which the forum lived up to expectations.

Free text feedback from forum participants was consistent with wider table feedback. The feedback included:

- more detail on the modelling approach
- more information needed on the impact on specific groups of customers, whether low income, low consumption or legacy tariff
- more work on the communications plan, including on cross-industry collaboration in its development.
  - There was a strong message about the need for distributors and retailers to be more aware of each other's drivers in the design and introduction of tariffs.
- questions about data access, including discussion of better, real-time data access for customers
- questions about (the level of) fixed charges.

A. Forum Agenda

Agenda:

Victorian Electricity Future Forum: Household Network Pricing

Date:	**Wednesday, 20 March 2019**
Time:	**9.15am – 4.00pm**
Location:	Cliftons Level 18, Freshwater Place 2 Southbank Blvd Southbank
Facilitator:	Patricia Boyce Director, Seed Advisory

Time	Item	Presenter
9.30 am	Welcome	Patricia Boyce
9.35 am	**Introduction** Opening speech by Executive General Manager, Regulated Energy Services, AusNet Services *What problem are we trying to solve with tariff reform?*	Alistair Parker
9.45 am	**Forum objectives/Recap**	Patricia Boyce
9.55 am	**Vic Distributors' Pricing Reform Proposal - Time-of-use (ToU) pricing** Presentation by Head of Regulatory Strategy and Pricing, CitiPower, Powercor & United Energy *Overview of our current proposal, including how and why we've adopted this approach*	Mark De Villiers
10.20 am	**Q&A**	
10.35 am	**Workshop 1 & Morning Tea** *Feedback about pricing proposal*	Break out activity
11.45 am	**Recent experiences of tariff reform** Presentation by Director, Research, Energy Consumers Australia *Learnings from tariff reform in other Australian jurisdictions*	Lynne Gallagher
Noon	**Q&A**	
12.15 pm	**LUNCH**	

Agenda:

Victorian Electricity Future Forum: Household Network Pricing

Time	Item	Presenter
12.45 pm	**Forum objectives for the afternoon/Recap**	Patricia Boyce
12.50 pm	**Results of ACIL Allen Pricing Study** Presentation by Executive Director, ACIL Allen *Findings from research into the impact on vulnerable customers from a shift to ToU pricing*	Jeremy Tustin
1.05 pm	**Q&A**	
1.20 pm	**Preferred transition approach** Presentation by Manager, Pricing and Compliance, Jemena *Outline of our preferred transition approach and rationale*	Alex McPherson
1.45 pm	**Workshop 2** *Feedback about transition approach*	Break out activity
2.45 pm	**Afternoon Tea**	
3.00 pm	**Communicating changes to customers** Presentation *Potential approaches to communicating pricing changes to customers to support transition to ToU pricing*	Alex McPherson
3.10 pm	**Workshop 3** *Practical implementation issues for various approaches to communicating changes*	Break out activity
3.45 pm	**Next steps** Where to from here?	Patricia Boyce
3.55 pm	**Close** Closing speech by General Manager, Regulations, AusNet Services	Tom Hallam
4.00 pm	**FORUM CONCLUDES**	

AusNet services Jemena CitiPower Powercor united energy

B. Pre-Reading

Victorian Electricity Networks Forum Series

Third Forum - Household Network Pricing

Pre-reading

March 2019

Powercor AUSTRALIA

CITIPOWER

AusNet services

united energy

Jemena bringing energy to life

TABLE OF CONTENTS

Abbreviations ..... **iv**
1. Background **1**
1.1 Purpose 1
1.2 About pricing structures 1
1.3 We are reviewing our pricing structures to apply from 1 January 2021 2
1.4 Separate small business consultation 3
2. Reflections on what we have heard so far **4**
2.1 Households 4
2.2 Customer and stakeholder representatives 4
2.3 Retailers 5
3. ToU network pricing is an appropriate next step for Victorian households **6**
3.1 The problem we are trying to address 6
3.2 Looking beyond 2025 6
3.3 A ToU pricing structure best balances stakeholder feedback as well as the challenges we are currently managing 8
4. What would the ToU pricing structure look like? **10**
4.1 Two rates or three? 10
4.2 When is the peak-time period? 10
4.3 Include weekends and public holidays? 13
4.4 Should the peak period only apply at certain times of the year? 13
5. Customer outcomes with a ToU network pricing structure **15**
6. Transition options for the ToU pricing structure **16**
6.1 Some customers have limited choice about when they use electricity 16
6.2 Vulnerable customers 17
6.3 Slower transition options 19
7. Complementary customer support measures **22**
7.1 Customer communications 22
7.2 Other complementary measures 22

ABBREVIATIONS

AER	Australian Energy Regulator
EV	Electric vehicle
AEMO	Australian Energy Market Operator
ToU	Time of use
SEIFA	Socio-economic indexes for areas

1. BACKGROUND

1.1 PURPOSE

This document has been prepared by the Victorian electricity distributors—AusNet Services, CitiPower, Jemena, Powercor and United Energy—the five companies that transport electricity to homes and businesses across Victoria. It focuses on residential customer network pricing structures and provides background information on our proposed pricing structure and transition approach.

We have prepared this document as pre-reading to a stakeholder forum being held on 20 March 2019 in relation to residential network pricing structures. The purpose of this document is to provide information to participants on the issues for discussion, to assist them to provide feedback on the day.

1.2 ABOUT PRICING STRUCTURES

AusNet Services, CitiPower, Jemena, Powercor and United Energy are the five companies that transport electricity to homes and businesses across Victoria. We charge electricity retailers for providing these services, not customers directly. But ultimately, customers pay for our services within the electricity bill they receive from their retailer.

Before we set the prices we charge electricity retailers, we must determine how to structure our prices. At its simplest, there are three main types of residential electricity network pricing structures as shown in Figure 1–1.

Figure 1–1: Victorian household network tariff structures (simplified)

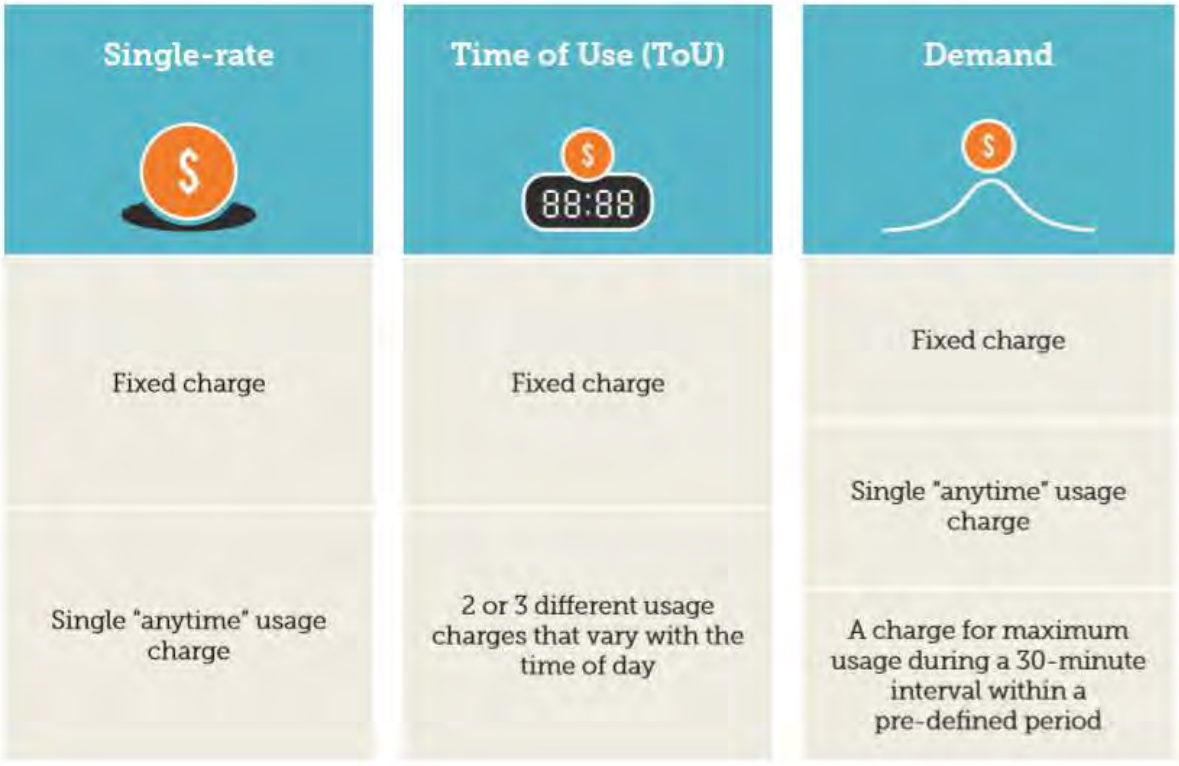
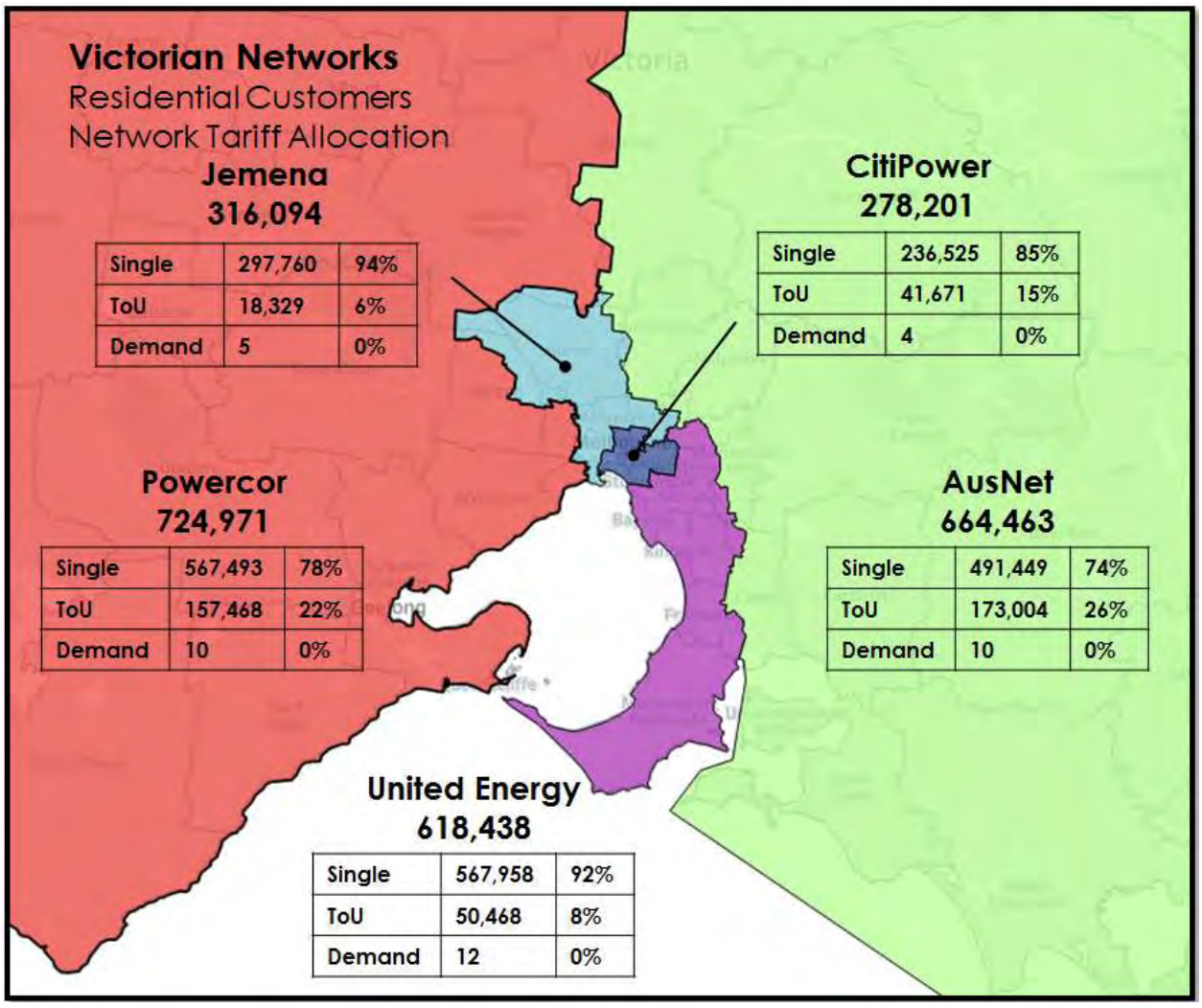


Figure 1–2 sets out the approximate number of Victorian residential customers on the three electricity network pricing structures as at December 2018.

Figure 1–2: Victorian residential customers are currently assigned to different network pricing structure



1.3 WE ARE REVIEWING OUR PRICING STRUCTURES TO APPLY FROM 1 JANUARY 2021

Every five years we undertake a major review of our electricity network pricing structures. We are currently undertaking one of these review processes, and any new or changed pricing structures will come into effect from 1 January 2021. We need to submit a proposed set of electricity network pricing structures to the Australian Energy Regulator (**AER**) for approval in July 2019.

1.4 SEPARATE SMALL BUSINESS CONSULTATION

The circumstances facing small businesses are quite different to households. So we are undertaking targeted consultation with small business representatives to ensure their perspectives are understood and carefully considered.

We are currently consulting with the following small business representatives regarding small business electricity network pricing structures:

- Council of Small Businesses Organisations Australia;
- Australia Industry Group;
- Energy Consumers Australia; and
- Victorian Chamber of Commerce and Industry.

If you have any feedback on who we should engage with in relation to small business pricing structures, or any feedback on these yourself, please let us know.

2. REFLECTIONS ON WHAT WE HAVE HEARD SO FAR

Our current views on future residential network pricing structures are a product of our engagement with customers and stakeholders.

2.1 HOUSEHOLDS

The table below describes the feedback we have generally received from residential customers to date. Most consultation has conducted through face-to-face customer forums held by the various distributors.[1]

What we have heard from households	Our reflections on what we have heard
• Electricity pricing is complex and not well understood; • It is fair for households to pay in line with the cost they each impose on shared community infrastructure like an electricity network; • Some customers may need to be supported if any changes to pricing structures are imposed; • Mixed support for single-rate, ToU, and demand pricing structures; • ToU pricing is more readily understood than demand pricing; • There is little support for a subscription pricing(i) because of its relative complexity; • Peak time rebates(ii) are supported if cost-effective.	• The status of electricity as an essential service drives most households to want us to price our services in a way that carefully considers those least capable of responding to any changes we might implement; • Customers prefer pricing mechanisms that reward rather than mechanisms that penalise (a preference for "carrots" over "sticks") • Many customers, despite access to personalised information, time, and experts, have difficulty understanding demand pricing; • ToU pricing is well understood and "part of life" – customers readily cite examples such as public transport fares as examples of ToU pricing.

(i) This option applies a fixed charge for each customer based on pre-defined peak period usage band

(ii) Peak time rebates involve paying customers in a particular local area (depending on the location of a constraint) a rebate for using less electricity than they were intending to at the time we called an electricity network peak event.

2.2 CUSTOMER AND STAKEHOLDER REPRESENTATIVES

The table below summarises our consultation efforts with customers and stakeholder representatives to date, what we have heard, and what we are doing in response. This consultation has been conducted through a number of one-on-one and small group meetings, a public consultation paper, as well as two major consultation forums held in 2017 and 2018.

[1] See for example: Jemena's Peoples Panel: https://yourgrid.jemena.com.au/33868/documents/87920; CitiPower, Powercor and United Energy deliberative forums: https://talkingelectricity.com.au/wp/wp-content/uploads/2018/08/CPPCUE-RESI-AND-SME-Forum-Report-Final-5-Jul-2018.pdf.

What we have heard from customer and stakeholder representatives	Our reflections on what we have heard
• Pricing principles should be: affordability, simplicity, equity, economic efficiency and adaptability – and when designing tariff structures to meet these, recognition that some trade-offs are required between objectives; • Pricing structures should be able to be understood and managed by both retailers and customers; • Peak time rebates are supported if cost-effective; • Transition and complementary measures are important to consider.	• Given retailers often mirror network pricing structures, it is important that customers understand, and can therefore respond to, network pricing structures; • We agree that moving to more cost-reflective pricing structures should be explored; • We will continue to explore demand management options as potentially a very powerful tool to manage peak demand; • Transitional and complementary measures are the focus of the third forum.

2.3 RETAILERS

We have engaged with a number of retailers in relation to network pricing. Further, on 9 February 2019 we wrote to all retailers outlining some key elements of our proposals, and seeking their feedback. Some retailers have responded to this letter. The table below summarises what we have heard so far and what we are doing in response.

What we have heard from retailer representatives	Our reflections on what we have heard
• The five distributors should align their residential pricing structures; • Network pricing structures should be focussed on retailers rather than customers; • Customers need to be informed of any changes that could result to their bills from a change in pricing structures; • Retailers would value further engagement with networks on tariff reform going forward.	• Generally, retail pricing structures have tended to closely align to network pricing structures – as a result stakeholders have asked us to have one-eye to customer outcomes if this pattern continues into the future; • We agree that customers should be made aware of material changes to their retail pricing structures; • Retailers determine when and how it may change a customers' retail pricing structure, so customer communications about pricing structures must be done collaboratively.

3. TOU NETWORK PRICING IS AN APPROPRIATE NEXT STEP FOR VICTORIAN HOUSEHOLDS

3.1 THE PROBLEM WE ARE TRYING TO ADDRESS

Our costs, and therefore customers' bills, are influenced by the need to meet peak demand on the electricity grid – that is, when everyone is using electricity at the same time. In most parts of Victoria this occurs on a very hot day when households are using air-conditioners. In some country areas, particularly where there is no natural gas, peak usage can also be caused by controlled household hot water heating and household electric heating on a very cold winter's night.

If we can reduce growth in peak usage, this will reduce future network capacity requirements, and put downward pressure on customer bills in the long-term.

In the past, new capacity investments have been significant, particularly as household air-conditioner penetration has increased.

Our analysis indicates that, at this point in time, additional capacity requirements over the 2021-25 period are mostly driven by new customers connecting to the network, rather than growth in the average customer's electricity usage at the time when the network is under most stress.

It is important to note that new customers pay a capital contribution when connecting to the network. This is calculated so that network prices won't be affected by newly connecting customers, including due to their contribution to peak demand.

Over the 2021-25 period, additional capacity investment will be a relatively low part of Victorian networks' cost base. Therefore deferring these investments would have a very modest impact on customer bills. As shown in Table 3–1, even under the extreme case where more cost-reflective network prices could defer **all** 2021-25 demand-driven capacity investment, the impact on household bills would be less than 1 per cent. The average Jemena household would see the biggest 2026 retail bill reduction – this would be only be $11 (or 0.8 per cent).

Table 3–1: Size of the prize – contribution to 2026 retail bill of 2021-25 capacity investment caused by average coincident peak demand growth

Distribution area	Demand-driven investment 2021-25 ($2020, $m)	Contribution to 2026 retail bill	
		Dollars ($2020)	% of total bill
CitiPower	0	0	0.0
Powercor	141	5	0.3
United Energy	67	3	0.2
Jemena	100	11	0.8
AusNet Services	67	3	0.2

3.2 LOOKING BEYOND 2025

While the short-term benefits of cost-reflective pricing are reasonably limited, we also need to think about the future beyond 2025.

There is uncertainty about how customers will use our network beyond 2025, particularly the intersection with solar, batteries and electric vehicles (**EV**).

In particular, stakeholders have raised the potential growth in EV uptake (following global trends) which may lead to a return in peak demand driving additional investment.

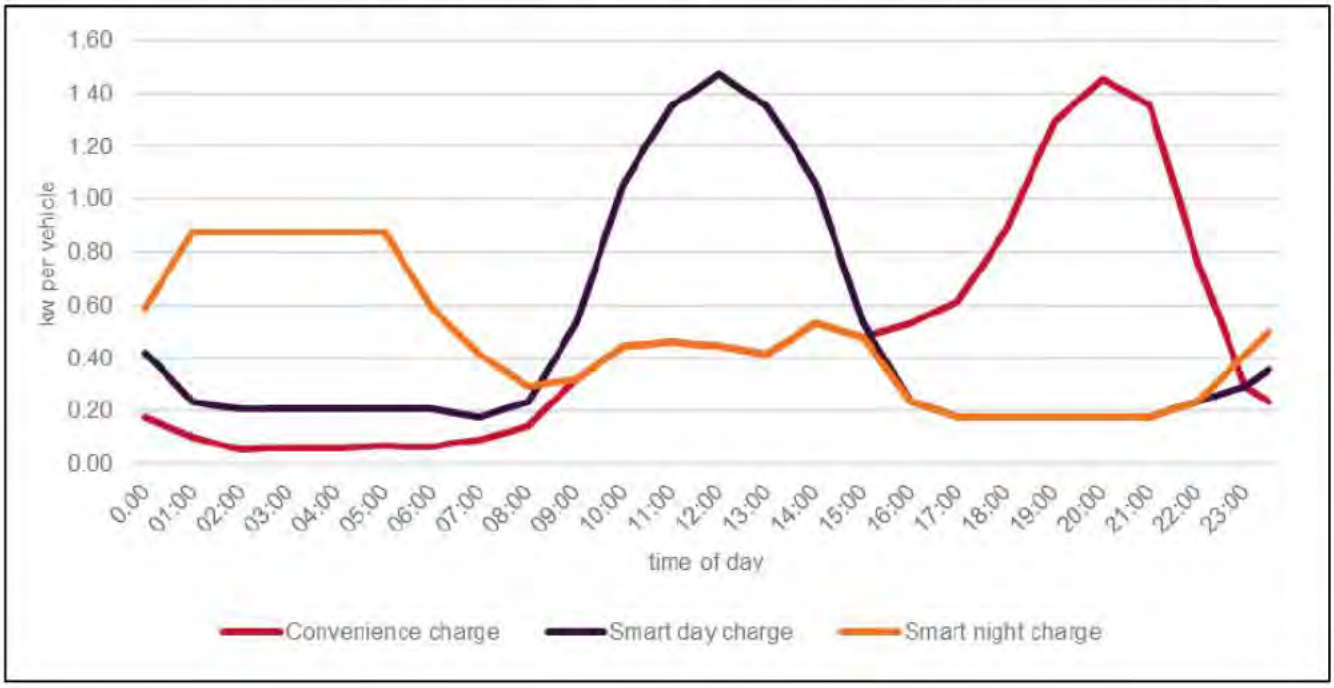
While there is general consensus that the penetration of EVs will increase, there is less certainty about the scale and pace of change. According to the Australian Energy Market Operator's (**AEMO**) 2018 Integrated System Plan:

> *Increases in electric vehicles will impact the uses of power, but over the plan period [to 2039/40] they are forecast to have a small impact on overall grid-based demand.*[2]

We have considered at a high-level how EV owners might charge their vehicles into the future. Figure 3–1 provides an example of electric vehicle charging profiles for a residential user in summer under three charging options[3]:

- convenience charging—predominantly charged as soon drivers get home, including during peak hours.
- smart day charging—predominantly charged in the middle of the day during the solar trough.
- overnight charging—predominantly charged overnight, after the evening demand peak.

Figure 3–1: Electric vehicle daily charge profile, residential user (weekday in February)



Source: AEMO, 2018 Electricity Statement of Opportunities, August 2018.

A future challenge will be optimising this EV load to ensure the peak does not intensify and shift to just after the peak-pricing window we may initially target, or simultaneous charging causes ramping issues on the network. In the longer-term diversifying overnight charging periods (smart-night charging) potentially through automation technology may best facilitate the integration of EVs into the grid. There are a range of ways to incentivise this,

[2] AEMO, *Integrated System Plan*, July 2018, p5.

[3] Sourced from AEMO, *2018 Electricity Statement of Opportunities*, August 2018, p32.

for example through controlled load pricing arrangements – these arrangements are in place for certain appliances today.

While EVs are not expected to be a key driver of peak demand growth prior to 2025, we do expect there to be increasing diversity in how customers use electricity, due to an increasing number of customers installing rooftop solar or large air-conditioning systems. Moving towards cost reflective pricing, in the form of time of use (**ToU**) pricing, will be fairer as it will better reflect the real costs of using the network in light of these changes. We note that the Energy Security Board has raised the importance of moving customers with smart meters onto cost-reflective network pricing structures.[4]

Providing appropriate price signals assists customers to make efficient investment decisions and will create markets for new technologies (e.g. batteries) that can efficiently reduce the need for future network investment. Again, the potential for economic uptake of these technologies is likely to be higher in 2025 and beyond than it is today.

3.3 A TOU PRICING STRUCTURE BEST BALANCES STAKEHOLDER FEEDBACK AS WELL AS THE CHALLENGES WE ARE CURRENTLY MANAGING

Taking the above into account, together with customer and stakeholder feedback, we consider:

- a move towards more cost reflective pricing continues to be in the best interests of customers; however
- the pace of this move should be commensurate with the potential short to medium-term benefits of change.

Box 3–1: Proposed ToU pricing structure for residential customers

We propose to re-assign all residential customers on a single-rate, or existing ToU network pricing structure, to a new, cost-reflective, ToU pricing structure.

The vast majority—over 83 per cent—of Victorian residential customers are currently on a single-rate network pricing structure. Almost all other residential customers are currently assigned to an existing ToU pricing structure. Our understanding is that retailers generally mirror network pricing structures and customer assignments at the retail level.

We consider a ToU pricing structure, at this point, best meets these key principles co-designed with key stakeholder groups in our first stakeholder forum in 2017 (see Table 3–2). Our rationale for reassigning customers currently on a ToU network pricing structure (as well as those on a single-rate structure) to the new cost-reflective ToU pricing structure is:

- legacy ToU network pricing structures have a peak-period of 7am to 11pm, typically on weekdays only, which does not align particularly well to periods of peak demand; and
- a single household ToU network pricing structure will make communicating a clear message to customers easier, and mitigate potential for customer and stakeholder confusion into the future.

[4] COAG Energy Council, Energy Security Board, *Strategy Energy Plan – consultation on proposed metrics*, November 2018.

Table 3–2: Assessment of ToU pricing structure against principles designed by key stakeholders

Principle	How a ToU pricing structure is consistent with this principle
Simplicity	Compared to other options (such as demand pricing), it is easier for customers to understand that consumption between certain times is more costly than consumption during other periods. A single ToU pricing structure is simpler to communicate, supporting reassignment of customers currently on a ToU pricing structure to the new ToU pricing structure. Beyond 2025, potential growth in home automation and third party energy management services may make it less important to customers to directly engage with and understand different electricity pricing structures.
Economic efficiency	Prices are more reflective of network costs than the status quo, reflecting a move towards more cost-reflective pricing
Equity	Compared to the status quo, customers using the network relatively more at peak times will pay more than customers using the network during off-peak periods, moving towards paying a fair share of network costs.
Affordability	The opt-out arrangements can help customers to avoid bill shock. Transition and complementary support measures may also be appropriate.
Adaptability	Introducing a ToU pricing structure as the default pricing structure provides a solid foundation for any potential new pricing structures that may be introduced after 2025. Due to future uncertainty, it is unclear what pricing structure will be preferable in the future. The two part or three part ToU pricing with fixed pricing periods could evolve into one, or a combination, of the following: • A demand pricing structure with a similar peak window • A ToU pricing structure with an additional critical peak price (or rebate) window nominated by the distributor on a few occasions a year; • A dynamic ToU pricing structure; • A locational ToU (or demand) pricing structure or rebate where the peak/rebate ratio varies depending on the cost/benefit to the network at certain location. Monitoring developments and considering the effectiveness of network pricing with greater cost reflectivity (e.g. demand-based prices) will be a key focus for 2021-25.

4. WHAT WOULD THE TOU PRICING STRUCTURE LOOK LIKE?

We intend to propose a consistent ToU structure across the 5 networks. There are some key decisions we need to make when designing a ToU pricing structure. Box 4–1 sets out our strawman ToU pricing structure, for consultation with stakeholders on 20 March 2019.

Box 4–1: Strawman for stakeholder feedback: ToU pricing structure

Our current view is that the new ToU pricing structure would:

- comprise only two daily pricing periods – peak and off-peak;
- have a peak window of 3pm to 9pm local time;
- apply weekdays, weekends and public holidays; and
- apply year-round with no seasonal pricing differences.

4.1 TWO RATES OR THREE?

Currently, ToU pricing structures are generally two-rate (peak/off-peak) or three-rate (peak/off-peak/shoulder). Prices are highest during the peak period, lowest during the off-peak period, and somewhere in-between during the shoulder periods. The shoulder periods sit either side of the peak period.

We prefer a 2-rate ToU pricing structure because it is simple and customers only have to remember two times within the day – when the peak period starts and ends. In their conversations with us customers show an awareness of peak and off-peak pricing, but have rarely mentioned the existence of a shoulder-period. We are unsure if a shoulder period is particularly effective.

4.2 WHEN IS THE PEAK-TIME PERIOD?

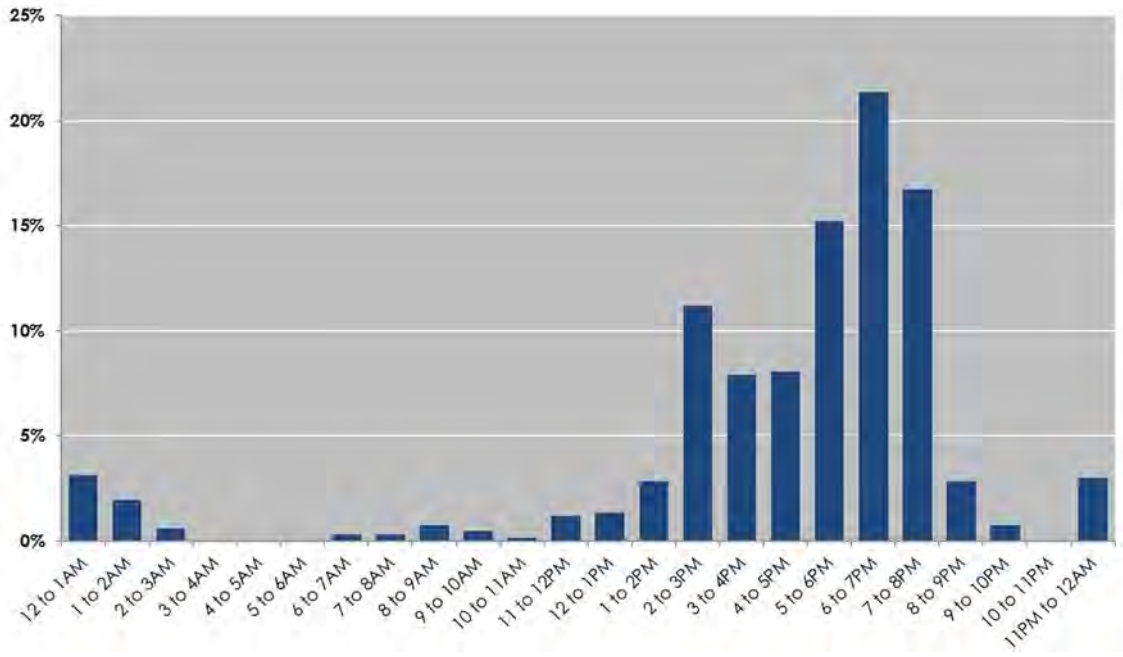
The objective of a ToU pricing structure is to provide customers with an incentive to move discretionary load into off-peak periods, when the network is under less stress.

We therefore need to choose a peak-time that reflects when households are using a large amount of electricity at the same time the local electricity network is under stress.

Figure 4–1 shows when our (approximately) 230 zone substations are under most stress. Most zone substations are peaking between 2pm and 8pm (local time)[5]. There are also "tails" to this period, with about 10 per cent of substations peaking between 11am and 2pm, and 8pm and 10pm, local time.

[5] Zone substations peaking between 11pm and 2am reflect zone substations supplying customers with controlled load.

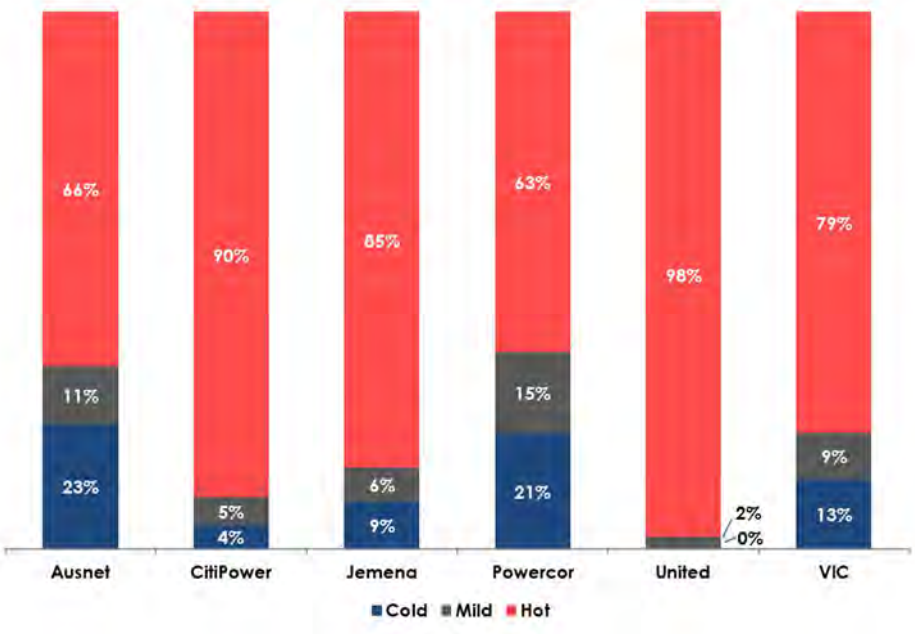
Figure 4–1: Victorian zone substation peaks by hour of day (2015-17), local time



We also need to assess when households are using the most electricity. To do this, we ranked each 30 minute interval between 1 January 2016 and 31 December 2018 by total household consumption across Victoria. We observed that the top 100 household consumption intervals all occurred in December, January, February or March.

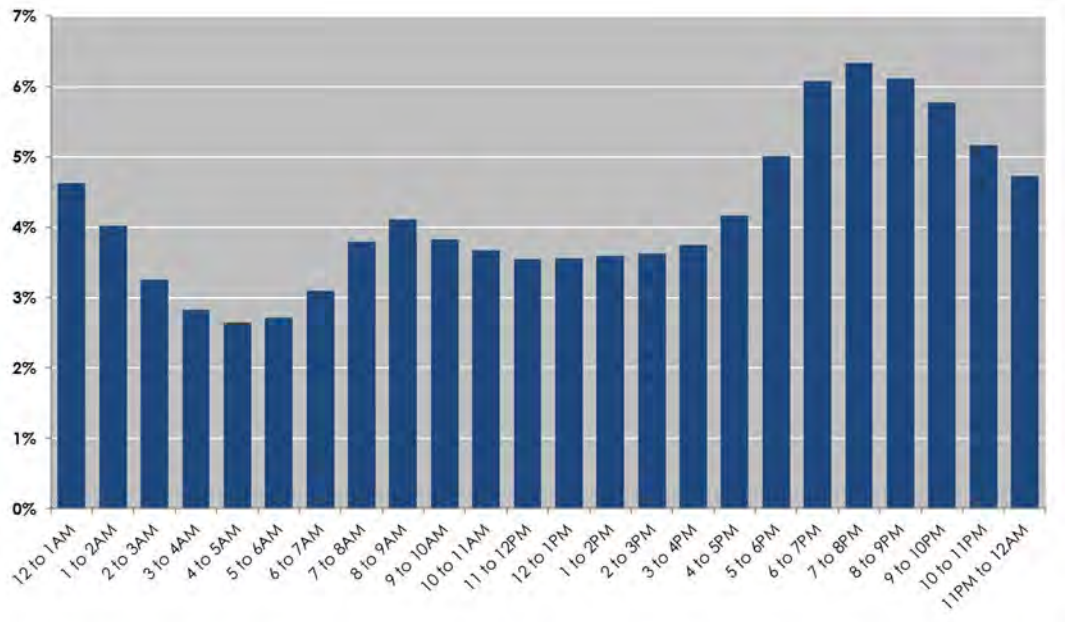
We also looked at the temperature when substations peaks where occurring. As can be seen in Figure 4–2, most occur when it is hot (although there are some that occur in colder months).

Figure 4–2: Substation peak by temperature, 2015-17



Therefore, while we cannot ignore winter months, our analysis suggests we should focus on household consumption over December to March, which are generally the hottest months of the year. Figure 4–3 shows that between December and March, households tend to ramp up consumption from 4pm and continue to use large volumes of electricity to 1am (most controlled hot water heating), peaking between 6pm and 9pm during the evening.

Figure 4–3: Proportion of 2016-18 household consumption by hour of day, local time summer plus March



Taking Figure 4–1 and Figure 4–3 together (i.e. when households are using the most electricity at the same time as the network is under most stress), we intend to adopt 3pm to 9pm, local time, as the peak-time period for our new ToU pricing structure. The expected continued high rate of solar PV installations could reduce demand in the afternoon and therefore in the future peaks may occur a little later in the day.

One of the key questions we needed to consider in choosing this period is whether this might simply "move" the peak to just before or after this 3pm to 9pm time period, or for some networks exacerbate peak demand if that tended to occur on the fringes of 3pm to 9pm. This could be partially addressed through the use of a shoulder pricing period.

Over the 2021-25 period we don't expect that peak demand will shift outside 3pm to 9pm because:

- customers will continue to use air-conditioners on hot afternoons;
- as noted by AEMO, EV take-up is not expected to grow to the extent that it will have a material impact on the load shape over this period;
- to the extent that EV load grows faster than expected, we expect home convenience-charging (refer section 3.2) to be the predominant charging option in the near-term, and this would likely occur as households arrive home from work from 5pm;
- home battery installations are not expected to grow to the extent that they will have a material impact on the load shape over this period, despite recently announced government subsidies for a small number of batteries;
- while solar PV installation penetration is expected to increase, and price signals may encourage more solar panels to be oriented westwards, this is not expected to materially affect demand from 6 pm; and

- minimal impact is expected from customers moving other discretionary load.

4.3 INCLUDE WEEKENDS AND PUBLIC HOLIDAYS?

We need to determine which days to apply the ToU pricing structure for our residential customers.

We have therefore looked at when residential peak loads occur across Victoria, and whether there is any clear pattern to justify including or excluding weekends (104 days of the year) and/or public holidays (13 days of the year).

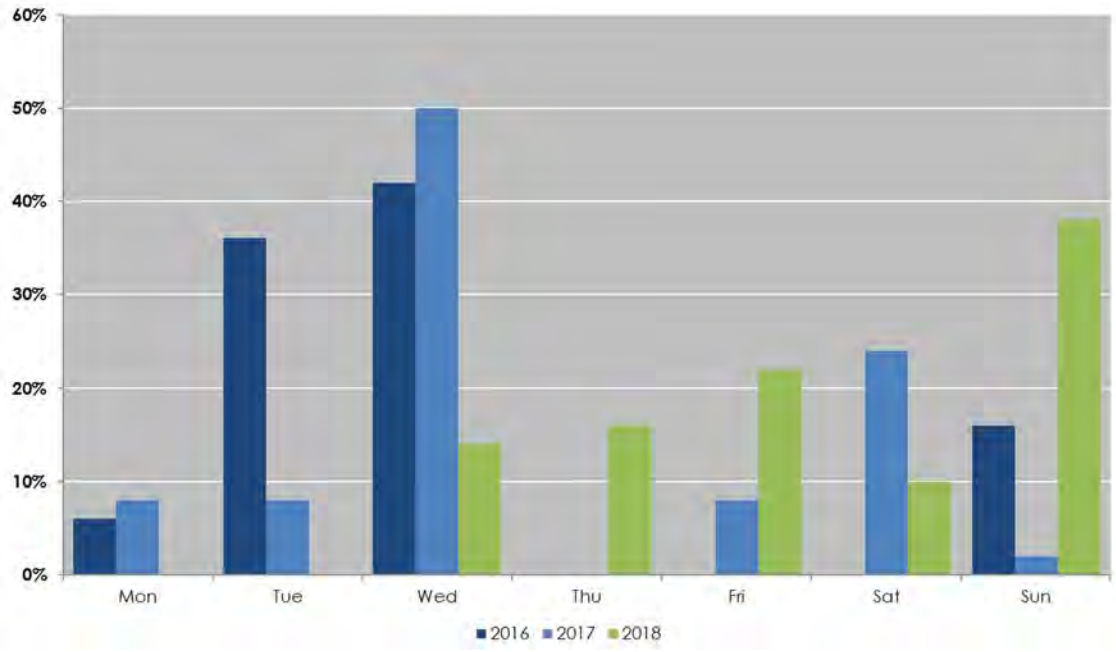
Residential peaks can and do occur on any day of the week (see Figure 4–4) . This is primarily driven by household air-conditioning load on hot summer days. We are therefore minded to apply the ToU pricing structure on all days of the week, including weekends.

The second question is whether we include public holidays.

Most substations peak on a very hot day, and very hot days can logically occur on public holidays (most likely those in summer). By chance, there have been no extremely hot days falling on a public holiday in recent years.

We are minded to include public holidays because an extremely hot day can logically fall on a public holiday in the future and this choice supports pricing simplicity. If stakeholders have strong views to the contrary, they may wish to consider whether it is acceptable to simply exclude public holidays that do not fall in summer.

Figure 4–4: Days on which the top 50 Victorian residential half-hour peaks fell (2016 to 2018)



4.4 SHOULD THE PEAK PERIOD ONLY APPLY AT CERTAIN TIMES OF THE YEAR?

At most zone substations in Victoria, residential peak load occurs in summer. This has led us to consider whether we just apply the new ToU price during summer, or perhaps the period of daylight savings, or year-round.

Our initial view is to apply the same ToU pricing all year around because of its simplicity. This choice:

- avoids customers having to remember when the pricing period starts and ends;
- may assist customers understand ToU pricing if the pricing structure is seen on every bill received by the customer during the year, rather than just some bills;
- would result in less confusing retail bills as it will avoid potentially two pricing structures appearing on the bills that cover time-periods when the ToU pricing structure does and does not apply; and
- recognises that 22 per cent of zone substations do peak in winter due to electric-heating load (as noted in Figure 4–2).

5. CUSTOMER OUTCOMES WITH A TOU NETWORK PRICING STRUCTURE

We do not know with certainty how retailers would respond to a ToU network pricing structure. However, as noted in section 2, stakeholders expect us to have "one-eye" on customer outcomes if retailers mirrored the ToU network pricing assignment at the retail level.

To do this, the five networks have used a common model to predict the network component of customers' 2019 retail bill under their current single-rate or ToU network pricing structure, and new ToU network pricing structure.

We will present the results of this analysis at the forum on 20 March. Unsurprisingly, there are a range of outcomes depending on the customer's usage profile. We need to be mindful of the impacts on customers. This gives rise to the potential need for transition options, as outlined in section 6.

5.1.1 WHAT DOES THIS MEAN FOR CUSTOMERS INSTALLING SOLAR OR PURCHASING AN EV?

Some industry and customer representatives have asked us to be particularly conscious of outcomes for customers installing solar or purchasing an EV.

Under its moderate scenario, CSIRO estimate that rooftop solar capacity will increase by about 50 per cent by 2030.[6] Recent Victorian Government announced solar rebates may result in an even higher rate of household solar PV uptake. A customer (or their solar installer) installing solar for the first time, or upgrading their solar system is required to inform their distribution network.

Under our proposal, new household solar customers would be assigned to the new ToU pricing structure. This would provide appropriate price signals to assist customers to make efficient investment decisions. It will also promote markets for new technologies – for example, solar customers may have a greater incentive to invest in a battery to absorb excess solar generation and reduce electricity drawn from the network during the peak period. AusNet Services and United Energy currently assign new solar customers to a ToU network pricing structure.

As noted in section 3.2, we expect an increase in the up-take of electric vehicles although the scale and pace of change is less clear and relatively low until at least 2025.

To the extent that EV charging occurs at home (and not at public charging stations), we expect this to be largely convenience-based commencing when households return home from work at around 5pm. A ToU network pricing structure would incentivise these customers to shift EV-charging to after the peak window. Consistent with AEMO expectations, we do not expect new EVs to have a material impact on peak demand before 2025 (and potentially 2030).

[6] CSIRO, *Projections for small-scale embedded technologies*, June 2018, pp35-36.

6. TRANSITION OPTIONS FOR THE TOU PRICING STRUCTURE

There are a range of transition options available to us when implementing the new ToU pricing structure and assigning households to it. Each may deliver varying outcomes both in terms of the households affected, but also the overall rate of movement to the new ToU pricing structure. Ultimately, customer outcomes will be most influenced by if/how retailers respond, and if/how customers respond to the new pricing signal.

Box 6–1 sets our strawman ToU pricing structure, for consultation with stakeholders on 20 March 2019. We intend to consult on each option at the 20 March forum.

Box 6–1: Strawman for stakeholder feedback – transition options

Our current view is that the following transition options should be implemented:

- Households (or their retailer) have the right to opt-out from the new ToU pricing structure for 5 years; and
- Life-support customers and those claiming the medical cooling concession should not be re-assigned to the new ToU pricing structure.

6.1 SOME CUSTOMERS HAVE LIMITED CHOICE ABOUT WHEN THEY USE ELECTRICITY

There are a range of outcomes if households move to a ToU network pricing structure (assuming retailers mirrored this in the applicable retail pricing structure).

As noted in section 3, stakeholders have told us that it is important for customers to have the choice to opt-out, recognising the impact this may have on some customers, particularly those that may have difficulty shifting their load.

We have thought carefully about this.

Customers that are more likely to opt-out from the new ToU pricing structure expect (or have experienced) a material increase in their bill as a result of the change. These customers are consuming relatively more electricity during the peak period relative to the off-peak period. From one perspective, this is exactly the consumption that ToU pricing is targeting. ToU pricing is providing these customers with a better signal of the cost impacts of consuming load during the peak period compared to the off-peak period.

However, taking into account stakeholder and customer feedback, we need to be particularly mindful of the impacts on customers who may not have a choice about when to consume electricity for reasons beyond their control. Indeed, some customers may be incentivised to shift load or reduce electricity consumption that, for health reasons, should ideally not be moved.

As a result we propose to provide the option for households or their retailer to opt-out from the new ToU pricing structure for 5 years. We recommend this is coupled with appropriate customer communications as noted in section 7.1.

6.2 VULNERABLE CUSTOMERS

Customers and stakeholders have all asked us to carefully consider the impact on vulnerable customers of changing their network pricing structure.

6.2.1 ACIL ALLEN STUDY INTO VULNERABLE CUSTOMER IMPACTS

It is important that we understand how vulnerable customers may be impacted from a ToU pricing structure.

We engaged ACIL Allen to assess the likely impact on vulnerable customers of changing those on a single-rate network pricing structure to a ToU pricing structure. 83 per cent of Victorian households are currently on a single-rate network pricing structure.

Guided by Australian Bureau Statistics' Socio-Economic Indexes for Areas (**SEIFA**), ACIL Allen surveyed over 2,000 Victorian households to identify those that could be considered vulnerable. With consent, ACIL Allen then utilised smart meter data to estimate the network bill change arising from a change to network pricing structure.

Vulnerable customers (identified via survey self-evaluation) are expected to see an average annual bill *decrease* of $18 per annum arising from a ToU pricing structure.

The methodologies and further detailed results will be presented at the 20 March forum.

6.2.2 TRANSITION ISSUES

While ACIL Allen surveyed 2,000 households, we do not have the same results for *all* Victorian households. As such, if we were to implement transition arrangements for vulnerable customers, we could not directly apply the ACIL Allen analysis.

The only household-level data sources we are aware of that potentially reflect a measure (albeit imprecise) of vulnerability across the entire customer base are:

- **life-support[7] customers**—approximately 1 per cent of households;
- **customers on a retailer payment assistance scheme**—approximately 5 per cent of households[8];
- **customers claiming the medical cooling concession**—approximately 0.5 per cent of households[9]; and
- **customers claiming the mains electricity concessions** (annual electricity concessions) from the Department of Health and Human Services—approximately 43 per cent of households[10]

[7] Life support equipment includes any equipment that a registered medical practitioner certifies is required for a person residing and the premises for life support.

[8] KPMG, *Payment difficulty framework – Assessment of customer impacts*, Report for the Essential Services Commission of Victoria, September 2017. According to this report approximately 5% of Victorian households were on a payment assistance scheme in 2017 and in the absence of publicly available data (to our knowledge), it is reasonable to assume this proportion of households are also currently on a payment assistance scheme.

[9] Concessions data is available at https://dhhs.vic.gov.au/publications/state-concessions-and-hardship-programs-annual-data-reports.

[10] Concessions data is available at https://dhhs.vic.gov.au/publications/state-concessions-and-hardship-programs-annual-data-reports.

6.2.3 LIFE-SUPPORT CUSTOMERS AND CUSTOMERS CLAIMING THE MEDICAL COOLING CONCESSIONS

We know which households are registered for life-support – we have special arrangements for these customers when managing planned interruptions to supply. Retailers and the Victorian Government know which households are registered for the medical cooling concession.

Our preference is to exclude these customers from the initial reassignment given the particularly sensitive circumstances these customers face, and the potential unintended consequences that could result from moving them to a ToU network pricing structure.

We note that a life-support flag and medical cooling concession applies to only 1.5 per cent of households, so excluding these customers would not materially impact the take-up of the new ToU pricing structure. Life-support and medical cooling customers could still opt-in to the new ToU pricing structure should they wish.

6.2.4 CUSTOMERS ON A RETAILER PAYMENT ASSISTANCE SCHEME; CUSTOMERS CLAIMING THE MAINS ELECTRICITY CONCESSION

Our preference is to re-assign customers on a retailer payment assistance scheme, or claiming the mains electricity concession, to the new ToU network pricing structure, because:

- we do not have sufficient data to know whether these customers are better or worse-off under a network ToU pricing structure;
- we believe customers (and potentially their retailer) are in a better position to assess the outcomes for this group, noting both retailers and customer would have the opportunity to opt-out in advance under our proposal; and
- excluding the large number of customers claiming the annual electricity concession would materially slow the pace of transition.

If there was a strong stakeholder preference to implement transition arrangements for these customers, we would recommend a glide-path transition.

6.2.5 GLIDE-PATH TRANSITION

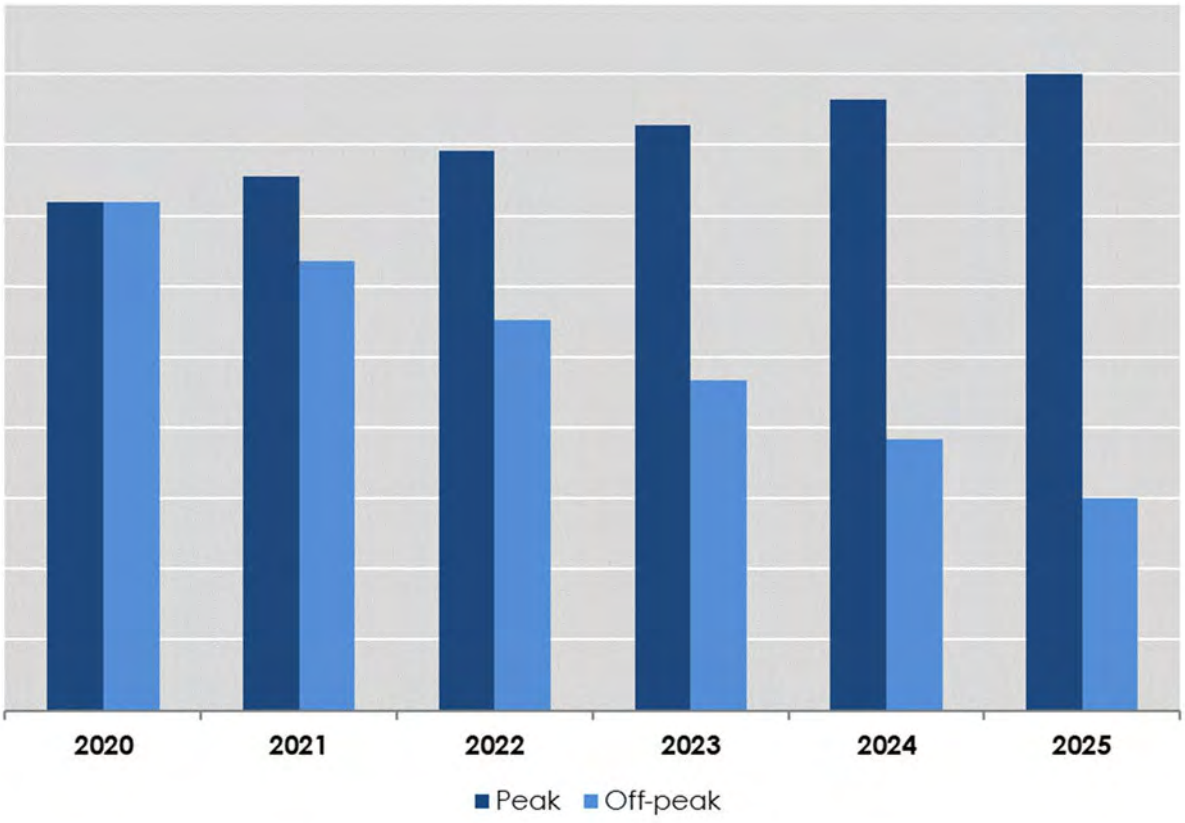
For customers (including vulnerable customers) currently on a single-rate pricing structure, the underlying cause of the customer impacts outlined in section 5 is the differential between the peak and off-peak electricity rates.

One option that could be considered is to start with those two different pricing rates quite closer together, then gradually move them apart in the subsequent 4 years. This would provide a glide path towards the desired ToU pricing structures. It would smooth-out the impact on customer bills for those worse-off. The impact would be roughly 20 per cent p.a. over 5 years, relative to the full change occurring in the first year (2021). The glide-path transition is illustrated in Figure 6–1.

This transition option could be adopted for all customers or only vulnerable customers (or a subset of those customers) as a transition measure. An issue that would needed to be considered is how retailers might respond to a glide-path. There may be good reasons for retailers not to follow this glide-path. For example, it could increase complexity for customers, retailers and distributors.

To be implemented at the network level for vulnerable customers we would also need access to the household level data on retailer payment assistance provision and mains electricity concessions in the lead up to 1 January 2021.

Figure 6–1: Transitioning from 2020 single-rate to preferred ToU rates by 2025 (illustrative only)



6.3 SLOWER TRANSITION OPTIONS

There are several transition options available that could be implemented individually or in combination. Each would see a slower rate of transition to the new ToU network tariff structure

6.3.1 MOVE HOUSEHOLDS CURRENTLY ON A TOU NETWORK PRICING STRUCTURE

Around 17 per cent of households are current on a ToU network pricing structure. We could move all customers currently on a ToU network pricing structure to the new, common, ToU network pricing structure. This could reduce customer impacts relative to our proposal – for each customer this will depend on the difference between each customers' current and new ToU price structures, and their consumption profile.

If existing ToU customers were not re-assigned to the new ToU pricing structure, then this would likely result in customer confusion or misunderstanding. Most existing ToU customers have a 7am to 11pm weekday[11] peak pricing period, whereas the proposed new ToU tariff would have a 3pm to 9pm everyday peak pricing period. Any

[11] Some existing ToU customers are on a 7am to 11pm everyday peak pricing period, and customers on the flexible TOU are on a three-part tariff with different pricing periods for weekdays and weekends.

customer communication regarding the peak pricing period would likely be very confusing or misleading if there were different ToU pricing periods.

6.3.2 NEW CONNECTIONS, MOVE-INS, UPGRADES

The slowest transition path (and in some cases, a path that may never see transition actually complete) would be to limit assignment to the new ToU pricing structure to customers moving home, connecting to the network for the first time, or upgrading their supply. What makes these customers unique is that they:

- will all be interacting with a retailer regarding a retail offer, providing the opportunity for the customer to receive information about their pricing structure upfront;
- there is less likelihood of a bill shock arising from the ToU pricing structure itself, because the first bill received by the customer is the first received in its present electricity supply circumstances; and
- are making choices about their house and/or electricity appliances and therefore may be ideal candidates to see an efficient pricing signal.

However, as noted limiting the allocation to customers in these circumstances would significantly slow-down the transition or could mean it never completes. As a result we do not intend to consider these options unless there are strong stakeholder views to the contrary. We present further information on these options below.

Table 6–1 below sets out the rate of transition for each option using available data.

Table 6–1: Annual transition rate for certain customer groups

Circumstances	Unique customers p.a. (estimate)	Annual transition rate
Move-in customers	Uncertain (see section 6.3.2.1)	
Upgrades	3,000	0.1%
New connections	52,000	2.4%

6.3.2.1 Move-in customers

As noted in Table 6–1, of the three categories, move-in customers provides the fastest transition rate. We have assessed the data available to us in market systems (MSATS) to determine whether we can identify customers that have moved-in to their premises. MSATS does not have a field that identifies such customers, and we would need to initiate a procedure change via AEMO to obtain such information. This may be a material process change for retailers who would need to flag whether a new customer is a move-in customer.

6.3.2.2 New connections

The Victorian residential customer base grows by about 2.4 per cent per annum (around 52,000 new homes each year). As noted in Table 6–1 of the three categories, move-in customers provides the second fastest transition rate, although significantly slower than move-ins.

If assignment is limited to new connections, based on our experience with opt-in demand-based pricing, almost all existing NMIs assigned to a single-rate pricing structure (around 2.2 million) could remain on that pricing structure for the foreseeable future.

6.3.2.3 Upgrade from single-phase to three-phase supply

Large electric motors can need three-phase power and require customers to upgrade their electricity supply. This can occur when customers are installing large air-conditioning systems, kilns, significant power tools (sometimes used in workshops or for home renovations), or a solar panel array above 10kVA.

The Victorian networks provide around 3,000 supply upgrades per annum. Our current view is that if we do limit the new ToU pricing structure to new connections and/or move-in customers, we would also include customers with a supply upgrade given the relatively small numbers, and the fact that they are making a choice to invest in appliances that may materially change their consumption patterns.

7. COMPLEMENTARY CUSTOMER SUPPORT MEASURES

The previous section set out customer support options that relate to how we actually implement the new ToU pricing structure. There are other customer support measures that we could explore that may complement potential changes to retail pricing structures, that may follow our change to network pricing structure changes.

7.1 CUSTOMER COMMUNICATIONS

If retailers mirror the ToU pricing structure reassignment at the retail level, it is important that customers are made aware of this change. Given that:

- customers care more about their retail pricing structure than the underlying network pricing structure; and
- are not aware of the company that owns and operates the local electricity distribution network,

we are open to working collaboratively with relevant stakeholders on communications about pricing structures.

7.2 OTHER COMPLEMENTARY MEASURES

We have considered the following complementary measures that would support appropriate customer communications:

- **literacy programs**—some distribution networks currently support energy literacy programs within the communities they serve, and should ToU pricing proliferate at the retail level, we would adjust our literacy programs accordingly.
- **technology rebates**—in our view, home automation is a key enabler of more complex pricing structures. While a simple peak/off-peak ToU pricing structure is relatively straight-forward for customers to understand and recall, in the future there may be a business case to provide rebates for home energy management services and technologies that will automate customers' responses to network pricing structure.
- **energy efficiency programs**—sensible, cost-effective energy efficiency programs can help lower energy usage overall, and those that target air-conditioners can help mitigate peak demand.
- **peak time rebates**—in areas where there are network constraints, networks can reward customers for reducing their consumption during nominated critical peak periods, or reward customers for allowing the network to control certain devices during critical peak periods.

We are interested in stakeholder feedback on these options, particular which industry participant or group would be best-placed to lead these initiatives.

C. Participants attending the Workshop

Name	Organisation
Ingrid Michel	ACCC
Jeremy Tustin	ACIL Allen Consulting
Tim Weterings	ACIL Allen Consulting
Anthony Bell	AEMC
Clare Stark	AER
Steven Dimovski	AGL
Brandon Hoogendorp	AGL
Alex Pavlich	AGL
Paul Kirkpatrick	Bendigo Sustainability Alliance
David Bryant	Brotherhood of St Laurence
Emma Chessell	Brotherhood of St Laurence
Liam Cranley	Brotherhood of St Laurence
Darren Gladman	Clean Energy Council
David Locke	Click Energy
Federico Melzani	Click Energy
Brendan Renn	Click Energy
David Prins	Consumer Challenge Panel
Donna Swan	COTA
Simon McCabe	DELWP
Sarah Sheppard	DELWP
Daniel Zhang	DELWP
David Sita	Energy Australia
Jay Whelan	Energy Australia
Lynne Gallagher	Energy Consumers Australia
Jordan Tasker	Essential Services Commission
Stephanie Bashir	Evie Networks
Andrew Simpson	Evie Networks
Jane Edwards	EWOV
Tony Brooks	Momentum
Marcel Hutchinson-Kern	Momentum
Kate Nicolazzo	Moreland Energy Foundation
Raman Vaid	Origin Energy

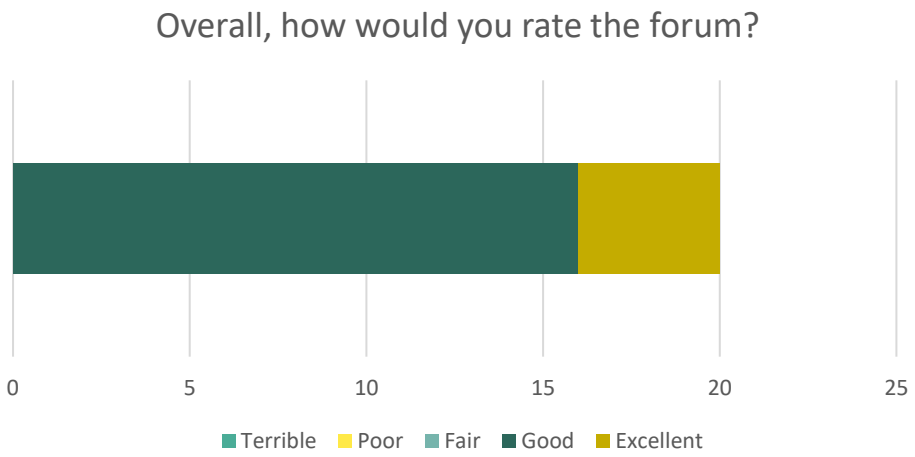
Name	Organisation
Eric	Powershop
Dean Lombard	Renew
Don Culvenor	Renewable Newstead
Gavin Dufty	St Vincent de Paul
Adison Mok	Sumo
Davin Hopper	Tango Energy
Timothy Toh	Tango Energy
Emma O'Neill	VCOSS
Allan Bulleen	VFF
Robyn Stokes	
Victorian Distribution Business Attendees	
Catherine Gip	AusNet Services
Greg Hannan	AusNet Services
Edwin Chan	AusNet Services
Katie Yates	AusNet Services
Alistair Parker	AusNet Services
Tom Hallam	AusNet Services
Jana Dore	CitiPower Powercor United Energy
Jay Stein	CitiPower Powercor United Energy
Anna Tinline	CitiPower Powercor United Energy
Laslo Milias	CitiPower Powercor United Energy
Mark De Villiers	CitiPower Powercor United Energy
Alex McPherson	Jemena
Catherine Marshall	Jemena
Chris Stewart	Jemena
Usman Saadat	Jemena

D. Participant Feedback

Twenty of a maximum of 31 attendees staying at the end of the forum filled in feedback forms on the day, representing a response rate of around two thirds. Although participants were offered an email address for later feedback, no other feedback has been received.

Respondents' feedback was very positive. The charts below summarise respondents' feedback to the questions with a rating scale. Respondents' free text comments are summarised later in this section.

Figure D. 1 Forum Rating: Overall Rating, number of responses by rating



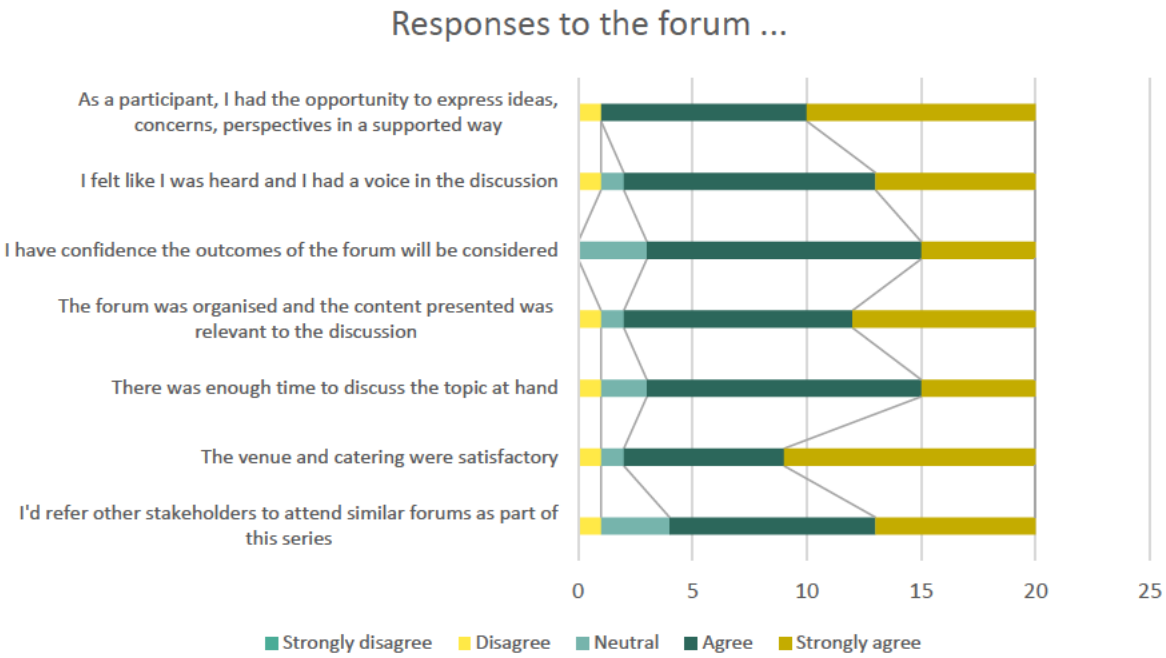
All the respondents gave an overall rating to the forum of "Good" or "Excellent".

Looking at the specific questions about the dimensions of their experience, 16 or more respondents agreed or strongly agreed that at the forum:

- "As a participant, I had the opportunity to express ideas, concerns, perspectives in a supported way"
- "I felt like I was heard and I had a voice in the discussion"
- "I have confidence the outcomes of the forum will be considered"
- "The forum was organised and the content presented was relevant to the discussion
- "There was enough time to discuss the topic at hand"
- "The venue and catering were satisfactory"
- "I'd refer other stakeholders to attend similar forums as part of this series."

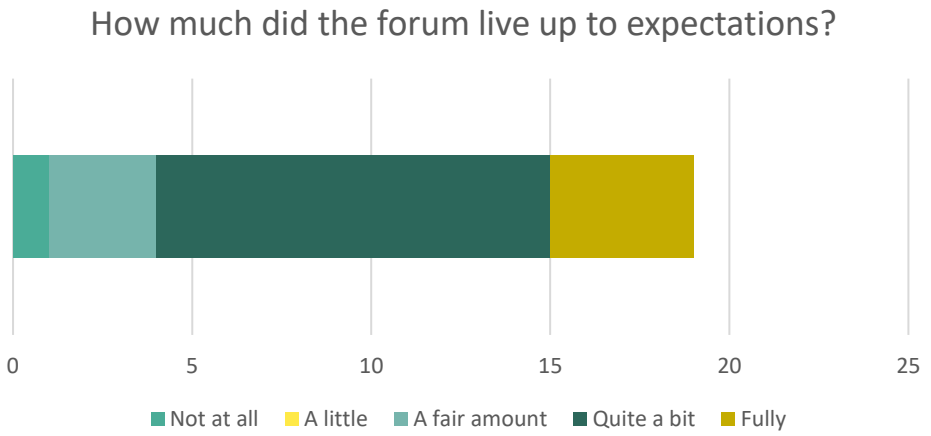
One respondent disagreed with six of the seven specific propositions about the forum and was neutral on the seventh ("I have confidence the outcomes of the forum will be considered"), but despite these individual evaluations, rated the forum as "Good", and as living up to expectations "Quite a bit".

Figure D. 2 Responses to the forum: Ratings by question, number of responses



Fifteen of the 20 respondents rated the forum as living up to expectations either "Quite a bit" or "Fully", while three respondents rated the forum as living up to expectations "A little". The one participant responded who responded "Not at all" indicated in his/her feedback form that his/her incoming expectation was that the forum "was going to be about demand implementation. Glad it is not!!", suggesting no unhappiness with the content or coverage of the forum. Two comments in the free text area of the feedback form suggested some difficulty in hearing others speak, given the number of people in the room. Late acceptances to the forum exceeded the anticipated number of attendees based on previous forums' experience and early indications of attendance, meaning that the room booked was adequate, but not spacious, in the sessions before lunch. After lunch, as is typical, a number of participants apologised and left.

Figure D. 3 Forum Rating: Living up to expectations, number of responses by rating



D.1 What respondents want to hear more about

The table following gives respondents' unedited responses to the question, "What topics would you like covered in any future forums held as part of this series?", grouped into categories reflecting the content of the comment, discussion on the day and table facilitators' information on table discussions. Not all respondents answered this question and a small number of respondents had more than one suggestion.

Eight of the comments received relate to more information on Customer Impacts – low income customers, but also other affected customers (low consumption, legacy network tariffs) and customers generally. Depending on whether you class "Communications" and "Collaboration with retailers" as the same or distinct categories, collectively they attract nearly as many comments as Customer Impacts (seven comments), with Communications attracting five of the seven comments. Two comments focused on access to (real-time) data, although it's unclear whether customer access or access by some other third party is meant.

Table D. 1 Topics for future discussion: Respondents' comments by category

Category	What topics would you like covered in any future forums held as part of this series?
Customer impacts	Fixed charges would be good to unpack
	Tariff forum
	Customer impacts
	Drill down on customers who will be worse off – who are they?
	Consumer impact analysis: drill down for low income and low consuming households
	Impact modelling better articulated (methodology)
	Treatment of legacy tariffs
	Would like to see more detail on consumer impact
Communications	Needs to be sorted – communications plan across government/industry across front line teams
	Some communication message: cross-industry collaboration, i.e. retailer and network
	Communication and time frames
	More content on communications – very broad
	Government/Department feedback/position
Collaboration with retailers	Collaboration with distributors and retailers
	Retailer focus – thoughts on how a modern retailer operates
Data access	Access to data (not sure)
	Better/real time access to data

D.2 Respondents' expectations of the forum

The word cloud below was formed from respondents' free text answers to the question, "What were your expectations for the event?" The content shows a strong focus on understanding the proposals, understanding the proposed implementation, and the opportunity for discussion.

Figure D. 4 Participant Survey: Responses, Word Cloud, top 35 words

Respondents' specific comments on their expectations included:

- "To understand DNSPs' thinking on introduction of cost reflective tariffs"
- "Similar to what was realised, except less discussion. The discussion was excellent."
- "Details around roll-out and communications".

D.3 What went well? Respondents' evaluation of the forum

The word cloud below was formed from respondents' free text answers to the question, "What went well today?" The content shows a strong appreciation of the discussion, the presentations, the agenda and discussion at the tables.

Figure D. 5 Participant survey: Responses, Word Cloud, top 35 words

Respondents' specific comments on what went will on the day included:

- "Prereading was well researched and written. Easy to understand. Presentations were good"
- "Well organised, well thought out, thorough agenda and questions posed"
- "The workshop sessions helped with understanding views"
- "Mix of stakeholders and a variety of perspectives discussed"
- "Questions raised around gaps, i.e. controlled load"
- "Detail provided, open forum".

Attachment B
ACIL Allen, Victorian DNSP vulnerable customer analysis, 20 March 2019

Jemena
bringing energy to life

If everybody moved to TOU (flexible) network tariffs, what would vulnerable Victorians experience?

DATA COLLECTION

1. Online survey of ~2,000 Victorians
2. Survey questions re:
   - Household structure and appliances
   - Vulnerability 'indicators' & Past payment difficulty
   - Ability to withstand expense in future
3. Matched at individual level to electricity usage data
4. Used data to calculate two annual network 'bills':
   - Conventional tariff
   - Revenue neutral TOU tariffs from DBs

	PAYMENT DIFFICULTY	CAPACITY TO MEET UNEXPECTED EXPENSE
Questions asked	Thinking about the past 12 months has your household ever had difficulty or delayed paying your electricity bill?	If you had a major unexpected expense for something essential – say, $400 from a fridge breakdown – how would you pay for it?
Available answers	— No, I/we always pay on time — **Borrowed money to pay an electricity bill** — **Required an extension of time to pay, or paid late** — **Was on special payment plan** — **Was disconnected for non-payment**	— From savings — Borrow from friends or family — Pit it on the credit card to pay off at another time (and bear interest) — Speak to a payday lender — Not pay for another bills/essentials — don't know
Interpretation of answers	'always paid on time' ➔ no past difficulty ***Underlined answers*** ➔ ***some past difficulty***	'from savings' ➔ has (feels) capacity to meet unexpected expense Any other answer ➔ limit (perceived) capacity to meet unexpected expense

	HAS EXPERIENCED DIFFICULTY	HAS *NOT* EXPERIENCED DIFFICULTY
Would *not* pay from savings	**293**	**445**
Would pay from savings	**53**	**1,160**

ANALYSIS

THREE APPROACHES TO DEFINING VULNERABILITY

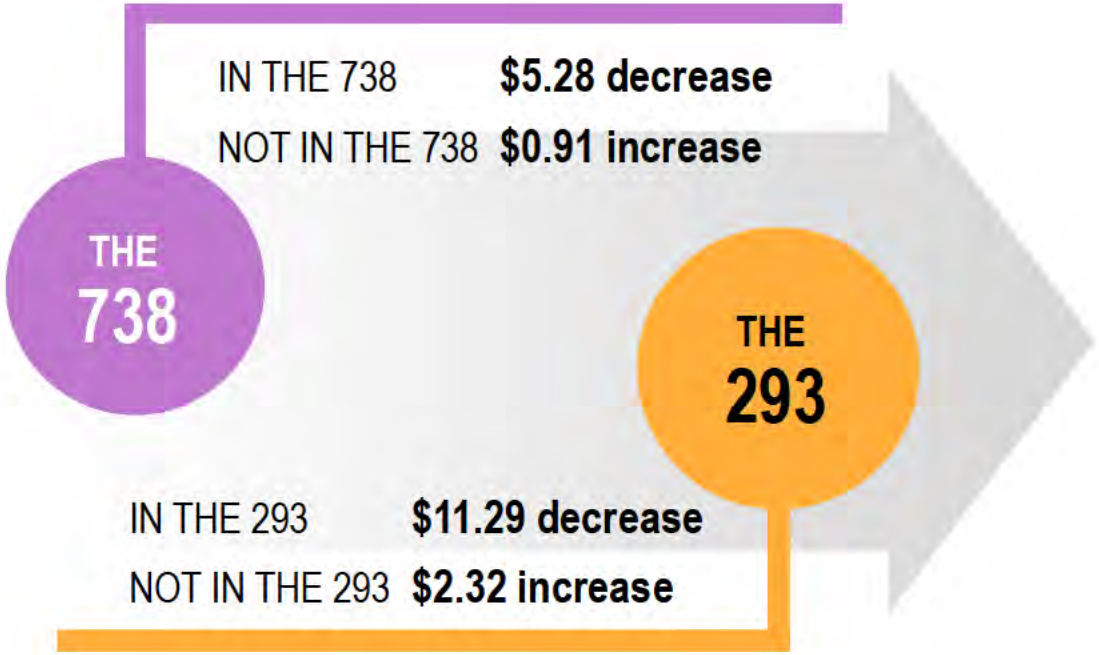
- *a priori* indicator characteristics
- Past payment difficulty *and* perceived difficulty funding an unexpected $500 expense (n=293)
- Bill impact and perceived difficulty meeting unexpected expense *regardless* of past (n=738)

FOUR ANALYTICAL APPROACHES

- Impact by 'characteristic A'?
- Impact on people with limited ability to meet expense – do these people experience increases or decreases and 'who are they'?
- Impact on 293 people with payment difficulty and limited ability to meet expense – do these people experience increases or decreases and 'who are they'?
- 'all else constant' analysis of bill impacts – what factors are associated with impacts and how large?
  - Leads to 'personas' not presented today

AVERAGE IMPACTS

Average bill impact on the whole sample (1951) – $0.28 increase



	AVERAGE	INCREASE	DECREASE
Overall	**$0.28**	**1174**	**777**
JEN	$1.17	115	93
CP	($0.78)	58	67
PC	$0.39	332	261
Ausnet	($1.76)	448	171
UE	$3.09	221	185

IMPACTS – BY CHARACTERISTIC

Indicators partly based on earlier work by Victorian Government

Dollar values are average 'network bill' impact within the group (negative is good)

The more vulnerable group – either larger decrease or no different for all characteristics

	MOST VULNERABLE	LESS VUNERABLE
	<$52,000	>$52,000
INCOME	-$1.11 (765)	$1.17 (1186)
	Nobody in house works full time	At least one full time worker
FT WORK	-$1.41 (1016)	$2.11 (935)
	Single parent family	Not a single parent family
SINGLE PARENT	-$9.51 (89)	$0.75 (1862)
	Children	No children
CHILDREN IN THE HOME	-$0.45 (533)	$0.21 (1418)
	Retired	Not retired
RETIRED/ RETIREMENT INCOME	-$0.46 (597)	$0.20 (1354)
	No gas	Has gas
MAINS GAS	-$13.86 (328)	$3.14 (1623)
	Rental	Owned/ mortgage
HOUSEHOLD TENANCY STATUS	-$4.98 (466)	$1.93 (1485)
	Concession	No Concession
ELIGIBLE FOR CONCESSION	-$1.59 (737)	$1.41 (1214)

PAST PAYMENT DIFFICULTY

- **738** respondents report limited capacity to meet unexpected expense
- **293** of these also report difficulty paying energy bills in the past
  - These people are in old, leaky houses with electric heating, few appliances, low incomes
- **150** of these 293 most vulnerable people (~51%) can expect a decrease in their bill

	Decrease	no change (=/- $10)	Increase	TOTAL
Limited capacity	94	120	79	293
Pay from savings	91	190	164	445
	190	**321**	**227**	**738**

Limited capacity	150		143	293
Pay from savings	171		274	445
	336		**402**	**738**

THE SHIFT TO FLEXIBLE TARIFFS *RELIEVES PRESSURE* ON AROUND HALF OF THE MOST VULNERABLE IN THE SAMPLE

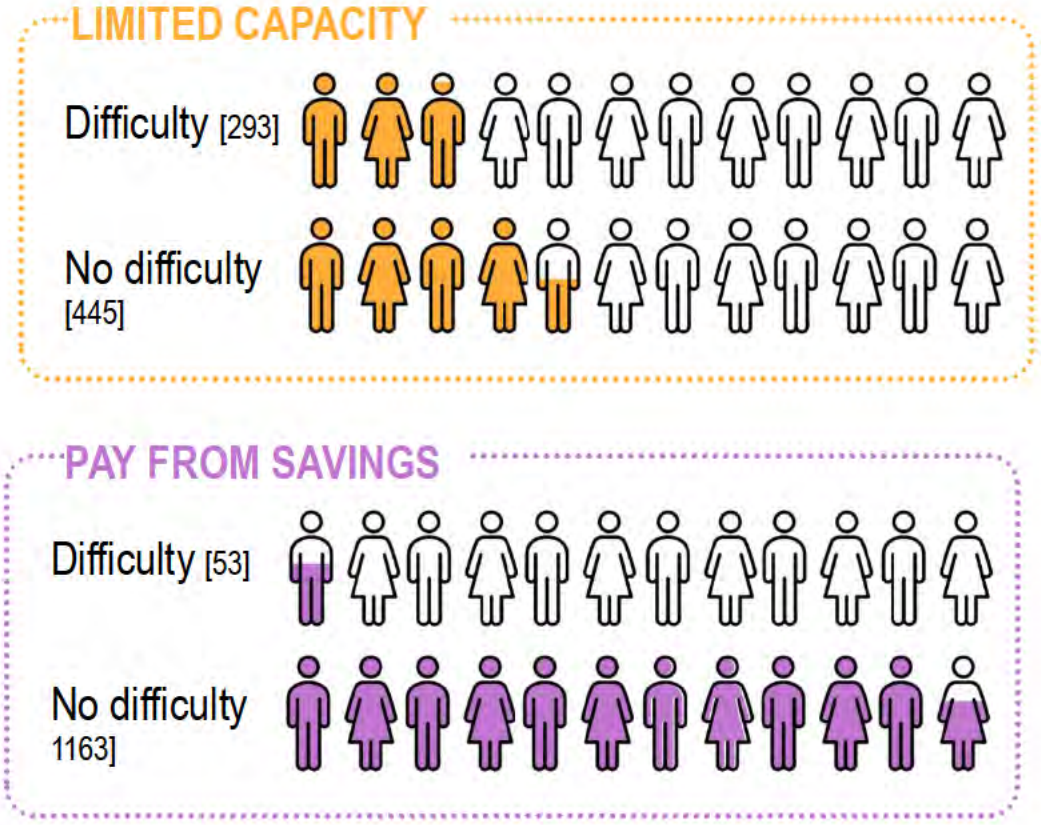
IMPACT ANALYSIS – NOT FROM SAVINGS AND PAST DIFFICULTY

	VULNERABLE	OTHER
Proportion of customers with bill decrease	**32%**	**19%**
Proportion of customers with no change (=/- $10 p.a.)	**41%**	**41%**
Proportion of customers with bill increase	**27%**	**40%**
Sample size	293	1658

32% of vulnerable group experiences decrease, another 41% experience +/- $10/annum change

Decreases commonly between -$30 to -$170 per annum.
4 cases of increases above $50 per annum

IMPACT ON PEOPLE WITH LIMITED ABILITY TO MEET UNEXPECTED EXPENSE



1. Almost 40% of the sample – 738 people – have limited capacity to meet an unexpected expense
2. Three fifths of these people have *not* had (reported) difficulty paying bills in the past
3. We have seen that people with past payment difficulty can expect relief
4. It is possible for people to *become* vulnerable, though they may not have been in the past
   - Do we see this in the data?
   - How might we identify and assist these people?

IMPACT ANALYSIS – NOT FROM SAVINGS AND PAST DIFFICULTY

	VULNERABLE	OTHER
Proportion of customers with bill decrease	25%	18%
Proportion of customers with no change (=/- $10 p.a.)	42%	41%
Proportion of customers with bill increase	33%	41%
Sample size	738	1213

25% of 'limited capacity' group experiences decrease, another 42% experience +/- $10/annum change

Most impacts (703 of 738) between $120 saving and $60 increase per annum

Attachment C
JWS Research, Electric Vehicles Research Report, September 2019

Jemena
bringing energy to life

Community Perceptions Toward Preparing for Electric Vehicles

Prepared for AusNet Services, Jemena, CitiPower, Powercor and United Energy

September 2019

JWS RESEARCH

Contents

Background, objectives and methodology	3
Executive summary	7
Detailed findings	15
Issues landscape	16
The electricity system and pricing	20
Impact of increasing EV uptake	24
Peak demand and investment in infrastructure	30
Infrastructure investment for new technologies	36
Pricing for new technologies	45
Appendix: Stimlus material	53

Background, objectives and methodology

Background

New electric vehicles (EV) are coming onto the market. In Australia, electric vehicle sales increased 67 per cent from 2016 to 2017. While this is seemingly a large increase, it comes from a low base. In 2017, Australians purchased 1,076 plug-in hybrid electric vehicles, and 1,208 battery electric vehicles, representing 0.2 per cent of the Australian car market[1].

There appears to be little consideration given, in the general public discussion around electric vehicles, to the ability of the grid to handle the increased demand. It is important that the distribution network is prepared to handle the increased demand that the change from (mainly) petrol to electric powered cars will bring about. In particular, the ability to manage the electricity load will need to be navigated.

That said, investment in infrastructure is challenging in an environment where cost of living, and electricity pricing, are top of mind concerns for the general community and electric vehicles are seen to be the domain of those who have some disposable income (i.e. are not 'struggling') due to EV's being, in the main, more expensive than equivalent petrol vehicles.

Investment in infrastructure will help make electric cars more accessible and may also help to speed up the adoption process, in turn assisting to bring down the purchase price – but who should bear the cost of this investment?

To ensure that customer perceptions on this matter are understood, the five Victorian distribution companies jointly commissioned qualitative research to explore the attitudes, perceptions and concerns of Victorians when it comes to preparing for the future of electric vehicles. Importantly, the distribution companies wish to gain insight into how the broader community reacts to information around the benefits of such investment.

It is important to note that the purpose of this qualitative research was to uncover consumer response (initial reactions, thoughts, concerns, questions) to information about investment in infrastructure to prepare for electric vehicles. **It is beyond the scope of qualitative research to identify the extent to which people support such investment.**

[1] Source: 'The state of electric vehicles in Australia', ClimateWorks Australia, June 2018, downloaded 17/7/19 from https://www.aph.gov.au/DocumentStore.ashx?id=be4e9b0a-bf39-442f-8acb-9830038f3617&subId=658041

Research objectives

The key objectives of the research program were to explore:

- Victorians attitudes to electric vehicles: What do people know about them? Do people consider them to be part of a sustainable and clean energy future?
- What is required to make electric vehicles more accessible? How can this be facilitated? Who needs to drive this?
- How do people feel about the need to invest in infrastructure to prepare for a future with electric vehicles? Is this important? Are they supportive of this? What questions do they have? What are the key considerations?
- What is the benefit of doing this – to them personally, to the community as a whole? Who should bear the cost?

Specifically, the research was designed to provide a comprehensive understanding of:

- The preparedness of customers to agree that distribution businesses need to plan, explore, trial and invest to prepare for the future of electric vehicles.
- What information assists with understanding the need to do this.
- Support for 'incentivising' electric vehicle charging at appropriate times to the benefit of the network.
- What information provides an understanding that any investment now (in trials, innovation, etc.) is a shared cost, but also creates a shared benefit.

Qualitative research methodology

Qualitative research in the form of **face-to-face and online group discussions**, were conducted with people from metropolitan and regional locations across Victoria. The group discussions were structured as follows:

Group type	Participants residing in the following locations:	Younger (25-54 years)	Older (55+ years)	Total
Face to face focus groups	**Melbourne:** CitiPower (city and inner suburbs), Jemena (northern and north-western suburbs), and United Energy (southern suburbs and Mornington Peninsula) customers.	1	1	2 groups
Online group discussions	**Regional Victoria** (including outer metropolitan Melbourne): AusNet Services (outer northern and eastern suburbs and eastern Victoria) and Powercor (western suburbs and western Victoria) customers.	1	1	2 groups
	Total	**2**	**2**	**4 groups**

Eight to nine participants took part in each face-to-face group discussion, and 16 to 17 people participated in each of the online group discussions. A mix of genders, ages, education and socio-economic status were represented within each group discussion. Qualitative group discussions were conducted on 12th August 2019, online group discussions ran from the 13th to the 15th August 2019.

Note: Qualitative research is exploratory in nature, and so the qualitative findings within this report are indicative only and are not necessarily fully representative of the target populations.

Executive summary

Snapshot of key findings

EV's perceived as expensive, limiting accessibility	The current price point of electric vehicles drives a perception that they are for 'the wealthy', and makes it difficult for customers to envisage owning one. In addition, better charging accessibility outside of homes is needed. There is a perception that travelling long distances is problematic, due to a lack of charging stations.
Customers accept that planning for the future is needed	The population is growing and distribution companies should plan for the future. Customers understand that investment in our electricity network will be required. New technologies are part of progress, and if we are to progress, infrastructure must keep up.
Mixed views on who pays for upgrading the system	While there is agreement that investment is needed, customers are divided on how this should be funded. Some argue that everyone should carry some of the burden, as we all use the system. Others want to see a 'user pays' approach. Importantly, there is a view that vulnerable people should be protected from bearing costs.
'Trials' to prepare for EVs are not well understood	The need for testing and trials, analysis, modelling and innovation to prepare for the future of electric vehicles is not well understood. While acknowledging there is a need to be prepared for the future, customers are concerned about uncapped expenditure. Some customers believe costs should be shared across all parties.
Using tariffs to shift charging away from peak demand generally supported	Encouraging electric vehicle owners to charge during off-peak periods is an intuitive solution and one that is mentioned spontaneously. Offering owners time of use tariffs is supported, as this is seen as a way to reduce the strain on the system during peak periods and potentially reduce the need for major upgrades.

There is a need to be prepared for the future

People understand that demand for electricity is increasing

The number of appliances drawing electricity in the home is increasing, with many households having multiple televisions, computers, mobile phones and other devices that need charging.

There is an expectation that the future will involve more household solar generation. Battery technology, along with solar panels, is anticipated to become more broadly accessible and affordable.

Electric vehicles are not top of mind considerations for households as yet, to the extent that solar panels are.

Infrastructure must keep pace with population growth and technological improvements

People agree that infrastructure needs to keep up with the needs of the community. This view holds across many sectors, not just energy. People cite road infrastructure and the NBN rollout as examples where infrastructure has lagged community needs.

There is a belief that the sector needs to be proactive to ensure electricity is there when needed and to support technologies that encourage progress and improved quality of life.

The idea of electric vehicles being commonplace is still some way into the future

Many people find it difficult to envisage owning an electric vehicle in the near future. The price tag means that they are perceived to be for wealthy people.

Furthermore, there is a perception that the driving range between charges for an electric vehicle is low. With charging stations not as prevalent as petrol stations, people fear being stranded with a car that has run out of charge.

That said, there is an expectation that these factors will improve over time, and that the price tag will come down and the technology will improve.

Views on the benefits of electric vehicles are mixed

People are unclear whether running costs for an electric vehicle are less than for a petrol engine car. While the price of petrol is considered to be high, so too is the cost of electricity.

Reducing our reliance on petrol is seen as a positive step toward reducing emissions and improving the environment. However, the fact that electricity for the grid is mostly sourced from fossil fuels is seen to negate the environmental benefits.

The electricity grid is already under pressure

People understand that the electricity system struggles to meet demand at times

Blackouts at times of extreme heat point to the fact that the grid already reaches capacity. Increasing numbers of electric vehicles are expected to exacerbate this situation.

There is an understanding that charging cars from household solar panels may serve to reduce the impact on the grid, but this is not seen as the sole solution – particularly as cars will most likely be charged overnight, when solar panels do not produce energy.

All of this points to a need to invest in improving the grid to meet demand.

The term 'peak demand' is not well understood

Once explained, people understand the concept of 'peak demand', but it is not well understood on a top of mind basis. There is an expectation that the frequency and length of peak demand periods could increase as our reliance on technology (appliances and devices) increases. This drives a view that upgrades to the electricity system will be required.

Infrastructure upgrades to cater to 'peak demand' should largely be paid by all

People differ in their view of how this should be facilitated. Some people believe that as everyone uses electricity, this needs to be a shared cost. Other people believe it should be funded by government (through taxes), as this effectively applies a form of 'means testing' – people who pay higher taxes will pay more.

Notwithstanding, it is important to be mindful of vulnerable people. The community believes that strategies need to be employed to ensure that vulnerable, low income people are exempt from infrastructure improvement costs or that they are compensated in some way.

Electric vehicles will place further pressure on the grid

The purchase of an electric vehicle is equivalent to adding a small house to the grid

This is 'new news' to people, and clearly demonstrates the impact on the grid of electric vehicles. It raises concerns about the preparedness of the grid for the future.

People agree that electric vehicle owners should be incentivised (through tariffs) to charge their cars during off-peak periods – this is a solution that makes sense.

Costs for trials and innovation to prepare for electric vehicles should be borne by 'others'

The idea of the general community bearing the cost of testing, trials and innovation to prepare for the future demand for electric vehicles does not sit well.

People interpret this phase of preparation as 'research and development' – a cost which should be borne by industry. Alternatively, people perceive that governments have a responsibility to fund research and development for advancements that will benefit society as a whole.

There is an argument for funding to be a shared responsibility

Electric vehicles are but one factor that contributes to the increasing pressure on the electricity grid. Population growth and increasing use of technology are other factors.

There is an expectation that consumers pay for essential services and infrastructure in general, and this is no different. However, typically these are funded through taxes.

People want to understand what the cost impact will be at an individual level

An investment of between $6.3 and $9.7 billion over the next 25 years provides some context, but people are unsure what it will mean for them individually – this is the information that they seek.

Strong positive sentiment toward solar energy

Solar panels are perceived to be more accessible and good for the environment

People are familiar with the increasing penetration of solar panels on homes. These are seen to be more popular and more affordable than electric vehicles. Solar panels can also reduce the load on the grid and assist with reducing the reliance on fossil fuels. There is a strong positive halo that sits around solar panels.

Some resistance to a shared cost for infrastructure investment to accommodate more solar

As with electric vehicles, there is a view that 'user pays' should apply when it comes to solar panels. However, again there is acknowledgement that solar panels are one factor that contribute to pressures or demands on the grid infrastructure.

The idea of increasing the amount of renewable energy in the grid is seen as a shared benefit. The idea of individual solar panels increasing the amount of renewable energy in the grid is therefore intuitively understood to be a shared benefit.

There is a concern that increased costs for solar users (e.g. high tariffs, high connection fees or an inability to feed into the grid) may discourage people from installing solar panels in the future, thus impacting on this shared benefit.

Potential benefits of time of use tariffs for electric vehicles

Ensuring electric vehicles are charged outside of peak demand periods intuitively makes sense

This is considered a tangible solution to minimise the impact (and associated costs) on grid infrastructure.

The wider benefits of electric vehicle uptake are not convincing

The idea that the wider community benefits from greater uptake of electric vehicles are considered to be future focussed. When explained, people understand that electric vehicles have the potential to bring the unit cost of electricity down for all users (greater demand could push wholesale prices down). They also understand that electric vehicles could use their battery stored power during periods of peak demand. However, people find it hard to envisage how this would be managed, and if in fact it could be facilitated. It feels a bit 'pie in the sky'.

There is some sense of a wait and see approach

The uptake of electric vehicles to date is perceived to be low. As a result, some people are hesitant to support funding innovation and infrastructure upgrades for a scenario that may not eventuate. There is a balancing act to be managed between being prepared and over-spending.

Offering a time of use tariff for electric vehicles is supported

There is strong support for electric vehicle owners to be offered a time of use tariff. However, people feel it is unfair to force existing electric vehicle owners onto such a tariff, as they were not able to make an informed choice at the time of purchase.

There is some support for the idea of making time of use tariffs mandatory for people who purchase electric vehicles in the future – this enables people to make an informed choice and serves to reduce the pressure on the grid.

Even so, there is a view that at this point in time, people who buy electric vehicles are not 'cash-strapped'. This means that they may not be motivated by a time of use tariff, convenience may serve to outweigh cost and they just charge it when it suits them best.

Key messaging considerations

Keep it simple	People accept, and expect, that distribution companies will ensure the electricity grid caters to an increasing population and the widening use of electricity. This will be achieved through infrastructure upgrades and innovation that prepares for that.
Shared costs for a shared system	Almost all Victorians use the electricity network – and thus it makes intuitive sense that costs for managing this network are also shared. Information that can link investment with shared accessibility or benefits of new technologies will be welcomed (e.g. increasing solar panel feed in ability).
Talk about new technologies rather than electric vehicles specifically	Information needs to centre around catering for adoption of new technologies as a whole and not focus specifically on electric vehicles. Messaging about the need to upgrade infrastructure to cater for increased adoption of electric vehicles leaves distributors susceptible to backlash – for many people they are not a realistic option.
Environmental benefits are shared benefits	Opportunities to point to environmental benefits convey a justification for a shared cost responsibility. However, at present, electric vehicles charged from coal-fired power do not present clear opportunities for reduced emissions. The future may be different, but care needs to be taken if this link is to be made.
Time of use tariffs make sense	Managing the demand created by electric vehicles is understood (when explained). Time of use are supported as a mechanism to reduce the impact on peak demand, although initially at least, customers believe electric vehicle owners should be provided with a choice to adopt these.

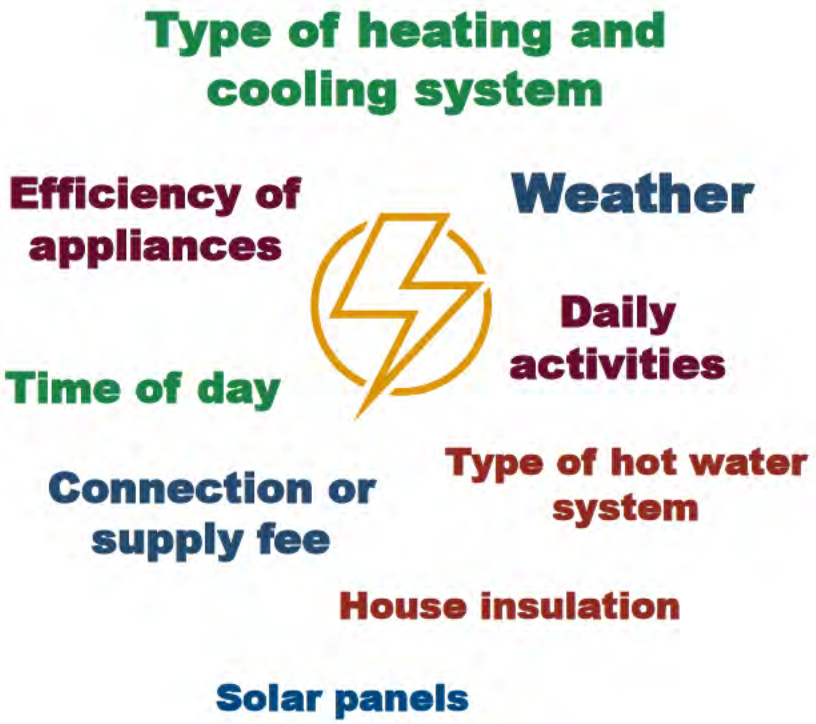
Detailed findings

Issues landscape

Top of mind contributors to electricity bills are typically within the home

Temperature control, heating water and use of appliances are perceived to be the major contributors to household electricity bills.

- The energy source used to heat and cool households has a major impact on electricity bills.
- Similarly, the type of hot water system used in a household impacts bills. Electric hot water systems are more costly than gas or heat pump systems.
- The age, quality and type of appliances in a household. Old fridges in particular are identified as consuming more electricity than newer models.
- There is some mention of connection and supply fee as a contributor to the overall bill, but not as a primary contributor. That said, people admit that electricity bills are confusing – particularly when attempts are made to compare retail tariffs, discounts and offers.



"Central heating is the big one, especially in winter. It's a gas system, but still needs electric fans to blow heat around the house. Aside from that, it's the usual; fridge, washing machine, TVs, computers, lights. Hot water is instant gas, so negligible electricity costs there. Lighting is all LED, so not much more to be gained there either." (Regional, older)

"Comfort comes at a price, keeping all those air conditioners, refrigerators, chargers, and water heaters going makes household energy one of the largest uses of energy in this country." (Regional, younger)

While customers do their best to reduce their bills, many things are beyond their control (or their budget)

Monitoring appliance usage, turning off lights, avoiding using the clothes dryer and paying bills on time are ways that customers try and reduce their bills.

However, **there are aspects that are simply beyond ones control which can significantly increase electricity usage and ultimately bills**.

- Weather can be a major determinant of the need to use electricity as it drives a need to heat and cool homes.
- The quality of insulation in a house is something that may also be beyond ones control – either from a practical sense (e.g. renters) or a budgetary sense (e.g. people don't have the funds to add insulation). This can have an effect on the extent to which homes need to be heated and cooled.
- The number of people present in a household can make bills more expensive. More people increases the use of appliances and lighting.
- There is a perception that solar panels on homes would significantly reduce bills. While some people are in a position to install solar panels, for others it isn't an option (e.g. they are unable to afford them or they rent). Having solar panels on a home remains an aspirational goal for many people.

"Relying on an electric pump for water is really expensive. We have looked into installing an underground pump, as we have had two issues with our current pump costing $300 over the past 12 months even though it's relatively new. A new state-of-the-art pump would be a minimum $2,000 plus installation which is not a cost we can take on at the moment." (Regional, younger)

"You can adjust the time of day and try to avoid peak periods." (Melbourne, younger)

"To me, solar power will be the biggest cause of expense for those who don't have it… I haven t yet installed solar panels, but I think I'll have to soon. Current running costs are being helped by more power-efficient domestic items and LED lighting." (Regional, older)

"We've had a really cold winter in Melbourne, we can't control that too much." (Melbourne, older)

People envision a future where households generate their own power and 'smart' homes are the norm

Electricity generation and supply in the future are anticipated to involve more household solar generation. In addition, there is an assumption that battery technology, along with solar panels, will be more broadly accessible and affordable – meaning that households will be able to store the power they generate from solar panels. Electric vehicles are not top of mind considerations for households as yet, to the extent that solar panels are.

"Our home and others ideally will be solar powered which would hopefully make electricity prices cheaper. Tiles, window panes and paved streets that are solar panels in themselves and improved, cheaper solar batteries and panels would make generating and storing electricity cheaper and more efficient." (Regional, older)

"Renewables spring to mind as an alternative source of energy, but I don't think that they will see widespread adoption unless the market price of power goes so high as to make it mandatory, or the price of power banks / solar panels comes down enough to make them attractive to home owners." (Regional, younger)

There is also an expectation that **new technologies will further integrate functionality of appliances in homes**, with a belief that these will be controlled from smart phones (akin to 'Google Home' technology, a smart home voice activated control hub).

"Down the track, the internet is making it more accessible… from your phone you'll be controlling things in your house." (Melbourne, older)

The electricity system and pricing

Depth of knowledge on how the electricity system works is shallow

There are **varying levels of understanding on how our electricity system works**. Some people understand the process of how electricity make it to homes. However, terms tend to be general and colloquial. With some exceptions, terms such as *generation, transmission, distribution, metering* and *retail*, tend not to be common language used by customers.

"I have a basic understanding of the system. The grid comes from coal fired power stations mostly and travels through the huge overhead cables around our state and we even swap power with other states sometimes. Then on smaller poles to our houses." (Regional, older)

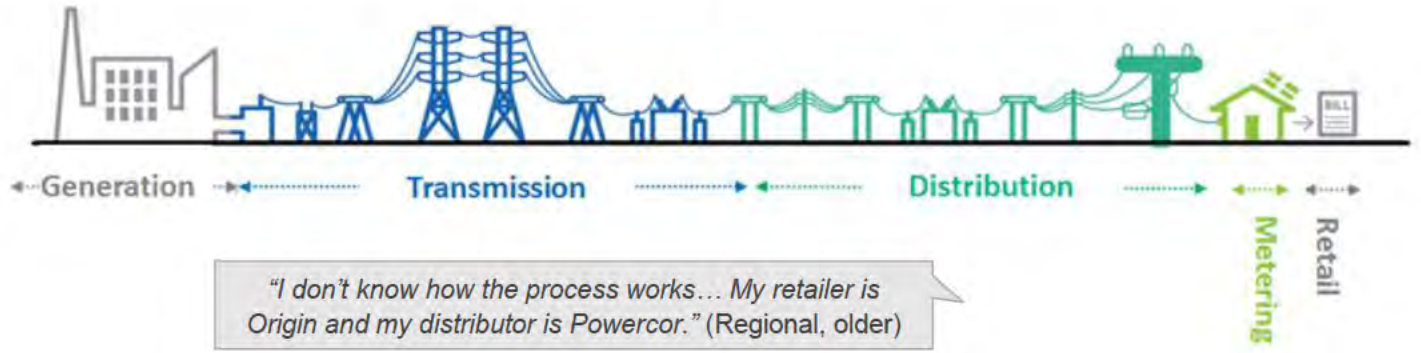
"You generate it in some sort of plant, that's transported down copper wires that come to the suburbs, that goes to the street wires and that goes to your house." (Melbourne, older)

For other people, **the manner in which electricity is delivered to their homes is not given much consideration and so the process is difficult to articulate**.

Most people understand in basic terms that electricity is generated from a fossil fuel or renewable source and then carried to homes through wires.

"I know a little bit but would not be certain my information is correct. My understanding is a natural resource is mined (mostly coal) which is then burnt and the energy from the burning converted to electricity by which it is then transported to users." (Regional, younger)

"There's the mining industry, coal gets transported, burnt at an energy producing facility, electric cables bring it to people's homes." (Melbourne, younger)



"I don't know how the process works… My retailer is Origin and my distributor is Powercor." (Regional, older)

The breakdown of electricity bills is interesting but isn't 'need to know' information

People are largely unaware of the components that make up the electricity bill and their associated contribution. Information on the make up of the bill is typically 'new news', but not information that makes a difference to people. *(The information provided to group participants may be found appended to this report.)*

Given little consideration

Customers tend not to have the time to consider how their bill is divided.

Out of their control

Customers feel they can't impact the individual components that make up their bill. They are more concerned with what they can do in their homes to reduce overall costs.

Can be interesting

The information is interesting, but not important.

Questions arise

The information can lead to questions and concerns on how the costs are divided among the companies in the supply chain (namely, whether the amount is justified at each stage).

"No, I didn't know the distribution costs were such a large percentage. I have never looked at a breakdown like this before and I'd like to know why it's so high. I appreciate this information." (Regional, older)

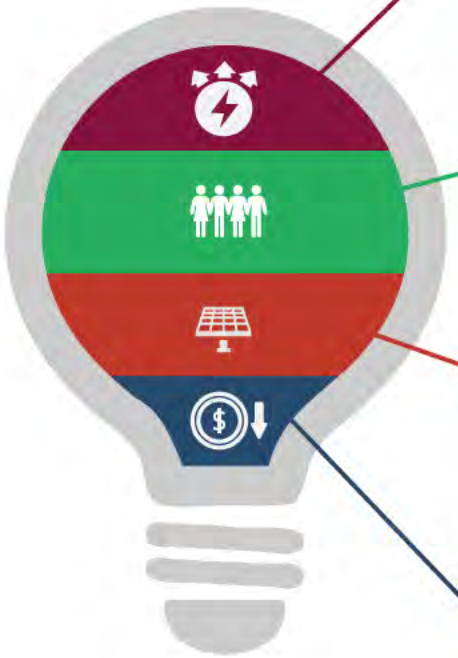
"Honestly, with three young kids and the hectic lifestyle lived today I'm really not all that concerned with the breakdown of my electricity bill. My only concern is the total bill cost and trying to get the best deal possible to get it as cheap as possible." (Regional, younger)

"Honestly, I have never thought about it. No, it's not important to me because there is nothing I can do about it." (Regional, older)

"You've got to pay it anyway, it's a cost of living." (Melbourne, older)

The need to plan for the future is a given and distribution companies are no exception

Population growth and constant technological improvements means that infrastructure must keep pace and provide a framework for the overall cost of new technologies to decrease. Customers tend to accept that distribution companies need to plan for the future – noting that this view holds across many sectors, not just energy.



Planning is required

Not only accepted but expected that distribution companies plan for the future through research and development and investment in the electricity network.

The population is growing

Planning is needed to accommodate population growth and the associated increase in demand for electricity.

New technologies are a part of progress

Technologies push society forward and improve lives. It's vital that infrastructure keeps up, or society will be held back.

Costs should decrease

With the required planning and infrastructure framework in place, there is an assumption that increased adoption of new technologies is inevitable. This will push prices down and improve access.

"All the companies in the supply chain will and are planning for the future and the electrical industry as a whole is continually doing this, with new and more efficient technology coming into play continually. What I see many times is companies using 'new' technology as an excuse to increase prices to their consumers when the uptake of new technology should be reducing costs, not increasing." (Regional, older)

"Yes, failure to do so would be dangerous. We need to be proactive about testing the potential impact of new technologies that rely on the electrical grid, especially when business, industry and day to day life is dependent on electricity." (Regional, younger)

Impact of increasing EV uptake

Knowledge of electric vehicles is framed around price, running costs and technology

Expensive to buy

'High' price drives a perception that electric vehicles are for the wealthy. Given the relative cost compared to petrol vehicles, it is hard for most people to envisage owning an electric vehicle in the near future.

"I know Tesla is a brand that make them, and the cost of running in relation to buying petrol would be much cheaper. I'm sure I've read somewhere that they are an expensive car to buy, so at the moment, I'd guess that only a small percentage of people in Australia would purchase them. My perception is that a lot of Hollywood stars drive them." (Regional, younger)

May be cheaper to run

Still some uncertainty on whether running an electric vehicle is cheaper than a petrol car. While it is acknowledged that petrol is expensive, the cost of electricity is also considered to be high. People are unsure how much electricity is needed to charge electric vehicles.

"I really do not know very much about electric vehicles other than you save money on petrol but with all of the charging of the batteries from home (I would think) it makes me wonder if you save money as a whole." (Regional, younger)

Advancing technologically

Recognition that improvements in electric vehicle technology are constantly being made. Drives a perception that cars will be able to drive for longer on a single charge.

"Good technology. Quiet, efficient and can be incredibly fast (not necessarily a good thing). Distance driving is still an issue due to limited recharging options and recharge times, but as battery technology improves that will also get better." (Regional, older)

Electric vehicles might be better for the environment, but the purchase price is prohibitive

Good things about electric vehicles:

- ✓ Better for the environment as they do not omit emissions when driving.
- ✓ Potentially cheaper to run compared to a petrol car.
- ✓ Can reduce the population's reliance on petrol/ oil.
- ✓ Creates increased consumer choice, in turn creating more competition amongst manufacturers.

"I still don't think they solve the issue of pollution and climate change, even though the fuel is not being burned in the car, it is still fossil fuels." (Melbourne, younger)

"It's (an electric car) *dangerous, people can't hear you coming."* (Melbourne, older)

"I think the biggest drawback at the moment would be finding charging stations." (Regional, older)

Downsides of electric vehicles:

- × The purchase price make them unattainable for most people.
- × The main reliance of the grid on fossil fuels means the power source will be mostly non-renewable.
- × Charging is difficult as the perception is that there are not many charging stations.
- × Electric vehicles can be dangerous as they are much quieter than petrol cars (pedestrians don't hear them coming).

"It can save me costs, of maintaining the car, at the moment I have a lot of costs, like petrol." (Melbourne, younger)

"I have heard that they are considered environmentally friendly, they're quiet and economical." (Regional, older)

"Love the fuel economy and also so much less pollution on our streets." (Regional, older)

There are different perceived benefits of electric vehicles for the individual versus for Australia

Spontaneously mentioned benefits for individuals tend to be linked to reduced running costs

For customers, the potential benefit of electric vehicles to them personally relate to lower running costs. This can be due to:

- Not having to pay for petrol. General assumptions (for some people) are that electricity would be a cheaper source of fuel than petrol.
- Electric vehicles may be cheaper to service and maintain; some people perceive there are fewer engine parts.

There is some recognition that reduced emissions is better for individuals. Customers do not intuitively draw a connection between increased electric vehicle ownership and a decrease in overall electricity costs.

"Personal benefit would be not paying for petrol. Will my local mechanic be able to work on an electric car? And for the environment, they still have to use the electricity, I don't think more people on the roads in an electric car is going to help the environment, they need to get off the roads." (Melbourne, younger)

"There are less moving pistons to go wrong. The cost of getting serviced all the time is probably cheaper." (Melbourne, younger)

Benefits for Australia as a whole tend to be focused on better environmental outcomes

Reduced emissions are the primary (and for many people, only) benefit to Australia. Views on this are somewhat mixed, as there is acknowledgement that much of our electricity still comes from coal-fired power.

There is some mention of reduced dependence on oil in general, which can be a costly and hard to secure resource.

"If more people go electric it reduces the pollution. The pollution problems are difficult in our cities and particularly in Melbourne where sometimes the pollution just lies over the city. For Australia it takes pressure off our oil supplies as we don't produce much and we apparently have very little reserves of oil." (Regional, older)

"Cleaner air generally is a very attractive personal benefit to me, but I am also curious about the offset value of the generation of the electricity. Is a car cleaner if it burns coal or petrol? I would like to know if the electric cars can be guaranteed to run off solar or wind generated electricity rather than traditional forms." (Regional, younger)

Price point, followed by recharging accessibility are key to increasing accessibility of electric vehicles

"Initial vehicle purchase price is substantially higher than its equivalent petrol versions. Maybe the government can offer incentives to purchase electric, e.g. discounted registration, etc." (Regional, younger)

"Cheaper purchase points, tax non electric cars! Make recharging more accessible. Reduce the cost of batteries for homes, further incentives. It needs to be led by government initiatives. It will be hard to go against the oil industry." (Regional, younger)

"From an environmental standpoint, the government should get behind it, put solar panels on petrol stations so we are filling up on green fuel, but the petrol companies are going to want you to keep buying cars. We want to be environmentally friendly but we can't afford it." (Melbourne, younger)

Price point

The price of electric vehicles needs to decrease for the wider population to even consider adoption. This is the first step towards improving accessibility.

Improve understanding

Improved knowledge of electric vehicles is seen to help drive accessibility. People are generally uninformed on running costs and distances, which creates apprehension.

Better recharging accessibility

Once the price of electric vehicles has decreased to a point that is accessible to the wider population, people want to see improved access to charging stations. Currently, the perception is that charging vehicles outside of homes is difficult. The key concern here is that travelling long distances is problematic, and people are concerned they will be stranded if they are running low on power and cannot access a charging station.

Driven by government

Generally, people want to see the government drive electric vehicle adoption through incentives, taxes and policies that encourage electric vehicle ownership.

Improved accessibility of electric vehicles

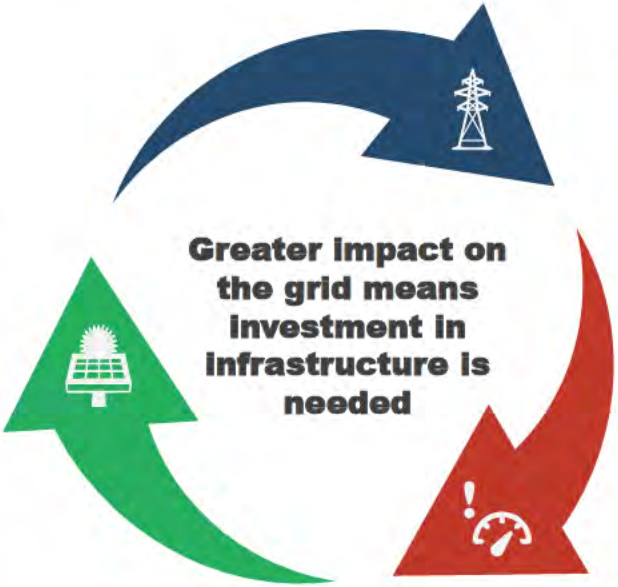
"The price would have to be affordable for all. The government needs to help with this." (Regional, older)

"They will have to supply power points to charge the cars in more locations. Lower prices which the government would have to help with if they want people to own them." (Regional, older)

There is unprompted recognition that electric vehicles will put extra strain on a system that is already struggling

Solar can minimise risk

There is a view that the potential strain on the network could be reduced by people charging their cars through personal solar-produced energy, but this is not the sole solution (cars will also need to be charged away from home and overnight).



The electricity system is already struggling

The network is perceived to be in need of upgrades due to blackouts that occur in summer from high electricity usage.

Electric vehicles will put increased strain on the system

Immediate assumptions are that electric vehicles will further exacerbate the issue due to the increased demand for electricity.

"We're actually buying more than what we're producing… More electric vehicles means more pressure on electricity and more cost." (Melbourne, older)

"Of course we would need to invest. You can t encourage the population to invest in something electrical but then not provide sufficient power!." (Regional, older)

"The grid will collapse, as more electric vehicles are being driven. We will need electric vehicles to have their own solar source, as this would help towards easing the electricity network from being over loaded." (Regional, older)

"The current network can't support more feed in to the grid of solar, let alone voltage issues that will be caused by more batteries and cars charging. Major infrastructure reworks are required immediately." (Regional, older)

Peak demand and investment in infrastructure

The term 'peak demand' is not well understood

'Peak demand'

In the main, unprompted understanding of the term 'peak demand' tends to be perceived in two different ways.

A few times a year

✓ Some people understand that 'peak demand' occurs on the few days a year where electricity usage is at its absolute highest. This is linked to blackouts in summer due to air conditioners.

"In the summer time, when everyone is using their electricity and their air conditioners and we have a black out." (Melbourne, younger)

Daily occurrence

× Some people mis-understand 'peak demand', believing it applies to daily surges in electricity usage – in the evening when people return home from work.

"I assume peak demand is when there is a huge increase in electricity usage at the one time. Not sure of times but early evening, around meal time through until about 11pm." (Regional, older)

Further, the term 'peak demand' is similar to other electricity related terms such as 'peak' and 'off-peak' tariffs. Some people can confuse the various terms and interchange them, resulting in a misunderstanding of which term applies to each situation.

"When I was younger, 'off-peak' meant late night to early morning when people weren't using so much electricity. Users were encouraged through a much lower tariff to run electric stored heat (heats a full tank) hot water units and other high energy items during this time. Now, with more people using central heating and air conditioning units, I'm not sure if peak demand can be fixed to a time frame any more." (Regional, older)

Once explained, peak demand is a concept people can understand

In the future, global warming and more extreme weather conditions are seen to likely increase the frequency and length of peak demand periods. Population growth will also have an effect with more people requiring power.

New technologies such as electric vehicles are understood to not only increase the amount of electricity needed during peak demand periods, but also extend peak periods. Further, there is a perception that our reliance on electricity becomes greater over time as the number of products and devices used in homes increases exponentially.

Comparing life today with that of the past provides an indication of how our electricity usage has increased. Households used to only have one television, one fridge, etc., whereas today it is not uncommon for many homes to have numerous appliances and devices that all require electricity.

These factors drive a view that the electricity system will require constant upgrades to cope with future demand.

(The information provided to group participants explaining 'peak demand' may be found appended to this report.)

"People rely on electricity more and more as time goes on. More appliances, perhaps charging their electric vehicles and new technologies in the future. This would expand our peak periods for sure." (Regional, younger)

"I haven't heard of this before but I understand now how blackouts occur and why. I'm not sure how we can change the actual peak times when the vast majority of the population do the same things everyday, perhaps again educating the public about these times and it seems the government will have to invest in upgrades to transformers and other network infrastructure." (Regional, older)

"With our uptake of more and more technology in our homes and businesses, demand will always increase. I think the statement 'Electricity demand reaches its maximum levels usually only for a few days each year in summer' is not accurate and will and does happen more often than this." (Regional, older)

"I'd imagine that global warming and longer periods of consecutive hot days over summer would effect periods of peak demand. If you had a greater rate of adoption of plug in electric vehicles needing to be charged during peak times, that would place serious stress on the grid." (Regional, older)

"Obviously demand is going to go up… the amount of apartments that have gone up in the area as well… when I was a kid, you had one TV in the house." (Melbourne, older)

There is a need to plan for future energy demand

As mentioned previously, people believe that across many sectors, there is a need to plan for the future – road infrastructure and the NBN are examples cited where required infrastructure has not kept up with population growth.

To this end, when learning about peak demand and changing technologies, customers similarly agree that there is a need to be prepared for the future.

"We have to think of it like superannuation, you've got to plan for your future." (Melbourne, older)

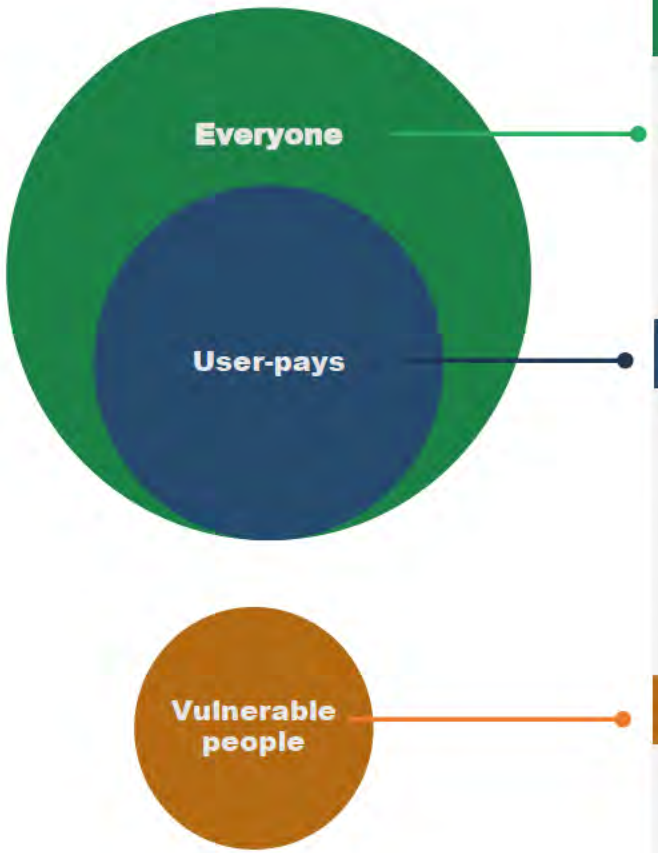
"It worries me for the future. We need to plan for this now (or yesterday!). Ideally with further investment in solar (both household and commercial) this will assist, as will the uptake in VPPs (virtual power plants) which is the aim of the battery rebate scheme." (Regional, younger)

"Yes, I am aware of how this peak period works. I never thought of it from the distributor perspective though... so yes, it definitely makes sense that they would need to upgrade powerlines, etc." (Regional, younger)

"I would question why the capacities of the network haven't been upgraded. This problem isn't a new one. In this day and age surely someone can say, 'let's fix this' and spend some money as our weather gets hotter, blackouts will occur more often." (Regional, older)

Views differ on who should bear the cost to upgrade the system to meet future demand

It is understood that the system needs to be upgraded in the future, but who should pay to upgrade the electricity system to meet peak demand?



'Everyone should pay' considerations

- Everyone uses electricity. People cannot predict their future use and may have a need to use it during peak times. With this in mind, everyone has a responsibility to contribute to costs.
- The government should use taxes to upgrade the system; this ensures a form of 'means testing'. Once infrastructure is established, end users will pay according to their consumption.

'User-pays' consideration

- Those that are already struggling to pay their bills would be protected from increased costs.
- Big business seen to be a major contributor. Those who aren't contributing as much to peak demand shouldn't have to bear the cost as much as higher users.
- Concerns that if everyone pays, extra revenue generated would go to profits. User-pays helps minimise this.

Vulnerable people

- Should be protected or exempt from bearing costs of upgrades.
- It is unfair to charge according to how much people contribute to peak demand, as vulnerable people may only be able to afford less energy efficient appliances.
- The government should offset the costs that vulnerable people would need to contribute.

Meeting peak demand in the future: Select verbatim comments

Who should pay to upgrade the electricity system to meet peak demand?

"Everyone should pay for it, because the price of electricity will go up. If I'm a person with an electric car, I will pay for more litres of electricity. The distributor fees will just get built in, unless the government says it is an environmental thing." (Melbourne, younger)

"I think it could be like the smart appliances, the expectation that your fridge will always be on, there is going to be this increase to have electricity to power these modern homes, then maybe there is an argument that everyone should share this cost." (Melbourne, younger)

"Everyone should pay towards upgrading the grid shared evenly. Though you may not require much electricity currently during peak periods, there may come a time down the line where you do and when you do it's only fair that you contributed towards the cost of the upgrades." (Regional, younger)

"The Government should pay for these upgrades. Asking customers to share the cost would put strain on those struggling to afford power, I can't see myself finding any more money to put into these costs, and people that cannot afford to use heating or cooling at the moment should not be impacted." (Regional, older)

"I think everyone who contributes to peak demand should be paying the most, big businesses. If you're not using electricity in peak times then it doesn't seem fair to have to pay but then vulnerable people who rely on life saving appliances definitely need to be compensated." (Regional, older)

"Vulnerable people shouldn't have to contribute to upgrade costs. Perhaps it should be distributed around how much peak power people use, especially large corporations who rely on huge electricity use during peak periods would contribute more than say a small family home." (Regoinal, younger)

"Vulnerable people would be the exception to this, e.g. low income, carers, families of the very young, elderly and people unable to work due to legitimate medical reasons. Their costs should be offset by the government." (Regional, younger)

"I'm not sure I'm comfortable charging people based on how much they contribute to peak demand. However if someone is taking steps to lower their energy use and others aren't, that does raise something to consider. However, many vulnerable people in society are often those less likely to be able to afford low rating appliances, solar panels and insulation or be able to make substantial changes if they rent." (Regional, younger)

Infrastructure investment for new technologies

There are a range of view on who should pay for electric vehicle trials

It is generally accepted that the electricity system will need to be upgraded to meet future demand and cater for new technologies. However, when it comes to exploring alternative options for electric vehicles through testing and trials, analysis and modelling and innovation, there are differing views on how this should be funded. Primarily, customers believe these costs should be covered by:

- **Car companies –** Industries need to invest in their own research and development. The cost of doing so should be factored into the end price of a product. In this instance, an electric vehicle.
- **Government –** The government should assist industries with research and development through funding. The government also has a responsibility to promote and fund innovation that will ultimately benefit the wider population.
- **Distribution companies –** Distributors have a responsibility to ensure the network is fit for purpose. Companies make profit from providing a distribution service and so should have budget set aside for testing, modelling and trials for new technologies.

In this instance, customers are hesitant to see these costs passed on to all end users. Once trials have been completed, there is more openness to bearing some cost for infrastructure investment.

"The companies that produce the vehicles. At the least they should make a contribution… it makes sense that they have to bear the brunt." (Melbourne, younger)

"I think if you can afford to drive one of these cars then you should be prepared to pay more for your electricity. The people who make the cars and the government should be prepared for these costs exploring alternative options through testing and trials." (Regional, older)

"The industries that would benefit (financially) the most should be paying the most to research, trial and test new and better ways to improve this sector, it's in their interest. That said, governments could (and should) offer any and all assistance they can to help make this happen – this can be done in a myriad of ways." (Regional, older)

"Research and development costs are always passed down the line to the end-user, us the consumer, and becomes one component in the final pricing of a product. So it is not a choice on who should pay at the end of the day, it's always the consumer who pays." (Regional, older)

"The distributors should be responsible for testing, trials, analysis, etc. Ultimately, it is their responsibility to provide a network that is fit and stable for use, especially seeing as they make money off it. This cost should not be passed on to consumers." (Regional, younger)

The amount of electricity needed to charge an electric vehicle is surprising

Participants in the focus groups were provided the following information:

'An electric car with a typical daily commute of 40km requires roughly 6–8 kilowatt hours of energy to recharge, which is equivalent to the daily needs of a small household. In other words, if you purchase an electric vehicle, the impact on the local electricity network is about the same as adding a small house to the neighbourhood.

Unlike showering, cooking and heating our homes, it is possible, when a car is not immediately needed, to shift the demand to other times, such as overnight, when there is more capacity in the network.'

"I'm surprised that one car is equivalent to the daily needs of a small household, that seems like a lot to me. If I understand correctly, that would mean that if everyone were to purchase an electric car, the power demand would be approximately doubled, if not more as most households have more than one car. I wonder how it would work with households who have four or more cars needing charging at the same time."
(Regional, younger)

"I am astounded at the requirements to recharge. However this does not change my views in relation to user pays. It is fortunate that much of the recharging will be done at off-peak times so perhaps this could be encouraged by off-peak rates."
(Regional, older)

Positives:

- ✓ Provides important context on the amount of electricity needed to charge electric vehicles.
- ✓ Allows customers to understand that charging electric vehicles is an everyday activity that has greater flexibility than other types of activities.
- ✓ People spontaneously suggest that electric vehicle owners should be incentivised with lower rates to charge during off-peak periods.

Questions/ concerns raised:

- The notion of potentially doubling the electricity needs of neighborhoods can be a confronting prospect.
- The information outlines the electricity requirements of just one car. With some households potentially purchasing multiple electric cars, people are worried that the load on the system will be crippling.

The amount of investment needed provides context but figures can be polarising

Participants in the focus groups were also prompted with the following information:

'The required investment in network and generation infrastructure, over the next 25 years or so comprising preparation and upgrades to the electricity system to cater to increased uptake of electric vehicles, is of the order of between $6.3 and $9.7 billion.'

"Is there any breakdown per average household? Is there a forecast of how many electric cars?" (Melbourne, younger)

"Over 25 years, that cost doesn't seem astronomical for upgrades. I do not think this is a social responsibility, as power bills are already so high, this will impact on the vulnerable." (Regional, older)

"That seems like a lot of money to spend on something that I really can't see huge benefits to. I may need to better inform myself about electric cars as at the moment, with what I've learnt here, I really don't see any great benefits to switching to electric." (Regional, younger)

"The figures involved aren't surprising to me. I agree that the need to prepare for the future of not just electric vehicles but everything future related is a social responsibility – and not just the costs, but the consequences will inevitably be borne by everyone one way or another – whether we like it or not." (Regional, older)

Positives:

- ✓ For some people, the potential cost of upgrades isn't as high as they may have thought. Those that hold this view are able to recognise that the outlay over 25 years is potentially manageable, meaning customers may not have to bear a large cost.

Questions/ concerns raised:

- The potential outlay can be polarising as people focus on the amount and tend not to take in the 25 year timeframe.
- People are seeking information on the forecasts of electric vehicle ownership in the future to provide context to these figures.
- Importantly, customers want to know how much it will cost an average household – this is the information they need to form a view on the outlay. Essentially, they want to know what it will mean for them.
- In the absence of a real and tangible benefit to customers (such as decreased cost of electric vehicles), the cost of upgrades may not seem worth the outlay.

There is a spread of views on who should bear the cost of innovation to prepare for the future of electric vehicles

Why everyone should pay

- Population growth means that the electricity system will need upgrading regardless – electric vehicles are just one contributing factor.
- Technological changes are inherent to delivery of all services. As for all essential services, consumers are ultimately the ones that pay.
- It is a government responsibility to ensure the power grid meets consumer needs. Upgrades should therefore be funded through tax payer dollars.

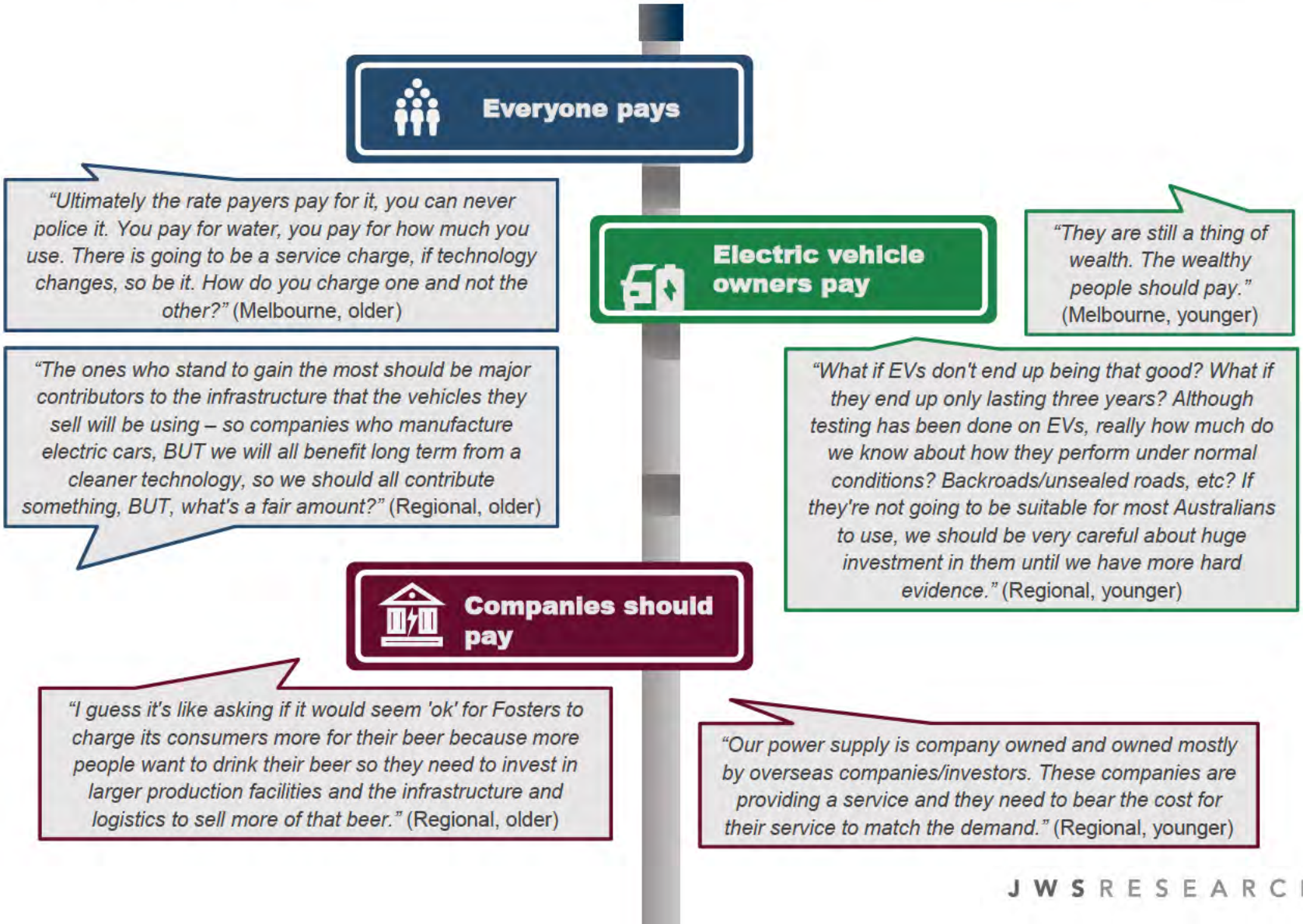
Why electric vehicle owners should pay

- Electric vehicles are perceived to be currently unattainable for the wider population, making it difficult for some to swallow having to pay to fund infrastructure. This drives a perception that those who can afford electric vehicles should bear the cost of upgrades.
- Some customers are still not sure electric vehicles are the way of the future. People need to be convinced there will be mass-uptake. Given uptake is currently relatively low, it is hard for some to envision widespread use of electric vehicles in the future.

Why companies should pay

- Companies are responsible for providing a service to match market demand. It is therefore their responsibility to invest in infrastructure as technologies evolve and demand increases.
- There are other more important services such as healthcare and housing which people already bear a social responsibility to pay for.

Views on who should bear the cost of innovation to prepare for electric vehicles: Select verbatim comments



Customers tend to agree that upgrades to infrastructure to cater for new technologies should happen faster

In the main, customers feel infrastructure investment and upgrades for new technologies should occur as fast as possible. There is a view that Australia often lags in this area and customers are mostly in favour of the system being prepared for the future.

Some people hold the view that a cautious approach should be adopted – there is no guarantee that electric vehicles will be adopted by the masses. In this context, a 'wait and see' approach is considered the best option.

Some people are torn between recognition that new technologies need to be prepared for, but not yet convinced of the benefits. The best option is to keep at the current pace and 'play it safe' until there is a clear need identified.

The more common standpoint – the best option is to prepare for the inevitable future and fast track adoption. Australia has a poor track record of this so now is the time to think and plan ahead.

"I'm not sure how fast it's going now, but I'd say take it fairly slowly. I don't think electric cars are very popular yet, and who knows maybe they'll never get super popular (or may not get super popular for a long time). There are other things that electricity companies need to do that I think are more important (increase efficiency to reduce costs, solar administration improvements, etc.)." (Regional, younger)

"I think it's something we need to prepare for.. I'd hate to see a huge boom for electric vehicles and then not the resources to use them. But I also don't think it's something we should rush into... perhaps just keeping at the same pace for now." (Regional, older)

"Faster and to think ahead. Much easier to be ahead of demand and easier to upgrade when the system is not under duress. Compared to our road/public transport network which is always behind demand and works then create larger disruptions/delays." (Regional, younger)

"If more people are going to be driving electric cars then we will need to upgrade the electricity network quicker to cater for new technologies as we will be drawing a lot more power with running the cars and homes." (Regional, younger)

Who should pay for infrastructure investment for solar panels is again a divisive issue

The initial reaction among some people is that the government and those with solar panels should pay for the necessary upgrades. In a financial sense, the benefit to the wider population of increased solar panel uptake is not entirely clear and this presents as a roadblock to accepting the need for the whole community to bear some cost.

However, relative to electric vehicles, solar panels are considered more attainable for most people, especially those who own their own home. There is an assumption that solar panels will soon be accompanied by batteries to store electricity. These can be used to help support the grid during peak periods and potentially reduce the need for major upgrades. There is a concern however, that burdening solar users with high tariffs, high connection fees or an inability to feed into the grid, may discourage people from installing solar panels in the future.

Some people recognise a need for everyone to contribute to the cost of upgrades, as (almost) everyone uses the grid in some way.

Ultimately, customers are hesitant to see any increases on their bills as cost of living pressures are already high. Funding through taxes is a way to ensure lower income earners are not as drastically effected.

"This isn't taking into account solar panel batteries, batteries will get better. If the solar panel has a battery, then they are not going to be using the electricity grid… if you have a whole lot of people with batteries, and you hit that peak demand, they can use their batteries to feed into the grid." (Melbourne, older)

"It always comes back to us. Ultimately it should be everybody because it is going to benefit everybody." (Melbourne, older)

"Look perhaps I would say here, that a portion of the upgrade costs could be distributed between solar panel users... with bills being dramatically lowered, I think it's something that could be considered. I am looking into using solar in the future and I would be prepared to pay a small portion of the upgrade costs for the network." (Regional, younger)

"Again should be user pays, but this disincentivises solar uptake." (Regional, younger)

"People who are in thresholds who don t pay tax, they are not paying for it. They have paid for it historically when they paid tax. Everyone is paying for it in levels, which I think is fair." (Melbourne, younger)

"Yes, we should all pay, people without panels are relying on the system in different ways than people with solar panels but they are all users and should therefore share the cost. Passing it through electricity bills is a bit counterproductive though as the increased cost will discourage compliance and uptake." (Regional, younger)

Electric vehicles are viewed differently to solar panels and air conditioners

Primarily, solar panels are seen to be more accessible, more popular and more affordable; all while considered to be reducing the load on the grid. A potential win-win scenario. Solar panels act as an enabler to moving away from fossil fuel reliance which reduces emissions. This is seen to be a responsibility borne by all.

Air conditioners are considered a necessity and so their use cannot be avoided. However, there is recognition that people could be educated on the need to consider the setting on their air conditioner during peak periods.

Need	Luxury item	Not essential but desirable	Necessity
Accessibility	Only to a few	Accessible to most	Accessible to all
Popularity	Minimal	More mainstream	Widespread
Price	Expensive	More affordable	Affordable
Efficiency	Not yet efficient	Efficient	Efficiency can vary
Impact on grid	Extra strain	Decreasing load	Extra strain

"The need to increase our use of solar and wind power instead of fossil fuels is a responsibility for everyone, world wide. In saying that, the government and manufacturers should bear the majority of the cost as the consumers are already paying for the panels and installation. I don't think it's different to the upgrades to the network." (Regional, older)

"Electric vehicles are only afforded by a few so far so it's different to day to day living for everyone. Electric vehicle prices will come down with demand and also as batteries get better. Solar power is for everyone, but electric vehicles not yet." (Regional, older)

"Air conditioning is not a luxury but a necessity for many, but an electric vehicle is a luxury." (Regional, older)

"I think the difference is with solar it is popular and efficient, whereas electric cars are not popular yet and given the amount of power they need, not efficient in terms of drain they would be on current grid. Solar reduces strain on grid, electric cars increase it." (Regional, younger)

Pricing for new technologies

The impact of electric vehicles on peak demand is a concern; spontaneous reactions are to shift charging times

Once aware of the amount of electricity required for an electric vehicle (equivalent to a small house), people are quick to make a connection between the potential simultaneous charging of electric vehicles and the increased load this would put on the system.

> *"If everyone decides to charge cars at the same time, it would put a huge load on the existing infrastructure. Maybe if people waited and charged over night it might make some difference as there isn't a huge load overnight but if everyone did that it would make a peak period over night so it's a hard one."* (Regional, younger)

However, the relatively low uptake of electric vehicles means some customers are hesitant to support upgrades that would address the potential risks.

> *"I just feel that unlike solar, electric cars aren't showing themselves to be a popular, accessible option yet. I'd want EVs to be much more popular before investing significant amounts of money into EV-specific infrastructure, particularly if it directly increased my bills."* (Regional, younger)

Home batteries are seen to be the missing link to maximising power generated by solar panels. These will allow consumers to charge their cars during peak periods without putting increased strain on the grid.

> *"If more homes had battery back up systems that are charged during the day, then that stored energy could be used as required to recharge electric cars. If more homes had this capacity, then there would be less need to continuously upgrade the network to deliver the massive needs of the end users of energy, but then the distributors wouldn't be selling as much energy. Also they'd not need to have such a huge upgrade of the distribution networks to deliver that energy."* (Regional, older)

Customers spontaneously suggest that charging electric vehicles should be shifted away from peak demand periods through the use of timers and smart meters. However, there is a concern that this would simply create a new 'peak period' and result in higher tariffs across a longer period of the day.

> *"Maybe cars could be charged via a specific module or charge point that can only be switched on at certain times. Full charging could take place overnight where the demand for electricity is at a minimum."* (Regional, older)

> *"I don't see it being that effective – if everyone postpones peak electricity usage till off-peak times, peak demand would only be delayed."* (Regional, younger)

Relative risks and opportunities of electric vehicles

Consideration of balanced information on the possible impacts of increased penetration of electric vehicles presents both risks and opportunities. In the absence of guarantees and concrete information, it is difficult for customers to determine if electric vehicles are a risk or an opportunity overall.

While there may appear to be more opportunities, people are unclear if all of these opportunities will eventuate.

Some people expect any issues (both risks and opportunities) will resolve themselves as uptake proliferates. There is an assumption that 'bumps in the road' are common with new technologies, but society will figure things out as usage becomes common.

- The potential to overload the grid and damage appliances is a prominent concern.
- Rapid uptake of electric vehicles presents a possible risk to reliability of power if the extra strain on the grid is not properly planned for.

- There is opportunity if solar can support electric vehicle charging. If the source power used to charge electric vehicles is renewable (either from household solar panels or through more renewable energy in the grid), there is greater opportunity for all through reduced emissions.
- A potential decrease in the unit cost of electricity is appealing, but some are sceptical this will occur.
- The possibility for electric vehicles to support the grid during peak periods is appealing but customers are unsure if this is realistic.
- Perceptions that more research and investment into batteries for both cars and households will help solve the potential risks posed by electric vehicles.

Relative risks and opportunities of electric vehicles: Select verbatim comments

Risks

"I think I want to know where they see the technology going. What are they actually saying the km per charge will be and the battery life and the impact on the environment. The trade off, is it worthwhile?" (Melbourne, younger)

"I guess I'm wondering why the 'opportunities' aren t happening already and why – again – research hasn't been concentrated on improving the batteries both in cars and in houses so that these 'challenges' aren't challenges or happening." (Regional, older)

"Certainly they are valid concerns. This again drives the need for the adoption of solar batteries and further research and development to improve solar cell efficiency and reduce battery costs. The application of a solar battery system for every electric vehicle sold effectively solves each of those concerns." (Regional, younger)

Opportunities

"If it causes power outages, extra loads on the electricity network and damages household appliances then it does not seem worth it even with the opportunities… it all seems one big cost for the consumer." (Regional, younger)

"Electric cars have to be better for the environment so long as the electricity comes from a renewable source. This has to be an opportunity for us all." (Regional, younger)

"I like the idea that in the future vehicles could possibly be used to support the grid, but this is only a possibility, I would be interested to see if increased demand for electricity would decrease the cost to everybody, the decrease in volume is a big concern however, damage to household appliances could be a major problem." (Regional, older)

Shifting the charging of electric vehicles away from peak demand presents a number of benefits and concerns

The notion of moving charging of electric vehicles away from peak demand periods is welcomed by customers. However, there are some concerns that may need to be considered.

Shifting charging away from peak demand

Potential benefits

- Shifting the charging of electric vehicles away from peak demand periods is an intuitive solution to customers and one they are likely to support.
- Doing so can potentially encourage people to use electricity more wisely, as they are likely to monitor their usage.
- The move has the potential to reduce the strain on the grid during peak demand periods and minimize the need for infrastructure upgrades.

Concerns

- The demand for transport flexibility means people may charge their cars at times that are most convenient to them (rather than off-peak).
- The incentive would need to be significant to encourage electric vehicle owners to charge during off-peak periods. Small savings may not be enough – there is an assumption that convenience will outweigh cost for owners of electric vehicles (the perception is that they do not have money worries).
- Environmentally, there does not appear to be any benefit – solar is not available overnight, rather cars will be charged with non-renewable (coal fired) electricity.

Shifting the charging of electric vehicles away from peak demand: Select verbatim comments

"The benefit of this is that it would encourage people to use power more wisely. My only concern with this is that power companies could use this as a profit making tool and raise prices during times they don't need to, so this would have to be monitored or mandated." (Regional, older)

"I don't see it working, if you have a million small houses using electricity, and demand using it overnight, you have no solar availability, you have to use more coal, I see it sort of being detrimental, if the whole point is environmental sustainability." (Melbourne, younger)

"I think this would be a good idea but not sure a lot of people would take note as people are going to charge their cars when they need them whether it is in peak time or not. Would this also be for people who don't own an electric car as I think everyone would want the same discounts." (Regional, older)

"Nice idea, but I just don't think it would work without a pretty decent incentive. People are getting accustomed to having everything at the tip of their fingers – waiting around to charge a car to save a few dollars probably won t cut it." (Regional, younger)

"People will use electricity at their convenience especially if it effects their mode of transport, I'd expect most electric vehicle owners to just accept the added costs of charging during peak times as part of the cost of ownership." (Regional, younger)

Time of use tariffs are the way forward, although there is some expectation that this would be a choice

In principle, enforcing a time of use tariff for electric vehicles is a logical step that would help ease some of the pressure on the electricity network. There are calls by some people for a system such as this to be implemented now, by forcing people to sign an agreement when they purchase an electric vehicle.

> *"If it can be proven that a time of use tariff would reduce peak demand from EV vehicle owners, then sure, a time of use tariff agreement should be signed at the point of sale."* (Regional, younger)

While it may reduce flexibility in terms of charge times, there is a perception that encouraging this now through pricing structures, will ingrain this habit into consumers faster. This will ensure all future electric vehicle buyers understand time of use tariffs are a requirement.

> *"If people want to save money, it will. It is not as flexible… it's a good habit to get into anyway."* (Melbourne, younger)

> *"I agree with the policy of increasing pricing during peak hour, if you have to charge in peak time be prepared to pay the premium and habits do change. Look at plastic bags. Everyone brings their own bags now, so we can change and pricing is one way of enforcing this change."* (Regional, older)

Further, forcing electric vehicles on to a time of use tariff is generally viewed as a better approach to major and immediate infrastructure upgrades. However, some customers see this as merely delaying the inevitable. As the population increases, so too will demand on the electricity system. Consequently, investment and upgrades will be required at some point.

> *"Yes a better approach than to upgrade the whole network but I still have my doubts. Surely increased pressures of population will demand upgrades be done anyway."* (Regional, older)

Some consideration is given to people who may not be able to charge their vehicle during off-peak periods, e.g. those who work hours that do not align with off-peak periods. In this situation, forcing people onto a time of use tariff is considered unfair.

> *"It would definitely disadvantage a lot of people and I think would be extremely problematic for people with strict fixed hours – flexible work isn't as widespread as people make out, and just isn t possible in some roles. Those people could lose out. I also wonder what the reaction would be if, say, there was an emergency and someone hadn't charged their car, and thus couldn't get anywhere."* (Regional, younger)

Time of use tariffs should be introduced now, however charging people retrospectively is considered unfair

Those who purchase now?

Choice?

Supported – fair for EV owners

- Providing the consumer with options is fairest and allows for individual circumstances.
- Will help reduce pressure for immediate upgrades as purchases increase.

"I think it should be applied to all future electric cars. Doesn't seem fair to add costs in retrospect. Yes consumer choice is always the fairest way to go. Everyone's needs and circumstances are different. This may ease the immediate need for immediate upgrades." (Regional, younger)

Mandatory?

Supported – best for all

- Should be brought in as a complement to infrastructure upgrades.
- Has the best capacity to equalise the system overall.

"I think the fairest would probably be bring in a system at a set date with notice. I would hope that it would give them the options of costs going down but not up if they still charged at peak times. It is difficult to penalise people who didn't know going in. I think we should start upgrades to infrastructure while bringing it in." (Regional, younger)

All EV owners?

Fair for those who have already purchased

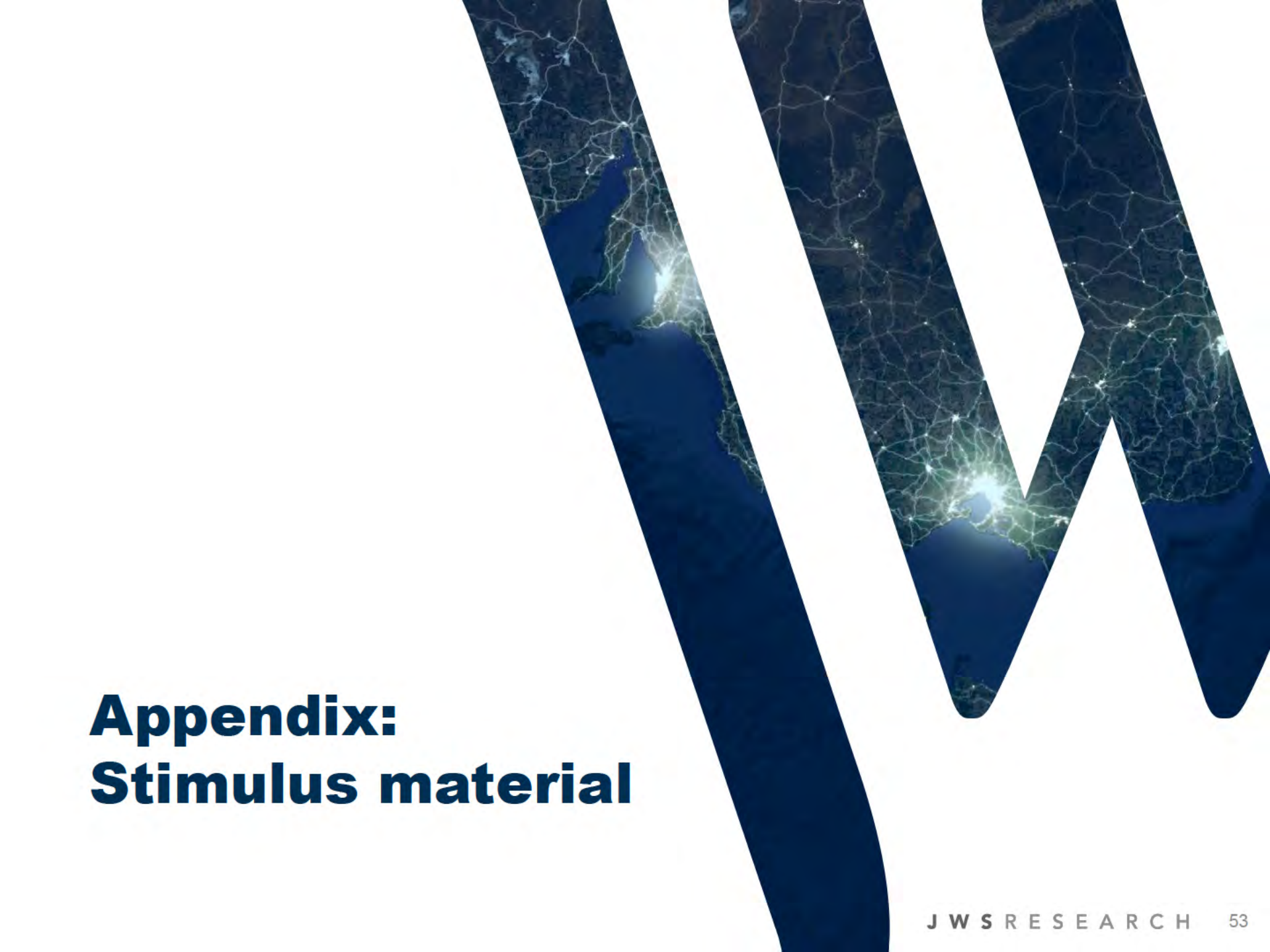
- Retrospective charging seen to be unfair. Providing all EV owners with a choice of tariff is fairest in this context.
- Current EV owners would still get to choose to go on a time of use tariff if they wish.

"The tariff should apply to all owners. I think they should have a choice about which tariff they're on. Not sure how you'd set it up. The 'upgrade' of the network is required no matter what, so I guess now is as good a time as any." (Regional, older)

Unfair

- Forcing those who have already purchased an electric vehicle onto tariffs is unfair as they were not aware when they originally purchased a vehicle.
- It's unfair to penalise people due to lack of infrastructure investment.

"Retrospective charging is unfair. People should not be punished for lack of infrastructure forethought from government or the industry." (Regional, younger)

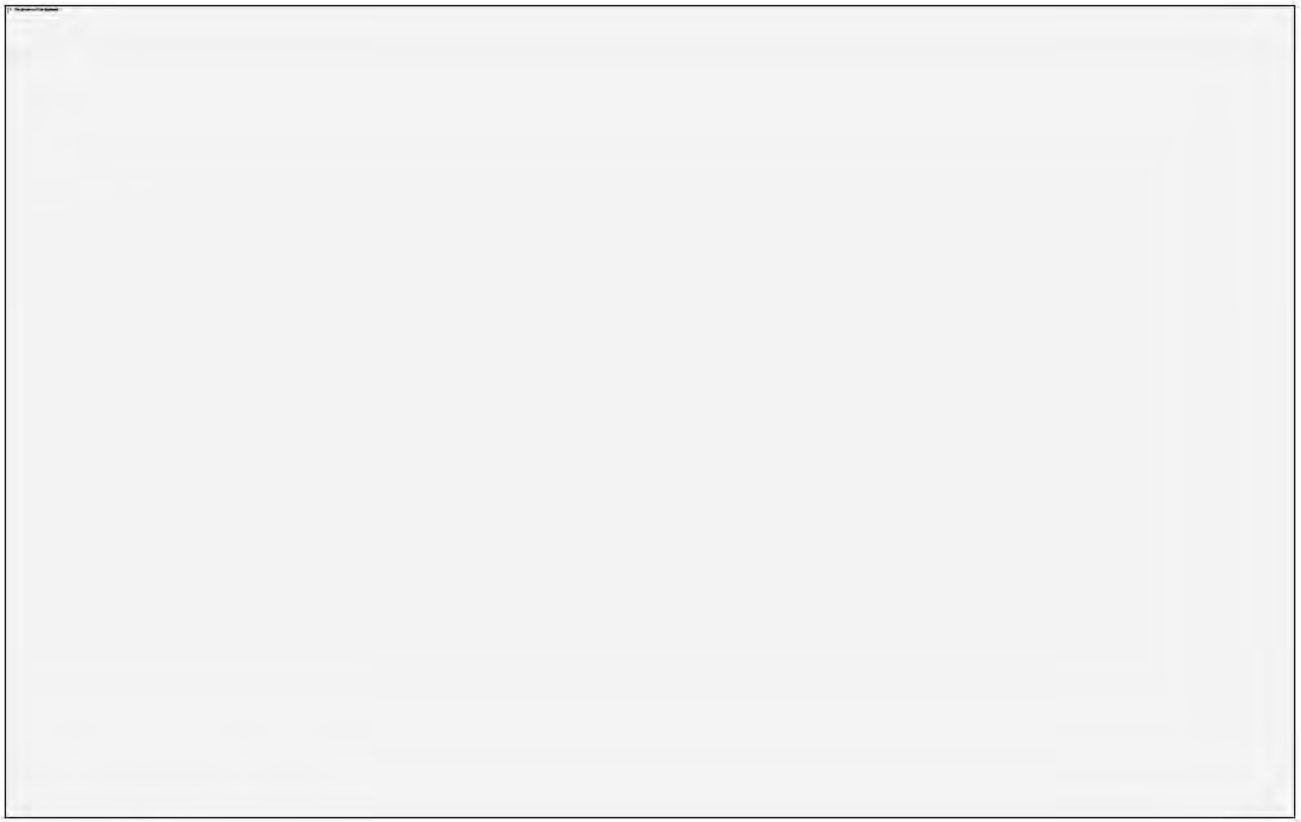


Appendix: Stimulus material

Handout: Components of the electricity bill

Distribution is around 31% of an average bill.

Residential customers pay an average of $86 per quarter for distribution services.



Source: Australian Energy Market Commission,
Electricity Price Trends Report, December 2018

Note: Figures are based on projections for 2019.

Handout: Peak demand

'Peak demand' is when electricity demand reaches its maximum levels at an given point in time. This happens when customers are on average using more electricity each at the same time (e.g. all turn on air-conditioners at once).

A freeway can be used as a way to explain the idea of peak demand. Electricity networks, like metropolitan freeways, aren't used to full capacity all the time: there are 'peak' periods and 'off-peak periods'. And, like freeways, capacity isn't the same across the network: a small part of the network can be highly congested while the rest is flowing freely. However, unlike traffic, transportation of electricity can't 'slow down' when there is congestion. If demand can't be safely met, it must be shed (i.e. parts of the network are turned off, and customers experience blackouts).

Electricity demand reaches its maximum levels usually only for a few days each year in summer (usually to run air-conditioners during heat waves), and rarely for more than a few hours. Historically, a substantial portion of electricity networks were built to meet these maximum peaks, but would sit idle for the rest of year.

To prevent blackouts at these times, distributors need to spend money to increase the capacity of the network to cope with demand on these peak days. This may mean upgrading power lines, transformers and other pieces of network infrastructure, so the network can deliver more power safely and reliably, even though these peaks happen only on about 4 or 5 days each year.

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Issued: 3rd September 2019

JWS RESEARCH

Attachment D
Network pricing options – reflections from initial customer consultation, September 2018

Jemena
bringing energy to life

Jemena

NETWORK PRICING OPTIONS

REFLECTIONS FROM INITIAL CUSTOMER CONSULTATION

SEPTEMBER 2018

Contents

01	Purpose	2
02	A People's Panel to understand customer perspectives on service, pricing and the future of energy	3
03	Pricing structures	4
04	Subscription pricing, and demand management rebates	6
05	Implementation	6
06	Continued panel deliberation	7
07	Final recommendation process	8
08	Our reflections	9

01

Purpose

Jemena, along with the other Victorian electricity distribution businesses, is consulting with stakeholders on the future of Victorian electricity network pricing structures.

This document provides our initial reflections on a consultation process we are conducting with Jemena customers in relation to network pricing structures. Many of the same issues raised in the Future Network Forum – Network Pricing Design paper have and will be deliberated on by Jemena residential and small business customers.

If you would like to stay informed of these developments (or wish to observe our upcoming small business consultation on network pricing structures), please get in touch with us at haveyoursay@jemena.com.au.

02

A People's Panel to understand customer perspectives on service, pricing and the future of energy

During July and August 2018, Jemena held a People's Panel to engage with our residential customers for the purposes of informing our 2021-25 price review proposal.

The Panel consisted of 43 diverse residential customers from across the Jemena electricity network area. It included customers with a disability, from a culturally and linguistically diverse background, and Aboriginal and Torres Strait Islanders. The Panel's diversity was reflective of the Jemena network household demographic. This gave us confidence that the Panel could speak on behalf of the households across our distribution area.

Jemena network household demographic

The Panel consisted of

43

diverse residential customers

03

Pricing structures

Jemena introduced the Panel to different network pricing structures at our fourth panel session.

Panel members were also asked to read a pricing structures paper as homework between the fourth and fifth sessions.[1]

The paper set out:

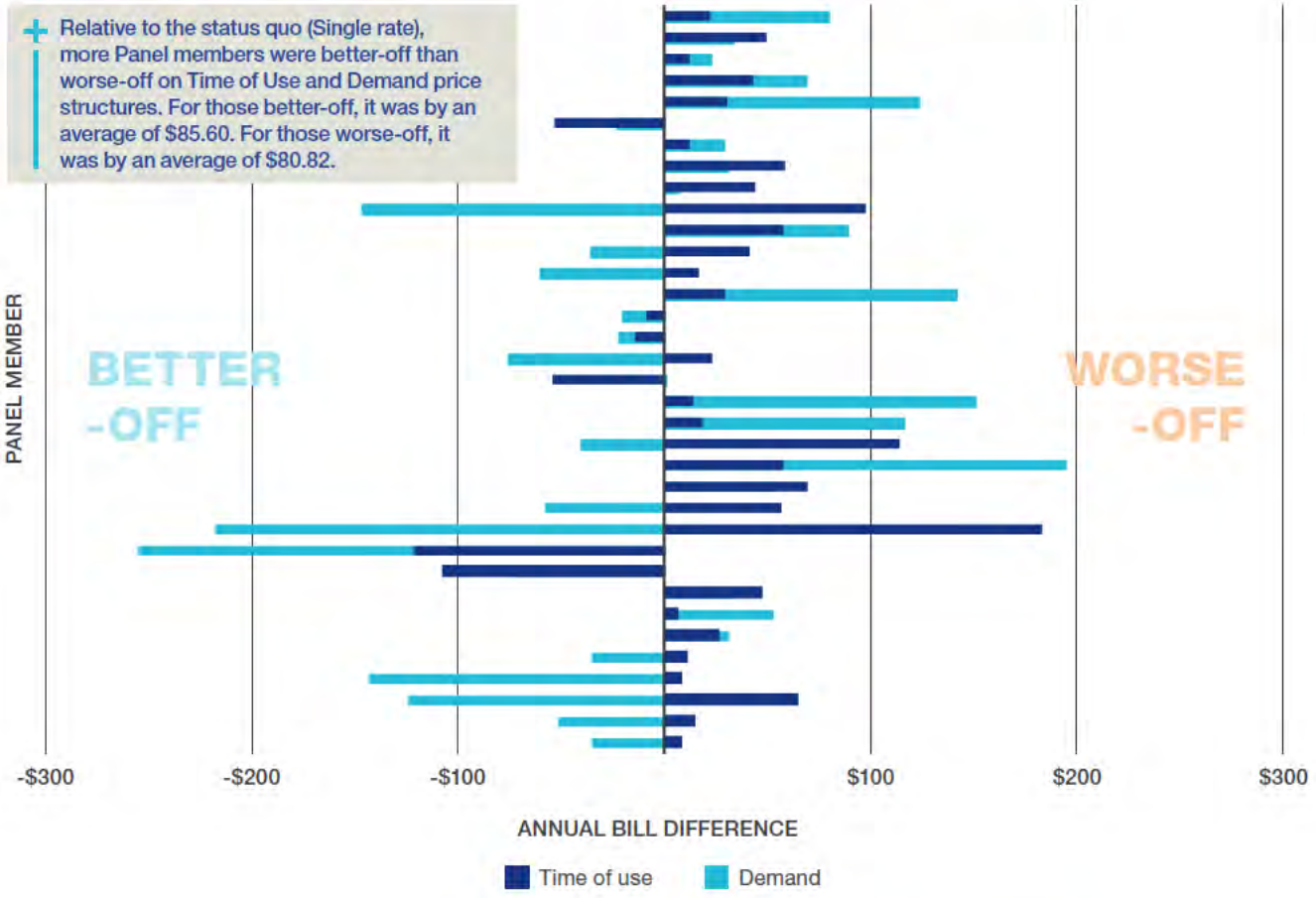
- how network pricing structures can influence customer outcomes
- scenarios for three hypothetical families under the three pricing structures (Single rate, Time of Use, Demand), and how those families responded to those structures.
- touched on the concept of the subscription pricing structure and demand management (or "peak-time") rebates (similar to Jemena's Power Changers pilot program).

For Panel members that consented to us accessing their smart meter data, we provided them with the individualised comparison of their retail bills under each of the pricing structures.

1 We are grateful for the constructive feedback received from members of the AER's Consumer Challenge Panel on an early draft of this document.

As a result of undertaking this analysis, we found there was a spread of customers who would have seen themselves as better-off or worse-off under time of use or demand structures, relative to the single rate structure. Across the room, there was a mix of outcomes: some customers would have been better off under demand pricing, some under time of use pricing, some remaining with the single rate.

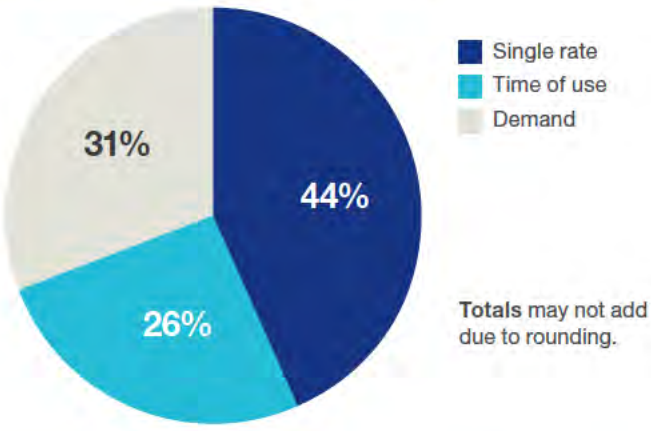
Bill comparison to the single rate structure – all Panel Members



Panel members were then provided time to ask questions of Jemena pricing experts.

An initial individual vote across the three pricing structures was then conducted. There was a spread of preferences across all three pricing structures.

Individual voting – round 1



Totals may not add due to rounding.

04

Subscription pricing, and demand management rebates

Following a short break, Panel members received a presentation on the subscription pricing structure as well as the peak-time rebate option.

Panel members discussed those options, and emerging from those discussions was a clear view that:

- the subscription pricing structure placed a significant responsibility on customers, and there was concern about whether it was reasonable to expect customers to estimate their load requirements in advance; and
- the demand management rebate program was worth further detailed exploration because it was relatively simple to understand, and customers were empowered to choose whether they participated or not.

05

Implementation

The Panel members then received a presentation on various options to implement a new network pricing structure. At this point, Jemena moved beyond individual bill outcomes and went into more depth on the potential societal benefits of the various options, in particular, mitigating network investment over the long-term. That is, of the three pricing structures being discussed, the single rate pricing structure provided the least benefit, the demand tariff provided the most, and time of use was somewhere in between.

Panel members discussed what their preferred implementation would be. Panel members considered:

- some community members may have low awareness of the implication of different options and they would ideally need help in choosing the option that best suited them
- any change should be phased in, potentially by applying it to newly built homes and customers who move house, but also to ensure that these customers have an opt-out option.

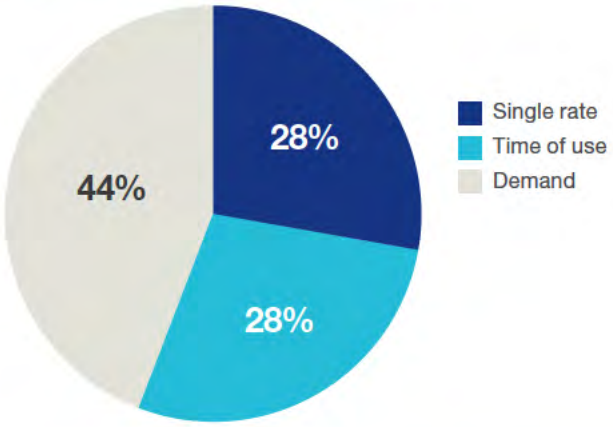
The Panel members then saw a video from Gavin Dufty of St Vincent de Paul covering a range of pricing structure topics.

06

Continued panel deliberation

Taking everything they had heard and learnt into account, the Panel members were asked to re-vote on the three original pricing structures. The re-vote resulted in a shift in preference towards the demand pricing structure. On this basis the demand pricing structure was taken forward to the final recommendation process.

Individual voting – round 2



07

Final recommendation process

At the end of the fifth workshop, taking into account what we had heard and the voting earlier that day, the Panel members were presented with two statements on pricing options to either agree or disagree with. The first related to pricing structures.

Statement 1: The Panel believes that the "Monthly maximum demand" pricing structure is the best for customers so long as customers can opt-out.

The first vote resulted in 55% agreeing and 45% disagreeing. Panel members then further debated the reasons for and against the statement. Key points raised were the societal benefits of demand-based pricing, but also the impact on customers that cannot readily respond. It was noted that the demand pricing structure was the most complex, but also that opt-out was a key "protection" built into the design of this statement.

A second vote was taken, with 74% agreeing and 26% disagreeing, and based on this vote, the Panel agreed to carry this forward as a recommendation it would give to Jemena.

Statement 2: The Panel recommends that Jemena continue to explore using rebates to encourage customers to respond during times of need (for example hot days).

95% of customers agreed with this statement, and the Panel agreed to carry this forward as a recommendation it would give to Jemena.

STATEMENT 1

1ST VOTE ► DEBATE ► 2ND VOTE

STATEMENT 2

1ST VOTE

08

Our reflections

The quantitative voting results suggest a reasonable degree of customer support for demand-based pricing.

Based on what we heard, and initial feedback from independent observers, our perception is that the degree of support for demand-based pricing reflects an emerging consensus around the objectives of demand-based pricing, particularly the societal benefits.

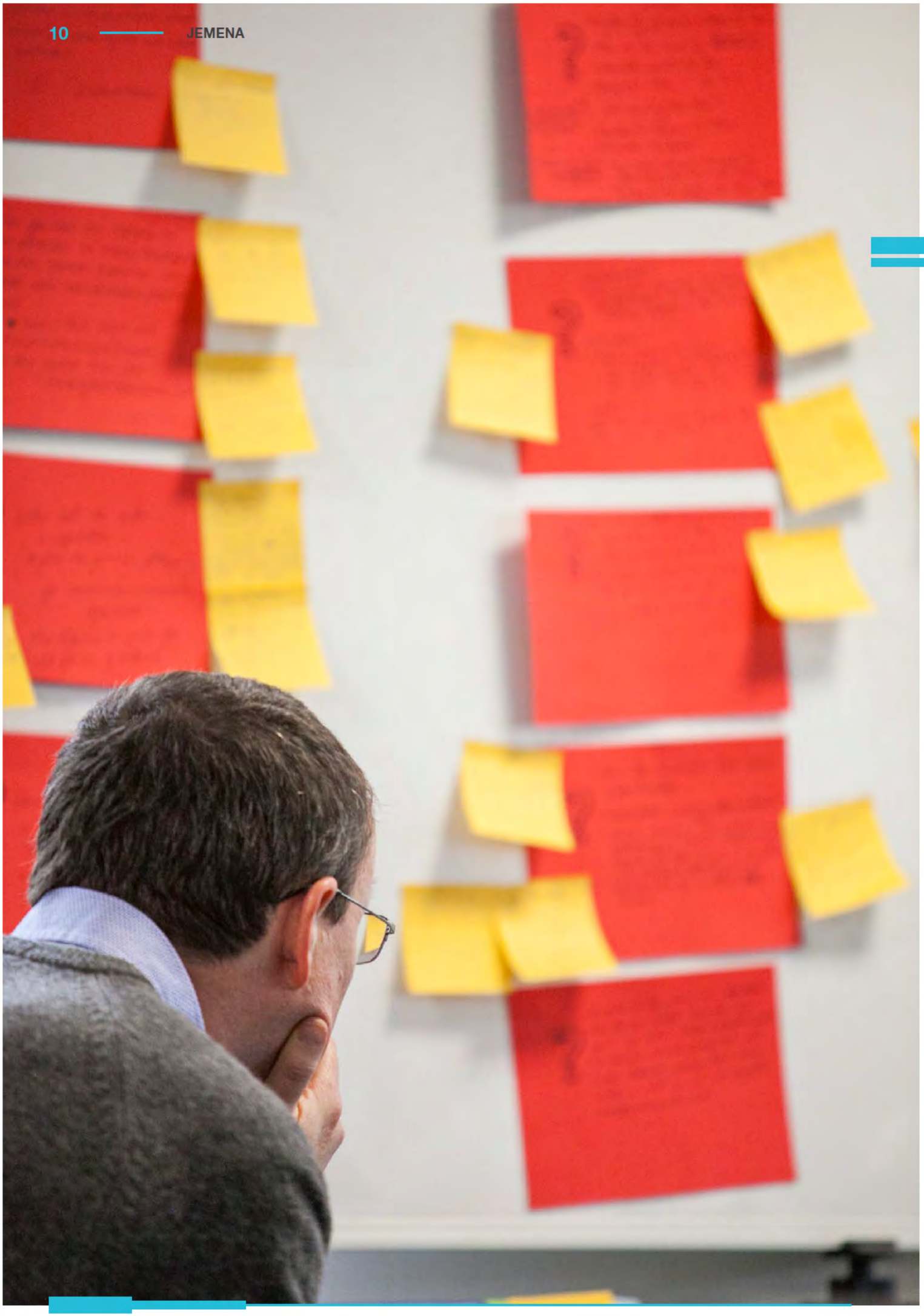
However, there does appear to be a segment of customers that may take some time to understand the structure, and therefore may face challenges in understanding their electricity bill.

Some customers were aware of the different levels of understanding emerging, and started asking about complementary measures such as enhanced literacy programs.

Time of use pricing was much more universally understood – indeed some Panel members thought they were already on a time of use pricing structure before the pricing discussions commenced.

The recommendation on the peak-time rebate was also very strong and we are confident that customers understood the essential elements of the option.

On the topic of how to transition to new pricing structures, the options were again well understood and the outcomes were also quite clear. There was strong direction that customers would be more comfortable with a network pricing structure change if there was a process of transition rather than a sudden move, and a clear option for allowing customers to opt-out of a particular pricing structure if that was their preference.

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Attachment E
Long run marginal cost

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E1. When JEN incorporates replacement capex into LRMC estimates

The AER has asked that JEN to continue to explore including replacement capital expenditure into estimates of long run marginal cost (**LRMC**).

JEN considers that, for the calculation of the Average Incremental Approach (**AIC**) method for LRMC, it is appropriate for augmentation capex (and associated opex) to mean the addition of new assets and 'upgrade / replacement' of existing assets *where these add capacity to the network*. Where there are upgrades that add capacity, only the additional cost above replacing like-for-like is included.

We do not consider it appropriate to add in all replacement capex.

We accept that the concept of including all replacement capex is appropriate when using a perturbation (or 'Turvey') method for calculating LRMC.

The AEMC describes the Turvey approach as:[73]

> *This methodology involves a number of steps. First a small increment or decrement "shock" is applied to a known demand forecast. Then, a change is calculated in the present value of costs over the investment planning period resulting from this shock compared to the base case. Finally, this result is divided by the demand increment or decrement to arrive at the LRMC estimate.*

Replacement capex used within the Turvey method does not therefore directly impact the LRMC estimates unless it is brought forward, delayed or resized as a result of the demand shock (as these are the only ways it would impact the present value of costs over the investment planning period). These assessments of how a capex program is changed due to the demand shock must be made by a qualified engineer over a number of different scenarios and locations. It is part of the reason why the Turvey method is administratively difficult to achieve and not cost effective.

The AIC method as described by the AEMC is (our emphasis):[74]

> *This methodology estimates LRMC by identifying the stream of capital, operations and maintenance expenditure needed to satisfy projected demand growth, typically over 10 years, and then dividing this by projected demand growth. It then calculates the present value of the expenditure required and divides this by the present value of incremental demand growth to estimate the LRMC.*

Further, in their report for the AEMC, NERA identified the algebraic approach for the AIC as:[75]

$$LRMC\ (Ave\ Incremental\ Cost) = \frac{PV(new\ network\ capacity + marginal\ operating\ costs)}{PV(additional\ demand\ served)}$$

For the purposes of how we calculate AIC, the present value (**PV**) of the projected demand growth at the denominator (or additional demand served) is set consistent with our demand forecast. The AIC method has no way of incorporating the cost of bringing forward or delaying expenditure as is undertaken in the Turvey method. Repex is either included (consistent with the levels in JEN's 2021-26 Plan) or it isn't. The numerator (and LRMC estimates) will only increase the more expenditure is incorporated.

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73 AEMC, Rule Determination, *Distribution Network Pricing Arrangements*, 27 Nov 2014, P. 122.
https://www.aemc.gov.au/sites/default/files/content/de5cc69f-e850-48e0-9277-b3db79dd25c8/Final-determination.PDF

74 IBID.

75 NERA, Economic Concepts for Pricing Electricity Network Services - A Report for the Australian Energy Market Commission, 21 July 2014, p. 15. PV is present value.
https://www.aemc.gov.au/sites/default/files/content/e03c20c9-273d-4ea7-84e5-3045141b487b/NERA-Economic-Consulting-%E2%80%93-Network-pricing-report.PDF

To be an appropriate LRMC estimate, it is therefore important that the expenditure included within the AIC method should pass the “needed to satisfy projected demand growth” test (noting demand growth can be negative at certain locations or in total) so that there is no distortion to the intended price signal.

NERA’s equation also emphasis that it’s the PV of new network capacity that should be included. Unless the asset being replaced is also being resized, it is required to satisfy current demand levels, not demand growth. For this reason, we only include replacement capex where this adds capacity to the network. And we only include the incremental capex above (or below) what a like-for-like capex cost would be.