



Friday, 6 August, 2021

The Hon. Lily D'Ambrosio
Minister for Energy, Environment and Climate Change
Minister for Solar Homes

Dear Minister,

Victoria's Gas Substitution Roadmap Consultation Paper Submission

CitiPower, Powercor and United Energy welcome the opportunity to provide feedback on the Gas Substitution Roadmap Consultation paper to inform the Victorian Government's exploration of sustainable alternatives and pathways as our state transitions to a net zero emissions economy.

Our three networks move electricity across more than 65 per cent of Victoria, supporting more than 1.9 million homes and businesses with their power needs. We recognise that climate change is affecting our environment and the local communities we operate in and acknowledge our role in facilitating new energy technology benefitting the environment and the communities we serve.

We are pleased that as the Victorian Government focuses on its emission reduction targets, early engagement with industries about the consequences and impacts of potential pathways is already underway.

As indicated in the Roadmap, the Government's proposed electrification pathway has implications on electrical infrastructure and the management of additional electrical demand. This is the pathway we have elected to respond to in this submission.

Our role is to supply the electricity that enables choices made by our household, commercial and industrial customers.

We operate the most efficient distribution businesses within Australia and, in order to keep costs for customers as low as possible, we run a highly-utilised network that integrates demand management programs with other technologies to support changes in demand on our infrastructure. An electrification pathway is likely to require us to undertake works such as capital upgrades in order to meet increased needs. Broader use of demand management and technology such as storage will also be critical to supporting ongoing reliability and security of supply.

Moving towards electrification will require careful planning with integrated policy development and consultation between the Victorian Government and Victoria's distribution networks. We would encourage the establishment of a working group to ensure that any transition fully considers the broader consequences and requirements of changes on the community and our networks.

Our submission focuses largely on the opportunities and impacts of the key pathways of electrification and energy efficiency. We view this submission as the first step in extensive consultation, policy development and implementation of the Gas Substitution Roadmap.



Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Mark Clarke'. The signature is fluid and cursive, with the first name 'Mark' being more prominent than the last name 'Clarke'.

Mark Clarke

**General Manager, Electricity Networks
CitiPower, Powercor and United Energy**

PATHWAY – ELECTRIFICATION

Key Questions	Comments
<p>What are the opportunities and challenges for Victoria to decarbonise the gas sector and achieve Victoria’s emissions reduction targets?</p>	<p>As electricity distribution businesses, our focus is to work closely with the Victorian Government on the most efficient ways to support electrification initiatives in line with the current regulatory and technical environment.</p> <p>Having just commenced our current regulatory period on 1 July 2021, we are now beginning to model and investigate our operational and asset requirements for the period commencing 1 July 2026. We believe the impact of electrification will potentially escalate during this next regulatory period and will therefore be interested to work with government to ensure assumptions and initiatives are appropriately factored into our planning.</p> <p>The challenge is around defining these assumptions.</p> <p>The modelling of the demand shift associated with electrification is a complex task taking into consideration a range of factors which, in addition to the customer-driven choices outlined in the Consultation Paper, include:</p> <ul style="list-style-type: none"> - Greater energy efficiency ratings of new appliances and emerging technologies - The impact of National Construction Code changes planned in 2022 and the government’s objectives for 7-star energy efficient homes - The impact of new distributed energy resources further developing the two-way flow of power in the network - The emergence of customers as active participants in the energy market which is forecast as part of the ESB Post 2025 Future of the NEM and raises questions regarding the impact of decisions regarding direct load control, demand management and demand response - The forecast impact of minimum demand scenarios with the growing penetration of household and commercial solar generation. <p>We therefore would welcome the opportunity to work closely with the Government to develop and agree the assumptions for network planning appropriately.</p>
<p>What are the key benefits, risks and potential impacts on various end-users, on energy affordability, safety, security, reliability and equity?</p>	<p>The Australian Energy Market Operator’s currently published forecasts from 2020 do not consider the proposed gas transition, with relatively level demand in the next five years and maximum demand growth beyond this of approximately 1GW annually to 2039 predominantly due to electric vehicle uptake.</p>

Actions taken under an electrification pathway could be expected to have a significant influence on the accuracy of these current forecasts.

This will potentially require a change in our network development plans and demand management processes, necessitating an increased investment in the capability of the grid.

To assist with demand management while the grid is updated, we can leverage our experience in managing peaks during summer months. We do this via a range of activities including capital upgrades and the use of demand management programs and other technology.

As regulatory electricity network businesses, we apply to the Australian Energy Regulatory (AER) to assess our revenue requirements every five years. Those five-year windows determine our capital investment and what costs can be recovered from customers. Planning has begun for CitiPower, Powercor and United Energy's forthcoming 2026-2030 regulatory reset period. To ensure that we provide the AER with the most accurate information to plan for future network demand requirements, we will need to work closely with the Victorian Government to align the timing of electrification strategies and associated impacts on demand on the grid.

Engaging early with the Victorian Government and ensuring we fully understand the timing and transition requirements of the chosen pathway will allow us to better manage the reliability and safety of our networks.

While investments to our networks are planned, Victoria's unique smart meter infrastructure provides us with the detailed data we need to understand our customer's energy usage and unlock grid capacity. CitiPower, Powercor and United Energy are investigating how we can use this data to implement more dynamic and automated ways of operating and allowing us to safely and quickly move energy around our networks to accommodate more distributed energy resources. A key component of these investigations is participation in trials.

Since 2014, United Energy have successfully delivered the Summer Saver program, a demand response initiative. The program works by asking participants to reduce demand by taking simple measures like turning their air conditioners' temperature up and avoiding high energy appliances like dishwashers and dryers. Customers that participated in the 2020 program received between \$15 and \$456 depending on the demand reduction achieved.

Demand management programs such as Summer Saver benefit consumers and assist with overall

	<p>network demand management in the short term. The only way to ensure long term security and reliability is through upgrades to the network. The cost of these upgrades should be a key consideration of the roadmap.</p>
<p>What are the scale of opportunities and potential to accelerate uptake?</p>	<p>The future reliability and security of the grid will require increased network capability and investment to support it. Existing initiatives such as the Renewable Energy Zones and installation of large-scale battery storage are good investments to build a foundation for future generation and storage at a large scale. Increased investment in programs such as the Building Recovery Energy Efficiency Fund and Victorian Energy Upgrades program would also likely see an increase in the rate of electrification.</p> <p>In the short term, to assist with the transition and accommodate managing the additional load we have undertaken steps such as the following:</p> <ul style="list-style-type: none"> - Time-of-use tariffs: From 1 July we have introduced new network tariff structures that are aimed at incentivising customers shift load for major appliances to daytime use up to 3pm. It is designed to encourage use of solar exports during the day and as a mitigation for minimum demand scenarios. We will be interested to watch the take up and behaviour change associated with this initiative to assess impacts on evening peak demand, particularly during summer time, and the implications for network planning. - Battery storage: As the price of at home batteries declines, they will become more accessible to more customers and businesses. This is being further assisted by government subsidies. As a business, we are also exploring the opportunities presented by low voltage network based energy storage and supporting community based energy storage programs. Both options provide benefits to communities in respect to increasing network capacity for solar exports and improving reliability in peak demand periods.
<p>What are the key technical, regulatory and economic barriers?</p>	<p>Renewable generation, battery storage and appliances that can integrate intelligently with a reliable network are the key components of safe and reliable distribution networks for customers.</p> <p>Based on the timelines in the discussion paper, the technical, regulatory and economic barriers include:</p> <p>Technical:</p> <ul style="list-style-type: none"> - Pace of Change: The timeline for electrification needs to be considered against the timelines to gain funding for and perform network upgrades. If the transition occurs too quickly, or in an uncoordinated manner, then the network will not be able to keep pace and this may affect power reliability for customers.

- Enabling Device Capability: Many modern devices now meet the standards to be Demand Response Enabling Devices (DRED), which means they can participate in demand response automatically when set up to do so. The standardisation of setup for DRED devices as they are installed, such as is the requirement in Queensland for air conditioning, will be critical to enable easy uptake by customers. Currently, new appliances such as air conditioners are DRED capable but the technology is not enabled on installation, meaning they need to be upgraded after installation by a qualified electrician.
- Incentivising Device Upgrade: In coordination with enabling the capability of new DRED installs, customers with older non-DRED devices would need their appliances to be retrofitted to participate in demand response initiatives, potentially adding a cost barrier. This creates a cost and time hurdle to participate in demand response. Without this integration, appliances, batteries and the network cannot talk to each other to manage demand and leverage the benefit of an integrated energy system. This is important as the uptake of renewable energy technology increases and multiple devices in a household will be responsible for generating, storing and distributing electricity. To maintain reliability and security, all components of the energy system should be integrated to assist with demand management and to understand how energy is being used.
- Electric Vehicles: The Government has announced a target that all public transport buses purchases will be Zero Emission Vehicles (ZEV) from 2025 and 50 per cent of new light vehicle sales will be zero mission by 2030. ZEVs will therefore play a key role in decarbonising the transport sector and reducing emissions. At a commercial level, EVs will likely be charged on commercial property, and with commercial peak demand tariffs in place, will be able to be managed. For households, EVs have the potential to become a major energy user during peak times. Importantly, as with DRED enabled appliances, EVs need to be integrated into the grid to ensure demand can be managed within the capabilities of the network around peak times. As technology such as Vehicle 2 Grid (V2G) becomes more available, EVs will also be an enabler of demand management. Without integrated planning, increases in EVs market share will result in a major increase in demand, and without associated increases in network capacity, reliability of the grid will be compromised.
- Transmission Supply: A key consideration is the transmission grid. Any upgrades to distribution networks need to be supported by upgrades or changes to the transmission grid.

	<ul style="list-style-type: none"> - Local Planning restrictions: As the greatest impact of electrification is likely to be seen in predominantly residential areas this will create the need to build new assets to supply customers reliably. New urban development space limitations for additional electricity assets and a drive by local planning bodies to underground electricity assets may significantly increase cost and complexity. <p>Regulatory:</p> <ul style="list-style-type: none"> - Australian Energy Regulator: CitiPower, Powercor and United Energy are regulated electricity distribution businesses and our funding for network upgrades is set in the five-year cycles of the Australian Energy Regulator (AER). We have limited flexibility to adapt our revenue and cost models in the short term to any major, unanticipated changes in demand. - National Electricity Rules: The National Electricity Rules and AER requirements indicate distributors can't charge customers the cost of constructing more capacity than they need presently to meet potential for future increased customer demand requirements unless that demand is contractually committed or contracted and included in demand forecasts. - Existing reviews: The outcomes of the National Construction Code and the Victorian Building Code reviews may also create additional network requirements to support electrification. <p>Economic:</p> <ul style="list-style-type: none"> - Cost: The construction of any additional electricity assets to meet the new market demand and needs must be managed within an environment where affordability of energy costs for all customers is paramount. - Personal Management: Solar PV and battery storage will play a role in reducing customer exposure to network cost increases but there will be a period of transition for consumers utility purchasing habits for energy.
<p>What are the roles to be played by government, industry and how will consumers preferences be accounted for in the transition?</p>	<p>We recommend the establishment of a working group with government, industry and consumers to consider electrification strategies. With the regulatory requirements of networks in Victoria and the future and ongoing investment required to upgrade and maintain the grid to manage the increased demand, networks need to be able to plan for the long term and be involved in the decision making process with the Government.</p> <p>The future demand management risks will be minimised if industry and consumers are directly</p>

	involved in policy creation and implementation, not just consulted.
What are the likely timings of technical maturity and economic viability?	<p>Such a significant shift to the way Victorian households and industry use electricity will require detailed modelling and planning to determine timing and viability.</p> <p>To best understand the timings of technical maturity and economic viability of the network, CitiPower, Powercor and United Energy would welcome the opportunity to work closely with the Government on electrification planning.</p>

KEY ISSUE 1: Maintaining electricity reliability with new sources of demand

Key Question	Comments
What policies are needed to ensure that the electricity network can reliably serve new sources of demand from hydrogen production, electric vehicles and electrification of gas demand?	<p>The energy market is rapidly transforming towards more distributed energy resources (DER). It is critical that the regulatory framework governing our industry evolves to reflect these changes to ensure maximum benefits for customers are fully realised.</p> <p>We need the support of the Victorian Government to lead policy change that allows distributors to participate in the energy storage market without cumbersome AER waivers and regulation and support a fulsome review by the Productivity Commission on ring-fencing guidelines.</p> <p>We are concerned the AER's existing draft electricity distribution ring-fencing guidelines prevent and limit distributors participating in new and emerging markets. This is not in the long-term interests of consumers and puts the reliability and affordability of the network at risk.</p> <p>The benefits from distributor-led energy storage include:</p> <ul style="list-style-type: none"> - a distributor has established teams, systems and processes for equipment installation and commissioning - distributors have access to land and network infrastructure from existing sites and existing relationships with local councils and community energy groups, providing flexibility for locating near constraints - distributors have economies of scale to as they operate and maintain and high volume of distributed assets - distributors also have a single network control system to maintain - distributors manage the risk of outages and reliability events on a daily basis across their entire network.

Electricity distributors are already demonstrating they can successfully deliver broad benefits for customers through investment in innovative technology such as energy storage. Within the United Energy network, our Bayside Battery pole-top trial of two batteries is already:

- supporting reliability of electricity supply in the community, particularly during peak demand times
- increasing the network capacity to allow more homes to connect and export from rooftop solar systems
- improving the quality of electricity supplied by our distribution network
- helping reduce network charges for customers by avoiding traditional network upgrades that might otherwise be required.

Energy storage will be a key supporting technology for electrification and renewables growth on the network and rapid deployment is highly sought after by our communities and the government. We are already experiencing strong community and government interest in the development of storage in our local distributed areas, particularly to enable more DER.

With distributors involved in energy storage, we can provide a more reliable network and better assist the government's net zero emissions target.