Economic Growth Engagement

CitiPower, Powercor and United Energy

Commercial and Industrial Customers

October 2023

CITIPOWER Powercor AUSTRALIA united energy | Forethought® Outcomes

Introduction

Reset stakeholder engagement program

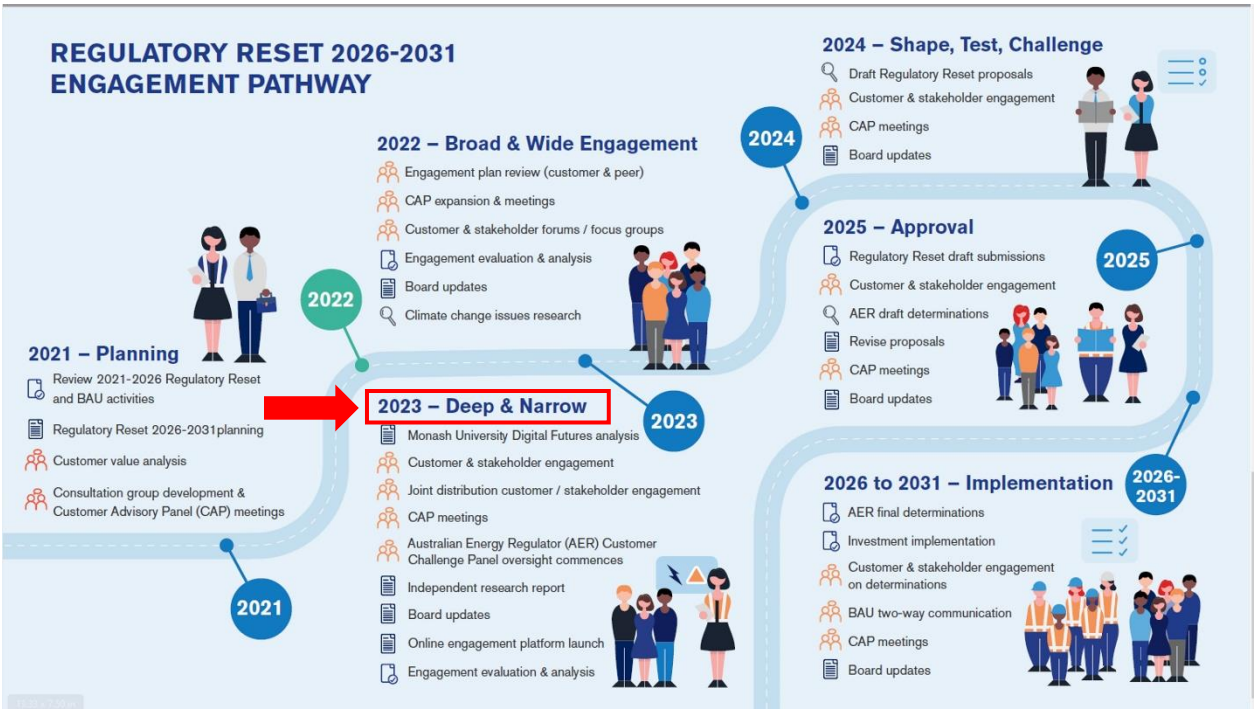
To support the development of regulatory proposals, a Foundational Program of Community Engagement was conducted in 2022 and the early part of 2023. This Broad and Wide engagement program identified the key needs and preferences of customers across all three networks and identified four common themes:

1. Affordability and Equity
2. Reliability and Resilience
3. Energy Transformation
4. Customer Experience

The Deep and Narrow Engagement builds on this broad and exploratory research. It adopts a more targeted approach; exploring, testing, and understanding customer preferences and priorities. To achieve this outcome, content for testing was developed in collaboration the CitiPower, Powercor and United Energy team and discussed in-depth with commercial and industrial (C&I) customers in the August and September engagements.

The below graphic explains the full Proposal Program.

Following a detailed examination of these customer outcomes, the insights gained will guide the subsequent phases of the 2026-2031 regulatory proposal development. This process will involve the formulation and evaluation of business cases that align with the identified customer outcomes.



Forethought's Involvement

Forethought is an independent Marketing, Analytics and Strategy organisation with teams that specialise in Research and Engagement within multiple industries, including Utilities.

Forethought's experience in the energy industry involves conducting customer and stakeholder research and engagement with organisations across the full value chain including electricity generation, distribution, transmission and retail services. They partner with clients to provide an

independent customer voice, ensuring that the customer is always at the forefront of organisational decision making.

Forethought was selected for this program based on their expertise across both Utilities and Research/Engagement capability to independently design and facilitate engagement forums and objectively report back on the needs and preferences of customers across the network.

Objectives and Methodology

The Deep and Narrow Summits built on foundational and exploratory research conducted in the Broad and Wide engagement phase. This reflects CitiPower, Powercor and United Energy's genuine commitment to develop proposals that are anchored in customer needs and preferences for the immediate and longer-term future of the network.

This Deep and Narrow: Economic Growth Engagements sought to achieve the objectives set out below.

2026-2031 Regulatory Reset Objective
Develop regulatory reset proposals for the 2026-2031 regulatory period that align with the needs and preferences of CitiPower, Powercor and United Energy's customer bases.

Engagement Objectives

- Understand and identify key concerns for C&I customers now and moving into the future.
- Understand tariff awareness and if / how C&I customers are responding to the current network tariff structures.
- Understand C&I customer energy preferences, experiences and needs:
    - Primarily relating to network tariffs
    - Secondly, across other energy topics including the energy transition, relationship management and power quality issues
- Assess the interest of C&I customers in modifying their network tariffs to more closely align with network investment triggers.

Building on Broad and Wide Engagement Phase[1]

This program builds on a previous phase of broad and exploratory engagement with customers across all three networks. Key insights from the Broad and Wide engagement phase were used to inform the design and content of this Summit. Key topics that customers prioritised during the Broad and Wide engagement phase included:

1. *Affordability and Equity*
   This was the most important theme to prioritise for regional and rural customers.
2. *Reliability and Resilience*
   Customer satisfaction with their electricity supply varied depending on their location within Victoria and length of time living in Australia, and was typically prioritised highly.
3. *Energy Transformation*

[1] Reports produced from Broad and Wide phase can be access via the following links: CitiPower Broad and Wide, Powercor Broad and Wide, United Energy Broad and Wide

There was varying preferences for the pace of the energy transition, with some customers curious and other concerned, therefore there was mixed prioritisation of this topic across customers.

4. *Customer Experience*
   Customers reported a positive customer experience and minimal challenges to solve for and so this topic was prioritised lowest; the expectation was to continue to deliver the same service levels.

The individual network Broad and Wide Reports provide further detail into the findings from this engagement phase.[2]

Approach

Because C&I customers generally operate across multiple networks, it was decided for this engagement, joint sessions would be held that discussed all three networks. It was hypothesised however that there maybe some differences in the needs of commercial and industrial customers operating in regional and metropolitan locations.

Consideration was given to recruit C&I participants from a diverse cross-section of industries across the three networks, in addition to varied connection types (e.g., high voltage, low voltage and sub-transmission customers).

Participation

Customer Group	Engagement	Consultation Date and Time	Number of Attendees
Metropolitan based C&I customers	In-person roundtables	14 August (9.00am-12.00pm)	n=12
Regional/ rural based C&I customers	In-person site visits and tours	22-23 August	17 number of participating businesses
Regional/ rural C&I customers	In person roundtables (held in Shepparton)	23 August 11.00am-1.00pm	n=8
All C&I customers and their advocates	Online in-depth interviews	24 August – 27 September	n=7

[2] CitiPower, Powercor, United Energy and Forethought Broad and Wide reports can be access via the following links: CitiPower Broad and Wide, Powercor Broad and Wide, United Energy Broad and Wide

Recruitment

There were three main channels used to recruit participants. These were chosen to ensure that every possible avenue was utilised to attract a diverse group of highly relevant customers to participate. The recruitment process included:

1. An invite extended to C&I customers across the three networks including council members, community organisations and private businesses. These invites were sent to customers by CitiPower, Powercor and United Energy.

2. Social media was also used to share the consultation details and provide access to a link to sign up for this consultation.
    - CitiPower, Powercor and United Energy used social media to further promote the consultations..
    - Additionally, CitiPower, Powercor and United Energy leveraged their membership with EUAA to distribute an expression of interest throughout the EUAA network.

3. Linda Nieuwenhuizen, CEO for Committee for Greater Shepparton (a not-for-profit, member funded advocacy organisation) provided significant support in recruiting participants for the Shepparton Roundtable engagement as well as participating businesses for the extensive site tours and interviewing across regional Victoria.

Compensation

As a thank you for the time given to the roundtable programs, a charity donation made on behalf of participants valued at $2,000. For customers who participated in an in-depth interview, $200 was donated to a charity nominated by them.

Methodology

Across all engagements, four key topics were the focus of discussions:

1. **Affordability** - discussed in the context of both network tariff structures and efficiency
2. **Power quality** - in particular load, demand management and network reliability
3. **Energy transition** – the many challenges facing customers in the face of transitioning to an increasingly renewable energy supply
4. **Relationship management** – between customers and their distributor

The methodology employed for this engagement encompassed three primary components:

1. <u>Roundtables</u>

Two roundtable sessions were conducted, one in Melbourne and the other in Shepparton. These sessions served as focal points for engaging with C&I customers and their advocates across regional and metropolitan Victoria.

2. <u>Site tours and informal interviews</u>

A total of 17 business sites were visited in the Greater Shepparton Region. During these site visits, customers showcased their operations and the impact energy had on their operations. Many customers offered detailed insights into their current energy consumption practices and their future aspirations. This approach facilitated meaningful engagement with C&I customers, allowing for a firsthand understanding of the issues that were top of mind.

3. <u>In-depth interviews</u>

In-depth interviews were conducted with selected C&I customers. These interviews provided C&I customers a platform to delve into their individual energy requirements. Throughout the interviews,

C&I customers were invited to complete a short quantitative survey, which posed targeted questions related to their network tariff and other issues of importance to them. This approach ensured a comprehensive exploration of customer perspectives and needs, both qualitatively and quantitatively.

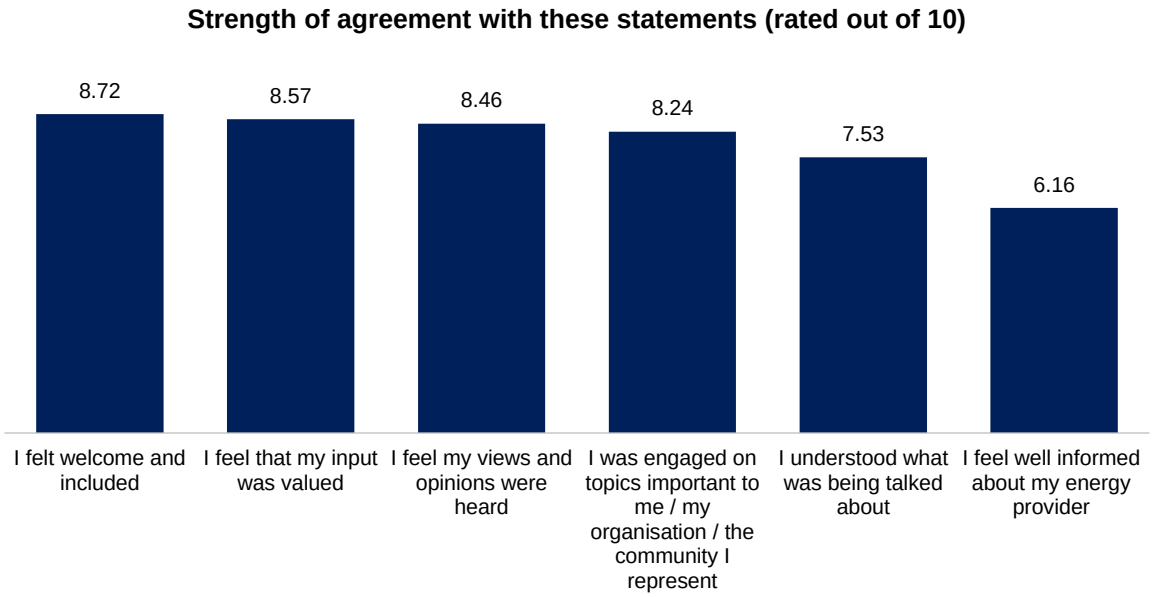
IAP2 Spectrum

The level of customer participation in this program was intentional and is highlighted in our depiction of the IAP2 Spectrum shown below. This consultation falls within the 'involve' classification on the IAP2 Spectrum. C&I Customers were involved in shaping the direction of focus for the networks by discussing a wide range of issues, and then voting on the area they thought was most important.

IAP2 Spectrum of Public Participation[3]

	Inform	Consult	Involve	Collaborate	Empower
Public Participation Goal	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives, and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision making in the hands of the public.

Evaluation



Note: Results are based on small a total sample size of n=21. A minimum sample of n=30 is recommended for an indicative result.

At the conclusion of each roundtable, C&I customers were invited to complete a feedback survey to support refinement of the engagement process. The results for the consultations are above (with

[3] IAP2, 2018, IAP2 Spectrum of Public Participation, accessed 22 November 2022, https://iap2.org.au/wp-content/uploads/2020/01/2018_IAP2_Spectrum.pdf

ratings out of 10 for each). The overall satisfaction rating across all engagements was 7.80 (out of 10).

Engagement Context

During the consultation period, there were several events that took place in both the lives of customers and within the wider electricity sector. We hypothesise these events impacted customers' needs and perceptions.

At the time of engagement, the following events occurred, were still in progress or top of mind for participants. Some customers referenced several of these events throughout the discussions:

- Severe rainfall and flooding across Victoria from 11 October 2022 [4].
- Victorian Government Election campaigns in late 2022 including the announcement to re-establish the State Electricity Commission of Victoria[5].
- War in the Ukraine with the Russian invasion impacting Australian energy prices[6]
- Well-publicised cyber-attacks on Optus (22/9/22[7]) and Medibank (12/10/22[8]).
- Victorian government announces ban on gas connections for new homes from January 2024 (C&I customers were concerned these bans would increase)[9].
- Victoria's increased debt[10].
- Growing cost of wholesale drives up electricity bills[11].

[4] Abbott. L, Ilanbey. S, Schelle. C, 11 October 2022, *People in flood risk areas told to prepare for up to 72 hours of isolation as heavy rains loom,* The Age, accessed 8 November 2022, https://www.theage.com.au/national/victoria/calm-before-the-storm-victoria-prepares-for-more-floods-20221011-p5botc.html.

[5] ABC News, November 2022, *Victorian state election campaign officially begins with promises on V/Line and water bills,* accessed 8 November, https://www.abc.net.au/news/2022-11-02/victorian-state-election-first-day-of-campaign/101607624.

[6] Mercer. D, 26 February 2022, *Russian invasion of Ukraine drives up energy costs and Australians will feel the pain,' ABC News,* accessed 8 November 2022, https://www.abc.net.au/news/2022-02-26/russia-invasion-of-ukraine-to-drive-up-energy-costs-for-all/100861246.

[7] ASIC, 2022, *Guidance for consumers impacted by the Optus data breach*, accessed 8 November 2022, https://asic.gov.au/about-asic/news-centre/news-items/guidance-for-consumers-impacted-by-the-optus-data-breach/#:~:text=On%2022%20September%202022%2C%20Optus,numbers%2C%20may%20have%20been%20exposed.

[8] Krester. A, Smith. P, 25 October 2022, *Minister preps for Medibank hack fallout,* Australian Financial Review, accesses 8 November 2022, https://www.afr.com/companies/financial-services/medibank-says-more-customers-hit-by-cyberattack-20221025-p5bsl9.

[9] Ore, Adeshola, 28 Jul 2023, *Victoria announces ban on gas connections from Jan 2024*, The Guardian, accessed 10 October 2023, https://www.theguardian.com/australia-news/2023/jul/28/victoria-announces-ban-on-gas-connections-to-new-homes-from-january-2024.

[10] Rooney, Kieran, 6 Oct 2023, *Government insists fiscal plan on track despite growing $4 billion interest bill,* The Age, accessed 12 October, 2023, https://www.theage.com.au/politics/victoria/government-insists-fiscal-plan-on-track-despite-growing-4-billion-interest-bill-20231006-p5eae9.html.

[11] ACCC, 30 June 2023, *Households face higher electricity costs as wholesale price spikes flow through,* ACCC, accessed 14 October, 2023, https://www.accc.gov.au/media-release/households-face-higher-electricity-bills-as-wholesale-price-spikes-flow-through.

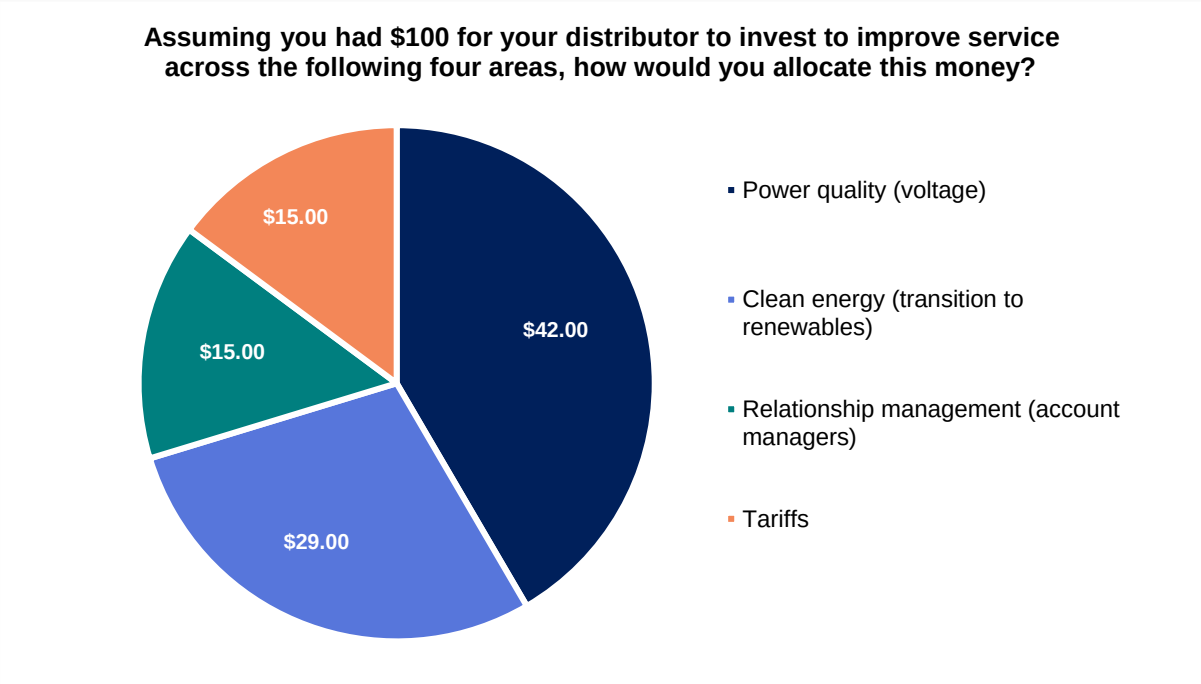
Executive Summary

Throughout discussions with C&I customers, four key areas of concern emerged consistently:

1. **Affordability** - discussed in the context of both network tariff structures and power efficiency
2. **Power quality** - in particular load, demand management and reliability
3. **Energy transition** – the many challenges facing customers in the face of transitioning to an increasingly renewable energy supply
4. **Relationship management** – between customers and their distributor

C&I customers were asked whether there were any areas outside of the above that were of concern for them, but none were suggested.

Above all topics discussed throughout the roundtables, Power quality was consistently discussed by C&I customers as the top priority for improvement. The chart below reflects priorities of customers drawn from a short survey component completed by roundtable and in-depth interview participants and is reflective of qualitative discussions.



Note: Numbers are rounded and may not sum to $100. Results are based on small a total sample size of n=21. A minimum sample of n=30 is recommended for an indicative result

C&I customers consider power quality and network reliability as the most significant factors affecting their business operations. These concerns are exacerbated by the growing emphasis on transitioning to renewable energy sources, which raises uncertainties about how network reliability will be maintained. In contrast, network tariffs are viewed as a lower priority for improvement, reflecting the varying ability of customers to leverage tariff structures to their advantage. For example, some businesses lack the flexibility to change their energy consumption behaviour and thus prioritise tariff-related changes less.

While customers acknowledge certain strengths in the network's current relationship management, there is a strong desire for closer collaboration and increased information exchange with the network. This includes initiatives like data sharing and the tagging of critical assets[12], highlighting an opportunity for enhanced communication and cooperation between customers and the network.

[12] Tagging of critical assets involves the identification and labelling of essential equipment or systems for a business to optimise their performance and minimise downtime.

Detailed findings across key topic areas

Customer Perspective on Power Quality

C&I customers felt that power quality would increasingly become a concern in the energy transition
The significance of power quality for C&I customers is increasing. In this context power quality refers to the stability of electricity supplied to their facilities. Any disruptions or issues in power quality can have significant impact on their business operations, equipment performance, and overall productivity. In general C&I customers felt that network reliability had improved in recent years, however, power quality remained a key challenge for all businesses. Additionally, many C&I customers in rural/regional areas reported that most interruptions to their power supply occurred during Spring, particularly when thunderstorms were experienced in surrounding areas.

Any power disturbance, even if momentary, can have substantial implications for C&I customers
Power quality and network reliability were discussed as key challenges for all businesses (both metropolitan and regional/rural C&I customers). Additionally, energy efficiency remained a crucial concern for C&I customers, and in that context, discussed how power quality could significantly influence the energy consumption of equipment and machinery. Poor power quality could lead to higher energy losses and reduced overall efficiency, significantly impacting the operating costs of their businesses.

Customers, particularly Powercor customers, noted an improvement in the reliability of their electricity supply in recent years. However, they still considered reliability an ongoing challenge. When discussing these concerns, C&I customers often did not draw a clear distinction between reliability and power quality issues. Instead, they tended to focus on the wide-ranging impacts these issues have on their business operations.

While customers recognised that longer outages can be challenging for them, they acknowledged these had decreased over recent years, and so their discussions focused on the difficulties they faced when dealing with voltage variations and the various factors that cause them. The duration of these voltage fluctuations depended on the underlying cause. It's worth noting that customers stated both under-voltage and over-voltage scenarios can be equally disruptive and detrimental to businesses.

Commercial and industrial customers have reported experiencing various types of power quality and voltage-related issues. This implies that they encounter a spectrum of problems related to the consistency and quality of their electrical supply, which can have different causes and consequences for their operations.

- **Natural interruptions:** due to natural factors, such as birds coming into contact with power lines, were discussed. In such cases, the network's inertia[13] can assist in managing these interruptions until a full recovery is achieved
- **Harmonics and power factor**: harmonics, which are distortions in the waveform of the electrical signal, and low power factor can be detrimental to power quality. High levels of harmonics can lead to equipment overheating and decreased equipment lifespan. Low power factor can result in higher energy bills due to inefficient energy usage
- **Voltage sags and surges:** voltage sags and surges are common power quality issues that can damage sensitive electronic equipment and disrupt manufacturing processes. C&I customers may face challenges in protecting their machinery and electronic devices from these fluctuations.

Outages, even momentary, can have significant financial and operational costs for C&I customers, including (but not limited to):

- **Substantial disruptions**: depending on the production stage, these outages can cause significant disruptions to manufacturing processes, leading to substantial revenue loss

[13] Inertia in power systems: Inertia refers to the inherent ability of rotating machinery (such as generators) in a power system to resist sudden changes in speed. This inertia is crucial for maintaining system stability, especially in the face of disturbances like natural interruptions (Energy Explained: Frequency Control, AEMO, published 2020).

- **Severe consequences in critical phases**: during critical production phases, such as specific fermentation stages in dairy production, the outcomes can be particularly severe. Such interruptions require equipment resets and sterilisation, incurring significant costs related to water usage, materials, and valuable production time
- **Loss of organic product assets**: another adverse consequence of these outages is the loss of organic product assets, which affects businesses relying on the preservation of perishable goods
- **Instantaneous financial losses**: It's important to highlight that for certain businesses, even brief outages can result in immediate financial losses totalling up to $20,000. These financial setbacks emphasise the crucial importance of maintaining a dependable and uninterrupted energy supply to support the continuous and efficient operations of commercial and industrial enterprises.

During the discussions between C&I customers and the business, some C&I customers learned they can adjust controls on their equipment to manage voltage fluctuations and reduce electricity surges 'tripping' their equipment and triggering a need for switching their supply to back-up generator supply. Some customers were open to working with CitiPower, Powercor and United Energy to learn more about how best to implement these measures (e.g., hospitals and large manufacturing facilities).

"Even a few seconds can cost $25,000" (Commercial and Industrial customer, 2023)

Some customers believed energy storage posed a viable option to support improvements to power quality and reliability

Certain C&I customers have identified energy storage as a potential solution to enhance power quality and reliability. While the concept of energy storage sounded promising for stabilisation purposes, C&I customers noted regulatory constraints prevented network ownership, and there was reluctance from some customers to take responsibility for management of energy storage. To establish a compelling business case for energy storage, C&I customers believed a comprehensive analysis of costs at the Victorian level was imperative. Achieving this necessitates a coordinated effort that extends beyond the domain of the networks. C&I customers discussed the importance of taking a longer-term perspective, recognising the broader implications of inefficiencies, including the loss of economic production. These concerns are particularly acute for C&I customers in rural and regional areas. They believe the business case should encompass the cost to the economy resulting from such inefficiencies, emphasising the need for a holistic approach.

"Storage is key… We want to be here for the long term" (Regional Commercial and Industrial customer, 2023)

"We're looking at battery solutions for some of our larger [sites],…so that would be in combination with solar. We're thinking: we need some energy security, do we put in a generator or a battery" (Regional Commercial and Industrial customer, 2023)

Addressing power quality issues

Customers reflected on their independent efforts to address power quality issues. Some of the measures included:

- **Investment in backup power supply**: a prevalent strategy adopted by many large C&I customers involves the implementation of backup power supply systems. This includes the deployment of backup generators or uninterruptible power supply (UPS) systems, which serve as a reliable defence against the potential risks posed by power quality issues. These systems are instrumental in ensuring uninterrupted operations during power outages, safeguarding business continuity.

- **Using historical data assessment**: an appealing notion discussed among some C&I customers was the capability of the businesses to leverage historical data to assess the previous duration and frequency of voltage variations. C&I customers believed this data-driven approach could empower them to make informed decisions regarding protective measures. For instance, it could allow for a more precise evaluation of whether power quality issues can be effectively addressed through UPS systems to mitigate fluctuations or if a more comprehensive solution is required. Moreover, C&I customers believed their network could play a pivotal role in assisting them understand their energy management, enabling them to fine-tune the sensitivity of their machinery to better withstand power quality fluctuations wherever feasible. Such collaborative efforts contribute to enhanced power quality management and operational resilience for C&I customers.

"If we put in a battery we'd also be looking at what are the opportunities from a demand management point of view…so utilising the battery for its best impact. But making sure it's there for our purposes primarily… in times of low prices we could feed energy from the battery back into the grid" (Regional Commercial and Industrial customer, 2023)

"The purpose of the solar is to reduce our reliance on the grid for electricity for cost and carbon purposes…so in part it's part of our 2025 zero emissions target" (Regional Commercial and Industrial customer, 2023)

<u>Future load access concerns and operational vitality</u>

For certain C&I customers, having unrestricted access to their load is of paramount importance. They express deep concern about the prospect of load constraints being imposed based on historical usage patterns. A prevalent sentiment among these C&I customers is the absolute necessity to maintain the capacity to draw maximum energy whenever needed. The potential restriction of load access raises alarms due to the critical nature of their operations, where any limitations on energy availability could have severe consequences. These C&I customers prioritise uninterrupted access to their energy load, as it is fundamental to the smooth functioning of their business activities, and they rely on the flexibility to draw on maximum energy levels at any given moment to meet their operational demands.

"Although we might no be near capacity limit currently – it's critical for us to have access to that level of power on any given day at no notice"

Case Studies: Power Quality

Across all case studies, power quality was considered critical and posed significant challenges.

Case study: Victorian dairy farmers

Multiple customers were dairy farmers located in regional Victoria. These farmers rely heavily on electrically powered equipment for milking, refrigeration, and environmental control within their operation. Voltage sags and surges can disrupt sensitive milking machinery, potentially harming the animals if interruptions cause extended outages and compromising the quality of milk production. Furthermore, power interruptions can lead to the spoilage of stored dairy products in refrigeration units, resulting in financial losses.

To mitigate these issues, some customers invested in backup power solutions, such as generators or uninterruptible power supply (UPS) systems, to support continuous operation during outages. They believed they need to work closely with their electricity distributor in the future to address power quality concerns and develop strategies for maintaining the reliability of their dairy farm's power supply. However, these measures come at significant cost. These costs are perceived as a substantial barrier for large farms and often not feasible for small farms to fund.

"The costs of upgrading generators [to address reliability concerns] are a necessary evil"
(Large Commercial and Industrial customer, 2023)

Case study: Dairy processing facility (regional Melbourne)

The dairy processing facility in regional Melbourne faces significant challenges due to power quality issues. This facility heavily relies on various electrically powered machinery for pasteurisation, packaging, and refrigeration processes. Voltage excursions and outages can lead to substantial product spoilage, financial losses, and regulatory compliance concerns, especially when precise temperature control is essential. The most critical time for uninterrupted power supply is during the cheese-making process. Any power interruptions during this phase can force the disposal of product, with losses ranging from $4,000 to $25,000.

To address these challenges, the facility is investing in self-generation capabilities, primarily for internal use, aiming to cover 75% to 80% of their power requirements. Additionally, they are exploring the possibility of purchasing power from the grid when the network's pricing is favourable, which can be seamlessly integrated into their management system.

Case study: Machinery manufacturing facility (metro Melbourne)

Managing power quality is of paramount concern due to the precision required in their manufacturing processes. Voltage fluctuations or power interruptions can have considerable consequences, potentially leading to defects in machinery parts, increased material waste, and costly rework. The facility heavily relies on advanced machinery, including computer numerical control (CNC) machines and high-precision tools, all of which necessitate a stable and uninterrupted power supply.

Additionally, while adjusting operational hours in a manufacturing facility may be logistically challenging, the customer is open to exploring this option to take advantage of off-peak tariffs. This willingness reflects their commitment to cost-effective and sustainable energy practices. Furthermore, the facility is eager to collaborate with their electricity distributor to enhance power quality and reliability further. They recognise that proactive maintenance and infrastructure upgrades, such as voltage stabilisation equipment and power factor correction, could be instrumental in ensuring a stable power supply throughout their critical manufacturing processes.

Case study: Commercial linen

This establishment heavily relies on different types of electrical equipment, including industrial washing machines, dryers, and ironing stations, to offer laundry services to both local businesses and residents. Voltage fluctuations can disrupt the delicate balance of these machines, causing uneven washing or drying, which results in subpar service quality and operational inefficiencies. Furthermore, power outages, even if momentary, can halt operations, leading to delays in servicing clients, potential damage to laundry, and financial losses due to lost business.

Customer Perspective on Tariffs

Many C&I customers expressed a desire for greater education and simple resources for understanding their network tariff structure

Many customers are largely unaware of their current network tariff structure. C&I customers have expressed a desire for more straightforward and easily comprehensible educational materials that explain their network tariff structures in simple 'customer-friendly' terms. Additionally, they want to understand how these structures can impact their energy consumption costs. This request for clearer information is complicated by the diverse and nuanced needs of individual businesses. Effectively addressing this complexity presents a challenge in ensuring that C&I customers have access to the knowledge required to optimise their energy usage and associated expenses.

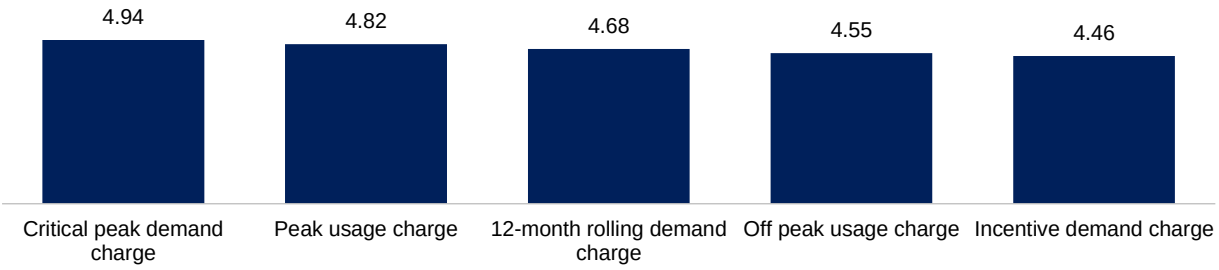
"Information is not readily available, you have to read the pricing outcomes to understand the tariff structures and the associated prices…there needs to be like a two-pager rather than having to read the whole thing" (Commercial and Industrial customer, 2023)

During the roundtable engagements and in-depth interviews, throughout the discussion, the information in the table below was shown to C&I customers to provide information on their current network tariff structure as well as a potential option for the future (critical peak demand charge):

Tariff component	Charge unit	Quantity
12-month rolling demand charge	c/kVA/day	Highest 15/30 minute kVA demand between 7am and 7pm workdays over last 12 months Minimum chargeable demand of 120 kVA LV, 500 kVA HV and 5 MVA sub-transmission
Incentive demand charge (does not apply to sub-transmission)	c/kVA/day	Highest 15/30 minute kVA demand between 4-7pm or 1-4pm workdays for each month from December to March
Peak usage charge	c/kWh	Energy usage between 7am and 7pm workdays
Off peak usage charge	c/kWh	Remaining energy usage
Critical peak demand charge		Structure charges higher rates during specified peak periods, encouraging commercial and industrial customers to reduce electricity usage during those times to alleviate strain on the network. Customers are notified in advance (typically one-two days) before the peak period occurs, allowing them to plan and manage their energy consumption.

In a short survey completed during the roundtable engagements and in-depth interviews, C&I customers were asked how "ready" they were to implement any changes to their behaviour to take advantage of the network tariff structures above. The purpose of the question was to understand the extent of customers' ability to actually implement behavioural change. On average, C&I customer readiness is generally low (see table below), with ratings between 4.4 and 4.95 (out of 10) across all options presented. There was a mixed reaction to critical peak demand charges, with some customers seeing potential opportunities to reduce their electricity costs, while other felt that these charges would add a further layer of complexity to network tariffs which are already not well understood, and would impose further costs on businesses who don't have the flexibility to change their operations.

To what extent is your business ready to make changes to its behaviour in line with the following options?



Note: Figures above may not sum to 100% due to rounding. Note: Results are based on small a total sample size of n=21. A minimum sample of n=30 is recommended for an indicative result.

"We're on a whole range of network tariffs across all of our sites. So, we're on high voltage sites, low voltage sites and then we've got metered sites as well…We know that network costs make up a huge proportion of our electricity bills – it's at least 40% and depending on the asset can be higher than that" (Regional Commercial and Industrial customer, 2023)

<u>Generally, feedback on the current network tariff structure was positive, however there was still interest in some of the future options proposed</u>

Across all types of C&I customers (low voltage, high voltage and sub-transmission), there are customers that possess the capacity to adapt their energy management practices if presented with the appropriate incentives. These C&I customers typically have a high proportion of their business costs attributed to electricity bills. The identification of such C&I customers who are willing to actively participate in optimising their energy management behaviour provides an opportunity for the electricity distribution sector. Identifying these C&I customers could be achieved through deeper relationships and more frequent communication with C&I customers.

C&I customers discussed the potential incentives that could motivate them to modify their energy management practices. These can broadly be categorised into two forms:

1. **Significantly reduced energy costs:** C&I customers discussed that a compelling enough incentive for many of them to justify a change in energy management practices would need to involve a substantial reduction in their energy expenses. C&I customers believed there would be a significant effort involved in changing consumption behaviours, therefore the savings would need to be commensurate to that effort. By aligning these incentives with actual consumption data and patterns, electricity distributors can encourage clients to use power during off-peak hours or adopt energy-efficient technologies, leading to cost savings for the customers while optimising grid usage.

2. **Greater level of power quality and reliability:** some C&I customers believed that by optimising demand management, they would experience fewer disruptions and voltage fluctuations. This translates into smoother operations e.g., manufacturing facilities, data centres, and critical infrastructure entities. C&I customers perceived a potential reduction

in costly downtime, damage to equipment and enhance overall operational efficiency highly appealing.

During the discussions, some C&I customers expressed interest in receiving rebates on critical event days. They suggested that if sufficient advance notice could be provided, some C&I customers would be capable of either halting or decreasing their energy consumption. For instance, one C&I customers discussed the potential to schedule a rostered day off (RDO) to reduce their energy load. This point aligns with the broader desire from C&I customers to enhance cooperation with their distributor to address demand management and grid reliability concerns.

Conversely for certain C&I customers with operationally constrained or specialised needs, the existing network tariff structure provides a sense of fairness and predictability. It is acknowledged not all C&I customers can easily adapt their energy consumption behaviours, and they should not be penalised for not being able to do so. This sentiment was particularly relevant for sub-transmission customers. Many large-scale C&I operations in the sub-transmission category have tightly structured and continuous production processes that are not easily amenable to load-shifting or curtailment. C&I customers discussed that in such cases, attempting to alter consumption patterns may not only be impractical but also detrimental to overall productivity and operational efficiency.

Feedback on the rolling demand charge was mixed

Most C&I customers had little feedback on the rolling demand charge. Of those that did, they felt that 12 months was too long for the rolling demand period. Shorter rolling periods were preferred, particularly by C&I customers with fluctuating energy needs and rapidly evolving operations.

Additionally, one sub-transmission customer expressed a specific interest in the implementation of summation metering. This request relates to the calculation of peak demand and rolling demand charges, with the customer's preference being for these charges to be determined based on summation of metering data across multiple points of supply.

"I personally hate the rolling demand charge, because if you have one little indiscretion…it disincentivises businesses to make investments that lowers their average peak demand because if they make one mistake, then they've blown that investment...whereas you've just got to have one fifteen minute stuff up which is pretty easy to do. So I think it needs to be fairer" (Commercial and Industrial customer, 2023)

C&I customers find it challenging that the time periods for their peak usage charges for distribution are not aligned with retailer peak usage charges

Some C&I customers discussed the significant challenge that peak periods for retail tariffs do not align with network tariffs. This poses a challenge for C&I customers leading to cost inconsistencies, billing complexity, disincentives for demand management and administrative burdens. C&I customers reflected that this misalignment complicates the billing process and hinders their ability to effectively manage their energy costs and implement energy-efficient practices.

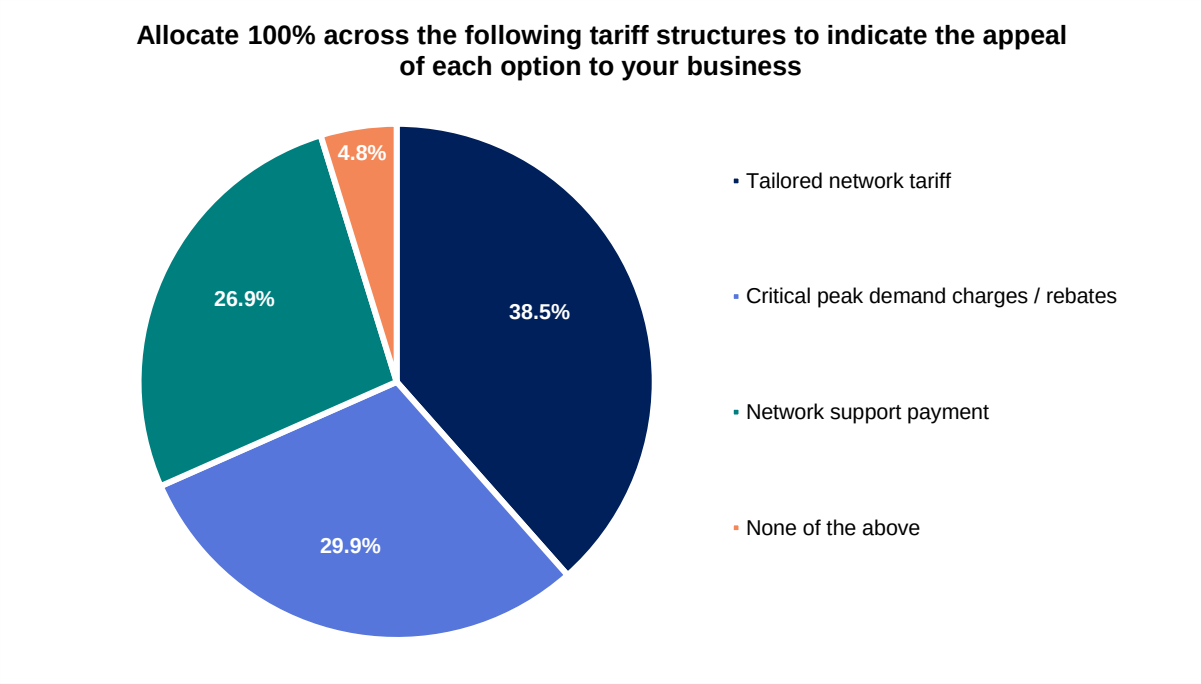
"The network tariff peak times aren't the same as the retailer peak times is really irritating…when they're in different periods, it makes it really difficult. Because then it becomes about… trying to manage the network cost or the retailer tariff element and you can't really optimise to full potential because you could be missing out on a two-hour window because there's a misalignment" (Commercial and Industrial customer, 2023)

Some future network tariff options that could be offered to constrained customers were considered to be appealing

The following options were presented to C&I customers to harness flexible loads for network support. These options would be offered as opt-ins for C&I customers to participate in areas of network constraint. Although a low proportion of the network is currently constrained, customers called for an updated current and future map for constraints to help with planning/build awareness:

Option	Description	Advantages	Disadvantages
Network support payment	• Network opportunities put to tender • Standardised network support contract including performance requirements • Customer receives network support payments directly from network	• Incentive rates can be location specific • Open to C&I customers, retailers and aggregators • Demand response can be firmer	• Effort to establish agreements • Some complexity in establishing a baseline
Tailored network tariff	• Intention is to provide similar incentives to above but achieved through a tailored network tariff • Our financial relationship is with the C&I customer's retailer	• Incentive rates can be location specific • Can be integrated with existing C&I flexible load contracted with a retailer or aggregator	• Effort and cost to establish tailored network tariffs • Response is uncertain
Critical peak demand charges / rebates	• Network critical peak demand tariff made voluntary in constrained areas only • Could include rebates e.g. for increasing demand in the middle of the day or for exports in early evening	• No need to negotiate or establish a baseline • Retailers already familiar with this tariff structure (AusNet)	• High cost to implement for network • Response is uncertain • Less opportunity for demand aggregation

In a short quantitative survey, C&I customers were asked to prioritise the above options based on their appeal (the chart below lays out customers' preferences). The *tailored network tariff* was considered the most appealing to customers (38.5%), with critical peak demand charges second in appeal (29.9%) and the network support payment (26.9%).



Note: Figures above may not sum to 100% due to rounding. Note: Results are based on small a total sample size of n=21. A minimum sample of n=30 is recommended for an indicative result.

Response to the option of a critical peak demand charge was mixed

There was mixed interest regarding a critical peak demand tariff structure[14]. The level of interest exhibited by C&I customers was closely linked to their operational flexibility. For example, C&I customers with more flexibility were the most interested. As outlined above, certain C&I customers find it challenging to adapt their operations to capitalise on critical peak charges due to inherent operational constraints. For example, hospitals with stringent operational requirements.

While other C&I customers found the prospect appealing, they expressed a desire for ensuring enough advance notice was given. Some suggested they would reduce or cease operations during peak periods if enough advance notice were provided (e.g., scheduling a rostered day off for staff). Critically, some C&I customers perceived a lack of timely, targeted and clear communication from their distributor as being a current barrier to implementing a tariff structure such as this. One example provided by a customer was messages are being distributed to the wrong stakeholder within their business (e.g., an accounts staff member who is not most appropriate to action it).

Some C&I customers suggested that the introduction of critical peak demand charge tariff structure may also benefit the Australian Energy Market Operator (AEMO) by addressing their shared goal of efficient energy demand management. C&I customers reflected that such a network tariff may incentivise reducing electricity consumption during peak periods. C&I customers believed that the networks' alignment with AEMO's demand management objectives could foster collaboration, enabling the promotion of critical peak demand charges among C&I customers. This partnership could include regulatory support, information sharing, or financial incentives to encourage C&I customers to modify their energy consumption behaviour during peak times, ultimately enhancing grid resilience and efficiency. If implemented, C&I customers emphasised the importance of avoiding a 'one-size-fits-all' approach, recognising the concept in its current form may be too broad. Instead, they expressed a desire for the networks to engage in a co-design process with eligible C&I customers.

[14] The following provides additional information on a 'critical peak demand tariff structure: here (https://www.aer.gov.au/system/files/AusNet%20Services%202023-24%20-%20Annual%20pricing%20proposal%20%20-%2020230427%20-%20PUBLIC.pdf)

Education was essential for C&I customers to manage and optimise their energy usage

Effective education plays a vital role in enabling C&I customers to manage and optimise their energy consumption. Some C&I customers expressed a lack of understanding of their network tariff structures and believed that enhancing education was crucial. Suggestions included creating educational materials like posters and flyers, offering support to comprehend network tariff structures in relation to their bills, and providing actionable strategies for reducing energy costs. While responsibility for this education was debated among C&I customers, it was generally agreed that CitiPower, Powercor and United Energy should play a significant role in ensuring C&I customers' understood their energy expenses, potentially through initiatives like training materials and one-on-one sessions.

C&I customers that enlist expert consultants to manage their energy bills benefit from specialised expertise. These consultants possess in-depth knowledge of network tariff structures and are skilled in aligning energy management practices with network tariffs. They conduct modelling for operational changes, providing tailored recommendations to optimise energy usage and reduce costs. However, this specialised knowledge is typically confined to experts and may not be widely accessible to all C&I customers.

"We need a detailed understanding across the business of when the critical times are for the peak demand and rolling demand charges are so we know when we can use our big water pumping assets and at what rate to make sure we don't trigger any further demand charges"
(Commercial and Industrial customer, 2023)

Customer Perspective on the Energy Transition

C&I customers are concerned about how they will manage the transition to an increasingly renewable energy supply

Across all C&I customers, there is a concern for the impacts of the energy transition will have on electricity distribution (particularly those customers heavily reliant on gas). Several regional and rural council areas, notably Shepparton council, have declared climate emergencies and initiated the development of Climate Action Plans. In these areas, the increasing adoption of renewable energy sources such as wind and solar is a prominent strategy. However, it's essential to note that C&I customers acknowledged that renewable energy sources, unlike traditional coal-generated power, are weather-dependent and can occasionally result in an inconsistent power supply, posing an additional layer of complexity and challenge for C&I customers.

Emissions targets and business implications

Numerous C&I customers, both in metropolitan and regional areas, have set stringent emissions reduction targets to be achieved by 2025 or 2030. Failing to meet these targets carries significant consequences, including potential penalties imposed by the Victorian Government or, in some cases, the complete cessation of operations within specific business segments. For instance, one C&I customer indicated that if its Shepparton site fails to attain emissions targets by 2030, the entire operation in that region will be shuttered. The ripple effect of such actions could be profoundly detrimental to communities where these C&I customers are significant employers. Consequently, C&I customers are actively exploring solutions, with investments in energy storage and solar power emerging as key strategies to help them achieve their emissions targets and ensure the sustainability of their operations in an environmentally conscious landscape.

Alternative energy sources and business innovation

In response to the formidable challenges posed by emissions reduction targets and the imperative for sustainability, many C&I customers are actively innovating to explore alternative energy sources. In rural and regional areas, this drive towards innovation is underscored by a compelling concern that their survival may hinge on the successful adoption of sustainable practices. Examples of this innovation include the optimisation of waste product reusage in production processes, such as a dairy processing business leveraging waste organic matter to produce whey products.

For most C&I customers, the primary value of alternative energy sources, like solar power, lies in self-consumption rather than revenue generation through energy exports. Furthermore, some C&I customers are venturing into innovative energy solutions such as aerobic digesters, which harness organic materials for energy generation. Bio-fuel generators, exemplified by companies like Gaia, offer a sustainable alternative to traditional fossil fuel-based generators. These generators utilise biofuels derived from organic materials, contributing to reduced greenhouse gas emissions and advancing the principles of a circular economy.

One C&I customer with a dairy processing plant is currently investing in an aerobic digester and a bio-fuel generator as an alternative energy source, which have the potential to offset their energy consumption. These initiatives underscore the growing aspiration among businesses to integrate renewable energy solutions into the grid, thereby reducing emissions and facilitating the attainment of sustainability objectives.

"As things have evolved over time it's made sense for us to start to look at alternative energy sources, so we're in the process of investing in an aerobic digester"

Challenges of proposed gas electrification for C&I customers

The proposed electrification of gas sources presents a substantial and pressing concern for many C&I customers. A significant proportion of these C&I customers rely on gas for their operations, a choice they fear will become increasingly restricted by government policies prohibiting new gas connections. Transitioning from gas to electricity entails formidable challenges for these C&I customers, particularly those with high-heat demands. Gas combustion traditionally yields higher temperatures than available through electrical alternatives. Consequently, certain C&I customers face substantial hurdles when adapting to the energy transition.

Some C&I customers expressed electrification of their operations was not feasible due to their imperative for high levels of heat. For these C&I customers, the proposed mandate for electrification, without the exploration of alternative innovative solutions, raises uncertainties about their future viability. Additionally, given existing concerns for power quality (discussed above), C&I customers were anxious about the additional strain that may be placed on the distribution network as electrification progressed over the next decade.

"From our perspective, one of the biggest priorities is increased electrification – so moving away from gas, particularly for heating…we'd be looking to CitiPower to work with us on trying to increase supply. Although it will be a bit of a journey, probably over the next ten years or so. We'd be looking to upgrade power to different substations…that's not just us, that's something that a lot of other building and property owners are doing as well" (C&I Customer with sites across metro and regional Vic, 2023)

"Usually when you put in an application to increase your supply, it depends a lot on what else is going on in the area. They look at high voltage feeders and whether there's capacity to increase those or not and I guess if it gets to a point in the future where everyone's doing it, that's going to create more demand, there could potentially be a bit of a bottleneck or restrictions" (C&I Customer with sites across metro and regional Vic, 2023)

C&I customers discussed that the affordability of gas far outstrips electricity transmission and distribution in regional and rural areas. Customers believed that the current cost structure presents a significant obstacle, as network electricity can be more expensive for regional and rural customers due to the extended distance it needs to travel compared to readily available gas sources. This raised another concern for C&I customers around the feasibility and affordability of transitioning from gas. Some C&I customers believe that thermal storage and other renewable energy storage and generation pose a potential solution to support increasing electrification.

"Gas is still so much cheaper, and I don't think the drive is there to electrify yet…even though at an environmental level we're highly motivated to do that, we can't go out and do that on our own. We'd just get smashed by the market. My biggest question is as the pressure to come off gas does increase, how is all of this going to be setup to impact the least both on your network and the cost and prices generally in the community" (Commercial and Industrial customer, 2023)

"In my mind you've got a whole lot of thermal demand that is currently in gas. If you're going to move that to electricity the cost would be HUGE – it would be a massive, massive increase. And from a network perspective, you will have more success in transitioning that if you can incentivise customers to suck power between midnight and 4.00am [at the best times for the network] and here's an incentive to do that. On the other hand you've got an energy wholesale market that you [the network] could also work that market, then I think you put yourself in a position where thermal storage (sand silos or whatever the mechanism for storing thermal energy might be) means all of the gas demand for thermal processes will work those markets to suck the energy at the times that will suit the transmission and the power generation markets. This would lessen the huge spike in costs. If you look at my current bill, the amount I'm paying for transmission alone is more than my total gas cost is." (Commercial and Industrial customer, 2023)

"I think a lot depends on the view of Powercor's ownership. Do they take the view of "how do we maximise profit opportunity of this?", because essentially they've got the community in a hostage situation over this. Everyone has to get onto electricity because there's no other options. OR do they take a view that if we get the right structures in place we can incentivise a less damaging transition in terms of costs for our customers. If they're focussed on that as an outcome, they'll seek methodologies that try to limit negative impact on the communities" (Commercial and Industrial customer, 2023)

Distribution Renewable Energy Zones (REZs) as a Solution

One prospective solution to address the challenges faced by C&I customers is the implementation of distribution renewable energy zones (REZs). Currently, the Victorian Government has declared several transmission renewable energy zones for power generation across regional Victoria. However, the communities surrounding these zones often lack the means to access and utilise that renewable energy supply as it is largely directed to metropolitan Melbourne.

C&I customers found the concept of distribution REZs highly appealing. However, it is important to acknowledge the key risk associated with this approach. There exists a possibility that the planned renewable energy generation may not materialize as expected, leading to unreliable supply or underutilized capacity. In such cases, the potential costs may be borne by existing customers without commensurate benefits. Nevertheless, most C&I customers expressed a strong desire for the introduction of distribution REZs, even in the face of this inherent risk. This sentiment is largely driven by a prevalent 'we before me' mentality observed in rural and regional areas, wherein the incentive for customers extends beyond direct financial savings. Instead, it centres on reinvestment in the community and the broader goal of making REZs more feasible and accessible, aligning with the collective interests of the local populace.

"There's definite appetite for something like this [Renewable Energy Zone] in our region [Shepparton]" (C&I Customer with multiple sites across metro and regional Vic, 2023)

Case Study: Gaia anaerobic digester

Multiple C&I customers had already installed or were in the process of installing an anaerobic biodigester on their site. Anaerobic digestion is a series of processes in which microorganisms breakdown biodegradable material in the absence of oxygen (Gaia EnviroTech, 2023). A dairy processing company contemplated implementing an installation due to the fact that milk whey and

permeate generated during cheese production and other dairy processes offer a reliable, large-scale supply of raw materials for the anaerobic digester. This byproduct possesses elevated levels of milk solids, sugars, proteins, and a certain amount of fat, resulting in substantial chemical and biological oxygen demand. Additionally, it carries a notable risk of environmental pollution, making its disposal a challenging issue. Nevertheless, the energy generated from the methane gas produced during anaerobic digestion can be harnessed and reintegrated into the cheese production process.

Another example of a customer using anaerobic digestion on site involves a transport company that has implemented an anaerobic digester as part of its sustainable practices. This company leverages its organic wastewater, generated during the cleaning of its vehicles, to feed the anaerobic digester. This innovative approach allows the company to convert organic waste into biogas efficiently, which can subsequently be utilised as an alternative energy source, contributing to both waste reduction and sustainable energy generation.

Many C&I customers discussed the desire to feed excess energy back into the grid, presenting a key challenge for the distribution networks. Accommodating increased export of energy requires the network to not only handle the technical aspects of energy flow, but also address C&I customers' hope for clear regulations, agreements, and compensation models for C&I customers engaged in exporting energy. Managing these dynamic changes while maintaining the integrity of the distribution network presents a multifaceted challenge.

Customer Perspective on Relationship Management

There was a desire from C&I customer to adjust timing for maintenance and planned outages

While many C&I customers recognised their distributor's communication efforts during critical periods of disruption, such as flooding in regional Victoria, there exists a prevailing desire for heightened levels of communication and accessibility beyond these critical moments. Some C&I customers have articulated challenges in engaging with their network, notably prior to the occurrence of events like floods, when seeking advice on preparation measures. This underscores the need for improved and more accessible communication channels that empower customers to interact with their distributor effectively, not just during emergencies but also as part of their ongoing relationship with the electricity distributor.

C&I customers have voiced a strong desire for improved timing and communication regarding maintenance and planned outages. They believe that collaborating with networks to schedule maintenance during periods of non-sensitive operations would be a valuable approach to minimise disruptions. Additionally, they emphasise the need for maintenance notifications to be issued at least a month in advance, providing C&I customers with enhanced visibility into planned maintenance activities. Furthermore, C&I customers have requested the availability of visualisations depicting planned outages on their distributor's website, which would facilitate informed decision-making and preparation.

"It seems a bit clunky on our end, particularly for multiple assets, having multiple contacts at Powercor would make a difference – they've made really good improvements, but I think taking that a step further would be good" (C&I Customer with sites across metro and regional Vic, 2023)

Proactive Relationship Management

C&I customers expressed a preference for proactive rather than reactive relationship management. They desire a collaborative relationship where multiple contact persons exist on both sides, rather than relying on a single point of contact. This proactive approach entails regular check-ins that extend beyond issue-specific interactions, providing an opportunity for open discussions on topics that matter to them. C&I customers seek the chance to anticipate potential future issues, allowing for proactive resolution. They also value the ability for a key contact within their organisations to receive updates and ensure that multiple stakeholders are contacted by the distributor in case of anticipated issues or interruptions. Building a more nuanced system that enables two-way communication with major customers across Victoria is seen as a promising avenue.

"I sit on a group which is a kind of advocacy group…so two weeks out from the floods we had pretty high-level confidence there was going to be a massive flood in our community and I spent a heap of time on the phone with Powercor trying to talk about this substation. I got in my car and drove out to the Powercor office here in our community (because I couldn't get onto anyone on the phone). I just couldn't get that escalated that this thing was going to be a linchpin and it ended up that several thousand people had no power in their homes for a period of time…it was a foreseeable issue that if they'd had those [communication] structures they would have been able to collect that information from the community" (C&I Customer with sites across metro and regional Vic, 2023

Reciprocal Relationship and Data Sharing

Some C&I customers expressed confusion over whom to contact for specific issues and have articulated a desire for more open data sharing and two-way communication practices. Customers want clarity on which contact points to engage based on a particular issue they are experiencing. There was an expressed interest in fostering a reciprocal relationship where data sharing practices are enhanced. C&I customers desire the ability to tag assets as critical, with the expectation that these tags would be considered by the network when planning and executing operations. This would ensure that the importance of critical assets is adequately acknowledged in planning processes.

"A self-service portal that was a bit more interactive would be helpful." (C&I Customer with sites across metro and regional Vic, 2023)

"It would be good if we could tag assets that are critical for service. To do that now it would be verbal and I don't know how that would be captured by Powercor. So being able to feed information back to Powercor – e.g., what's important to us so that it can be taken into account when there's an outage and prioritisation of restoration would be good." (C&I Customer with sites across metro and regional Vic, 2023)

Conclusion

CitiPower, Powercor, and United Energy, in collaboration with Forethought, extend their sincere appreciation to all participants for their invaluable contributions. These insights serve as a pivotal component among various inputs that will inform the formulation of CitiPower, Powercor, and United Energy's regulatory proposals.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