September 2022

Our Pricing Directions Paper for 2024-29

for consultation

Empowering communities for a resilient, affordable and net-zero future.

Ausgrid

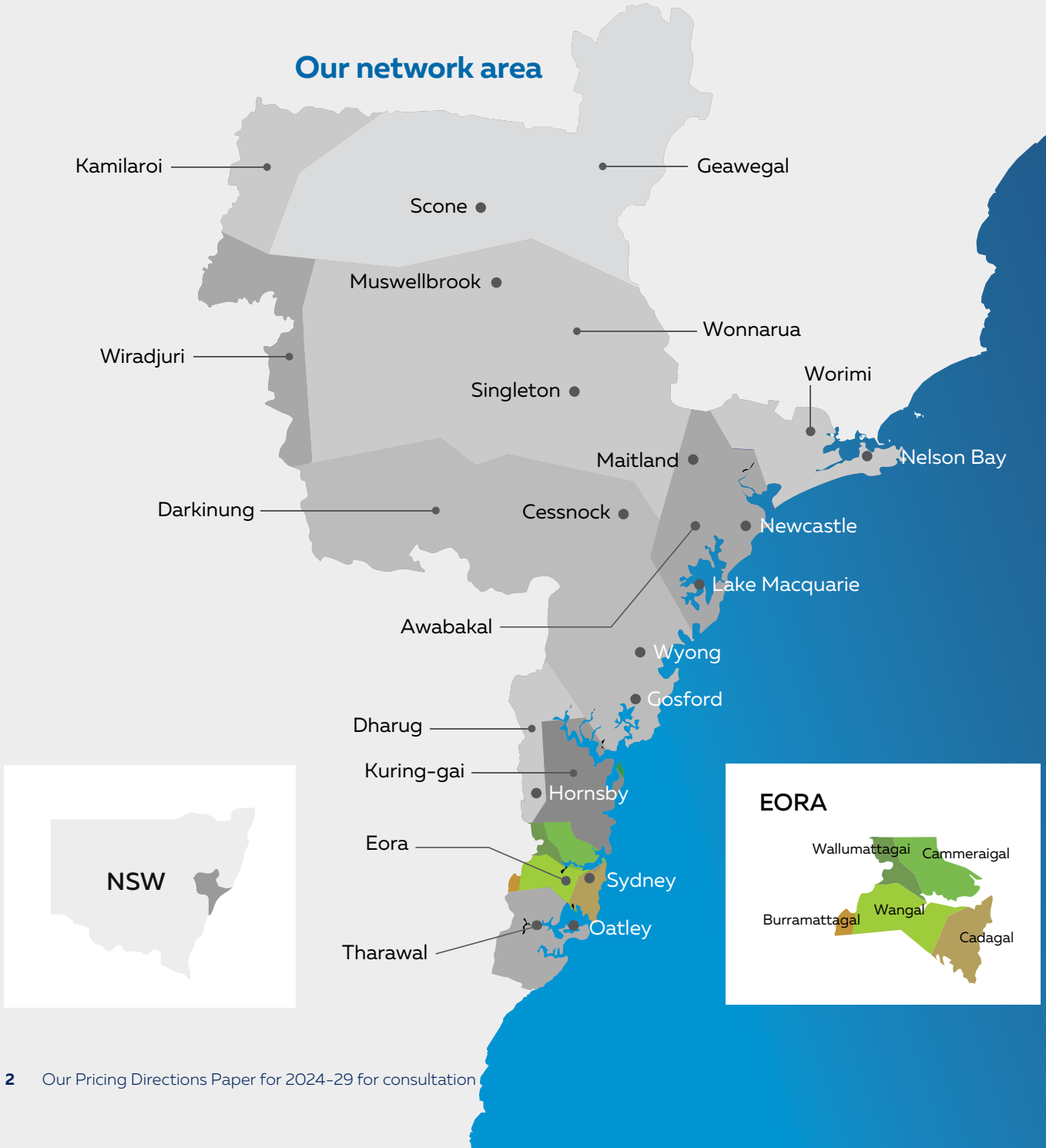
Acknowledgment of Country

We acknowledge the Traditional Custodians of the lands where the Ausgrid distribution network is located, and we pay our respects to the elders past, present and emerging.

As set out in our Reconciliation Action Plan, it is important that this recognition leads to industry wide support and understanding of the knowledge, stories, languages and experiences of Aboriginal and Torres Strait Islander peoples, as our way of paying respect, and contributing to, some of the oldest continuous cultures of the world.

Our network and operations span the traditional country of 17 languages, tribal and nation groups in Sydney, the Central Coast and Hunter regions of New South Wales. We want to lead and foster a workforce, and approach to our operations, that embraces the learnings, voices, cultures and histories of these Traditional Owners into our own organisation.

Our network area



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Executive summary

As the operator of the poles and wires delivering electricity to homes and businesses across large parts of Greater Sydney, the Central Coast and the Hunter, Ausgrid plays a pivotal role in connecting communities and empowering the lives of over four million Australians. Our network provides a platform for customers to make choices based on what is important to them, be that affordability, decarbonisation, or other priorities. Because of this, we need a strong plan for our future network prices.

In 2019 we introduced new demand tariffs for households and small businesses, which offered our customers lower bills for spreading out the use of electrical appliances. Further pricing reform is required to support the evolving needs of our changing sector. We need to get ahead of the changes facing our customers, our industry and our world. Rising temperatures and more frequent and severe bushfires, floods and storms mean the effects of climate change – and the need for a net zero future – are more apparent than ever before. New ways of living and working are leading to new patterns of energy use and customers are expecting individualised and affordable, zero emissions energy solutions. These changes create new opportunities for customers to be rewarded for using the network more flexibly. This improves utilisation of the grid, lowering the overall cost of the system.

Pricing reform is a significant opportunity

We want to maximise the opportunities for retailers and other partners, such as aggregators, to reward customers for their flexible use of the grid. We are building on reforms we have already introduced, such as trialling new incentives for customers to realise the shared value of rooftop solar, home batteries and electric vehicles. Digitisation will facilitate 'price for devices', a future where retailers and aggregators leverage cloud computing to manage any network tariff complexity, so customers do not have to. Our data-driven initiatives, such as Project Edith[1] and our Distributed Energy Resource (**DER**) integration strategy, are also showcasing the potential of new green technology solutions such as Virtual Power Plants to decarbonise the system at lowest cost.

Ausgrid remains committed to delivering options that cater for our diverse communities and customers who use our network. We appreciate that our customer's access to new technology will vary. We know customers and our partners expect an orderly transition that supports choice and involves solutions that set us on the right path for the long term. We will always balance innovative options with simple solutions and ensure customers are supported through change. We will continue building trust with the community through leadership and a clear commitment to support a fair, affordable, resilient and decarbonised system for the benefit of all.

We can only unlock these opportunities if we work together. Ausgrid is excited to collaborate with Governments, retailers and other partners to explore and communicate solutions, so all customers can benefit from the opportunities on offer, if they choose to do so.

Together we can improve the outcomes for NSW electricity customers and the communities we serve.

We are currently conducting extensive engagement with our communities, to guide and inform us as we develop our revenue, expenditure and pricing proposals for the 2024-29 period. This Pricing Directions Paper outlines our current thinking on pricing reforms and tariff innovation we could include in these proposals.

1 Project Edith is an initiative that aims to showcase how the grid can facilitate technology and green energy solutions (like Virtual Power Plants (**VPPs**) to participate in energy markets while responding to dynamic network pricing. See https://www.ausgrid.com.au/About-Us/Future-Grid/Project-Edith for more information.

Our proposed pricing reforms for 2024-29

We are developing a set of pricing reforms that respond to the changes and opportunities in the energy sector in the 2024-29 period, and what we are hearing from our customers and communities. Our key proposals are outlined in **Table 1** and discussed in detail in **Section 4** of this paper.

Table 1: Proposed pricing reforms from 1 July 2024

Reform	What	Why
Export pricing transition strategy	Introduce opt-in export pricing for small customers in July 2024, and make it the default assignment for new and existing[2] small customers on time of use (**TOU**) tariffs and demand network tariffs from July 2025. We will be consulting on a customer opt-out option. Our proposed structure has a charge and a reward component. The proposed level of the charge is low, and we expect it to have minimal bill impacts over the 2024-29 period.	To create a framework that allows people, communities and households to extract additional value out of the network. It will manage growth in these energy exports by: • Encouraging exports during peak demand periods; and • Empowering customers to optimise future DER investments and maximise the value they get from self-generation, improving pricing flexibility, and facilitating the transition to net zero.
Tariff streamlining	Withdraw up to 12 network tariffs that are very similar to other tariffs, or have few or no customers assigned to them.	To simplify our tariff offerings, making it easier for retailers to understand them and pass on the price signals they send in their retail prices, improving pricing efficiency.
Embedded network pricing	Introduce 3 tariffs for embedded networks (**ENs**) with medium or large annual energy usage, and make them the default tariffs for new and existing ENs connected to our network from 1 July 2024.	To better reflect the costs to serve ENs, and thus improve pricing efficiency and fairness.
Capacity charges	Lift the lower usage threshold at which capacity charges apply from 40 MWh to 100 MWh.	To align with the *National Energy Retail Law Regulation (NSW)* definition of a small customer and improve available options in our tariff assignment process.
Controlled load	Change the switching times for controlled load devices to allow customers to use these devices during the daytime, when solar customers are exporting to the grid.	To help mitigate the impact of solar exports on our low voltage network during the day, improve network utilisation, and potentially reduce greenhouse gas emissions, improving pricing efficiency and supporting the transition to net zero.
Charging windows	Move our peak period window to later in the day for customers on TOU and demand/capacity network tariffs, and extend it to weekends for residential customers.	To ensure our peak charges accurately signal the periods when these customers' energy use imposes highest costs on the network, improving pricing efficiency and fairness.

2 NER transitional rule 11.141.1 defines an existing DER customer as one that was connected as of 19 August 2021.

Our proposed tariff innovation for 2024-29

Our proposed tariff innovation and tariff trials for 2024-29 aim to improve our customers' opportunities to benefit from their DER investments, to share those benefits across our customers, and to build our capability to unlock new opportunities that will emerge from expected market changes over the coming years. Our proposed trials are discussed in detail in **Section 5** of this paper.

Consultation on this paper

This paper is intended for all our stakeholders, including our customers, retailers, government policy makers, and our regulator, the AER. We have consulted on the proposed pricing reforms with our Pricing Working Group, and via retailer and large customer forums.

We invite interested parties to make written submissions in response to this Pricing Directions Paper by close of business Tuesday, 4 October 2022.

Submissions should be sent electronically to pricing@ausgrid.com.au with the title 'Submission – Ausgrid Pricing Directions Paper'. We ask that all submissions sent in an electronic format are in Microsoft Word, Adobe PDF, or other text-readable document form.

1

Introduction

As the operator of the network that delivers electricity to homes and businesses across large parts of Greater Sydney, the Central Coast and the Hunter, Ausgrid plays a vital role in connecting communities and empowering the lives of more than four million Australians.

How we charge customers for our network services can influence when and how customers use electricity and give them flexibility to choose what is important to them – for example, convenience, lower bills, or lower carbon emissions. Our pricing can also influence the costs we incur in providing our services, and how we recover those costs from different customers – for example, the extent to which our pricing reflects the higher or lower costs that patterns of electricity use impose on the network, or result in some customers paying or more or less than their fair share. Because of this, we need a strong plan for our future network prices.

In January 2023, we will submit a regulatory proposal to the Australian Energy Regulator (**AER**) that will set out our expenditure plans for the 2024-29 period. At the same time, we will submit our Tariff Structure Statement (**TSS**).

The AER's determination will govern how much revenue we can earn over the 2024-29 period to recover our costs, and therefore how we can change our price levels over the period. The approved TSS will govern the range of tariffs we can charge, the structure of those tariffs, and our policies for assigning customers to a tariff over the period. The AER's review process is outlined in **Figure 1** below.

1.1 Why we are releasing this paper

This Pricing Directions Paper outlines our current thinking on the pricing reforms and pricing innovation we will include in our January 2023 TSS. We are seeking your feedback on whether we are heading in the right direction, and what refinements you would like us to make to better reflect your priorities.

We have also released our Draft Plan for the 2024-29 period, which outlines our current thinking on the revenue needs and expenditure plans we will include in our January 2023 proposal. We encourage you to review this Pricing Directions Paper alongside the Draft Plan, particularly the sections of the plan that relate to affordability and net zero.

This is because our TSS and regulatory proposals are inter-related. For example, our proposed tariff structures and reforms are intended to have an impact on how our customers use our network into the future (both when consuming electricity and exporting it to the grid).

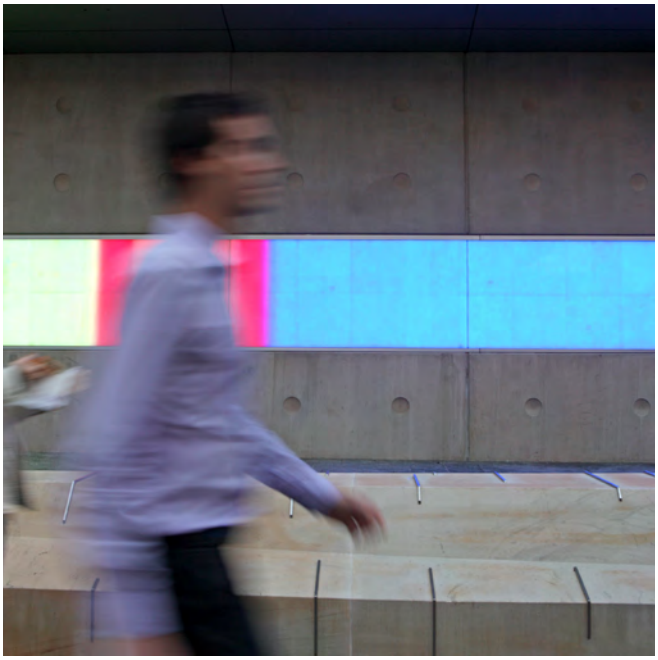
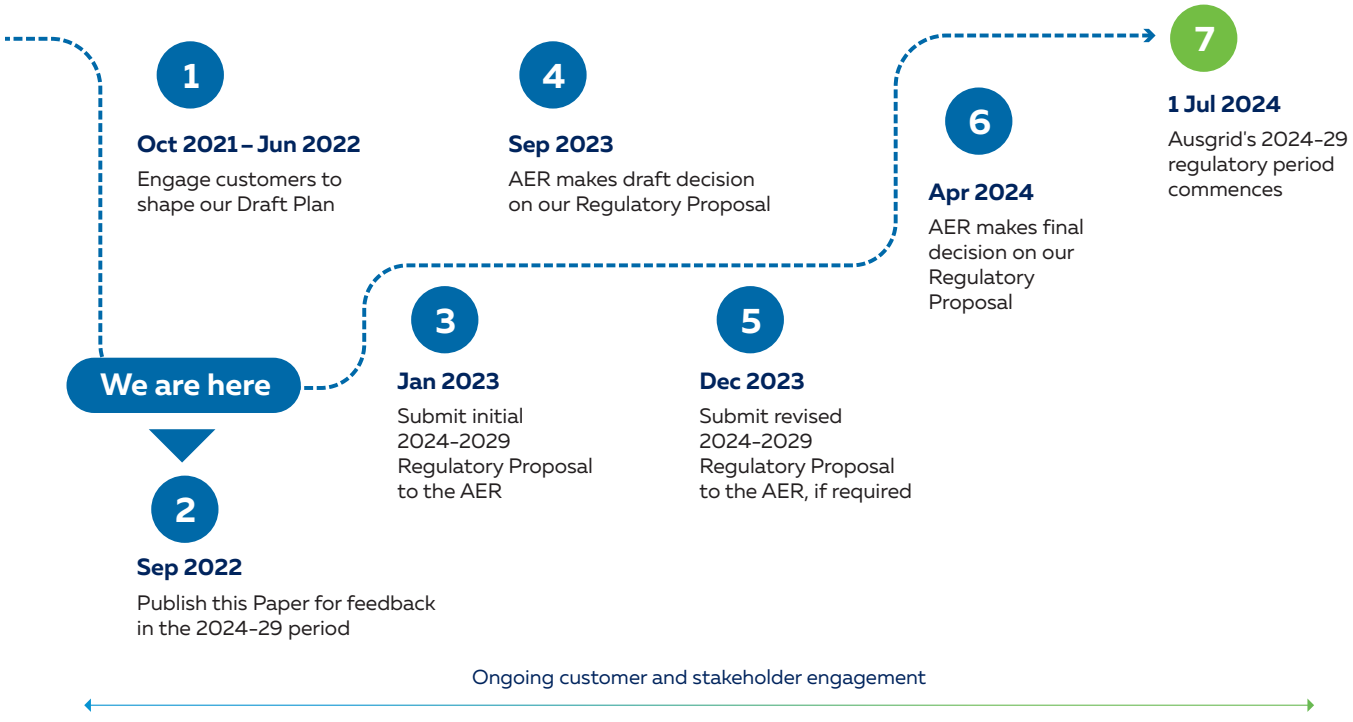


Figure 1: Ausgrid's 2024-29 regulatory reset timeline



1.2 Our current network prices

We have different network prices for our residential and small business customers and for our medium and large business customers.

For residential and small business customers, retailers package up our prices with the other costs of electricity supply – including wholesale, environmental and retail costs. Retailers' pricing structures might mirror the structure of our network prices, or have another structure entirely.

Historically, most of our residential and small business customers have been on network prices with a flat energy-based structure, which means they paid a fixed rate for every kWh of electricity they used. This is because older electricity meters only recorded the amount of energy used over time. However, this flat tariff structure:

- **Is not cost-reflective** – our costs are not driven by how much energy our customers use over time, but by how much energy our customers use **at the same time** (the peak demand on our network). Our costs are also expected to increasingly be driven by the amount of energy customers export to the grid at the same time.
- **Does not give customers much control over their bills** – with a flat energy-based structure, the only way customers can lower the network cost component in their bill is to lower their overall energy usage.

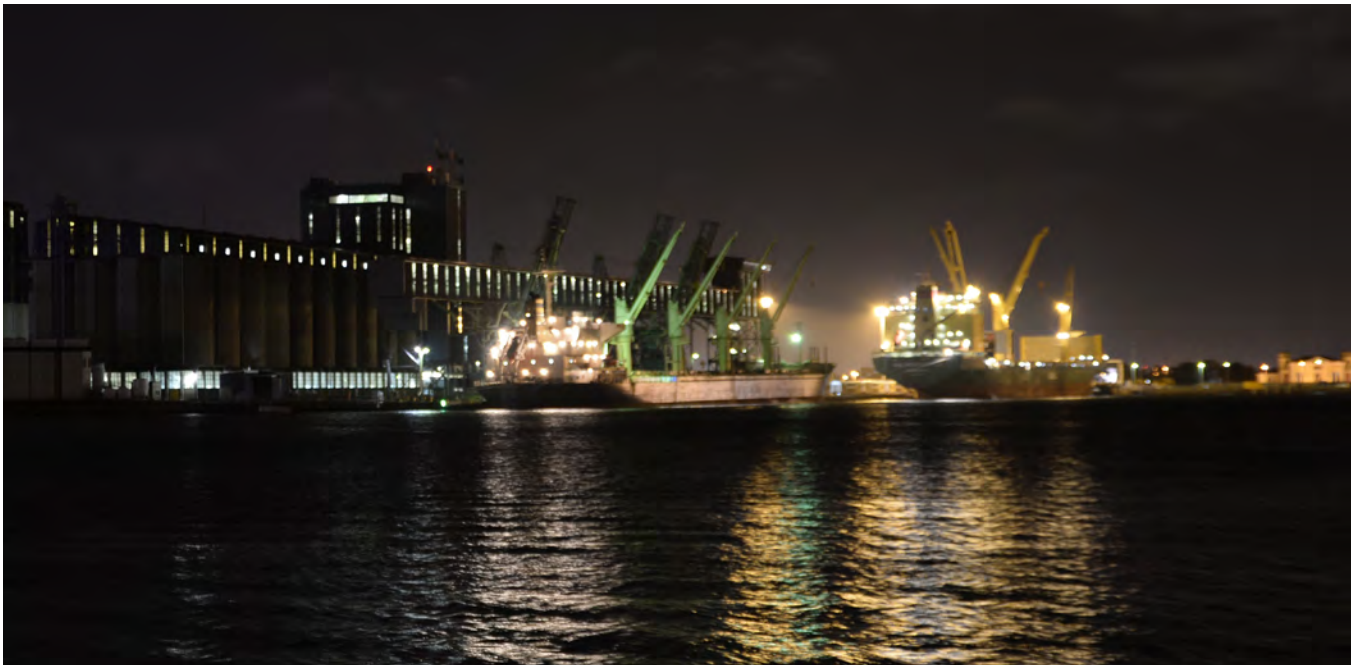
As metering technology has improved, we have implemented several pricing reforms to make our residential and small business tariffs more cost-reflective and give our customers more power to influence their bills. In 2003, we introduced TOU pricing for small customers with interval ready meters. These prices have a range of 'charging windows', so customers pay a higher rate for energy used during the periods of peak demand on our network. In 2019, we introduced demand pricing for new residential and small business customers with smart meters. These tariffs apply to a customer's metered peak demand that occurs over a month and within the peak period window.

If passed on by their retailer, our TOU and demand tariffs provide price signals to customers about how the timing of their energy use influences our network costs, and allow customers to lower their bills by shifting some of their energy use to when network demand is low. If many customers respond to these price signals, these tariffs can also help us control the growth in our network costs.

Almost half a million residential and small business customers are on our TOU tariffs, and more than 160,000 are on demand tariffs. This is nearly a third of all our residential customers and more than half of all our small business customers.

For large commercial and industrial customers, our network prices are typically itemised on their bill so they can see the contribution of our network prices to their overall electricity costs and are better able to respond to their price signals. Our existing tariffs for these customers include capacity charges, which are applied to the highest peak demand that occurs over 12 months that falls within the peak period window.

More information on our current tariffs structures can be found in our current Tariff Structure Statement. Information on our current tariffs price levels can be found in our current network price list available on our website (link).



1.3 Our proposed pricing principles

We need to continue reforming our pricing, to meet the challenges and capture the opportunities facing the energy sector and our customers. We are developing a set of reforms to implement in the 2024-29 period, as well as undertaking tariff innovation to inform further reforms in future periods.

To guide us, we have developed a set of pricing principles in consultation with our Pricing Working Group (see **Section 3.1**). We consider our pricing reforms for 2024-29 should accord with three principles:

1. **Efficiency**: our prices should efficiently reflect the overall costs of operating the distribution network, and the costs associated with providing different network services at different times of the day and year. Efficient cost-reflective tariffs can signal to customers the costs of distributing electricity, enabling customers to decide whether the benefits they get from the electricity (consumed or self-generated) outweigh the costs.

2. **Flexibility**: our prices should reward customers for being flexible in when and how they use energy. Prices that encourage customers to consume energy at times of low network d emand and export energy at times of peak network demand can improve the overall utilisation of the grid. This can reduce the need to augment the network and limit network charge increases for everyone in the long term. It also supports customer choice, facilitates innovation, and creates win-win outcomes across customer segments.

3. **Fairness**: our prices should recover our costs in a way that is fair and equitable to all customers. For example, they should not create an unfair burden on customers who have less ability to control their network charges, such as those renting and living in apartments, who may be unable to invest in distributed energy resources (**DER**), such as rooftop solar and battery storage systems.

   They should not discriminate between customers – for example, based on where they are located within our network area, or whether they have invested in DER already or will do so in the future. In addition, our approach to price setting should be technology-neutral to promote innovation and remain relevant as technology evolves. It should also consider customer impacts, and significant change should be supported by complementary measures to minimise these impacts if necessary.

Consultation question 1:

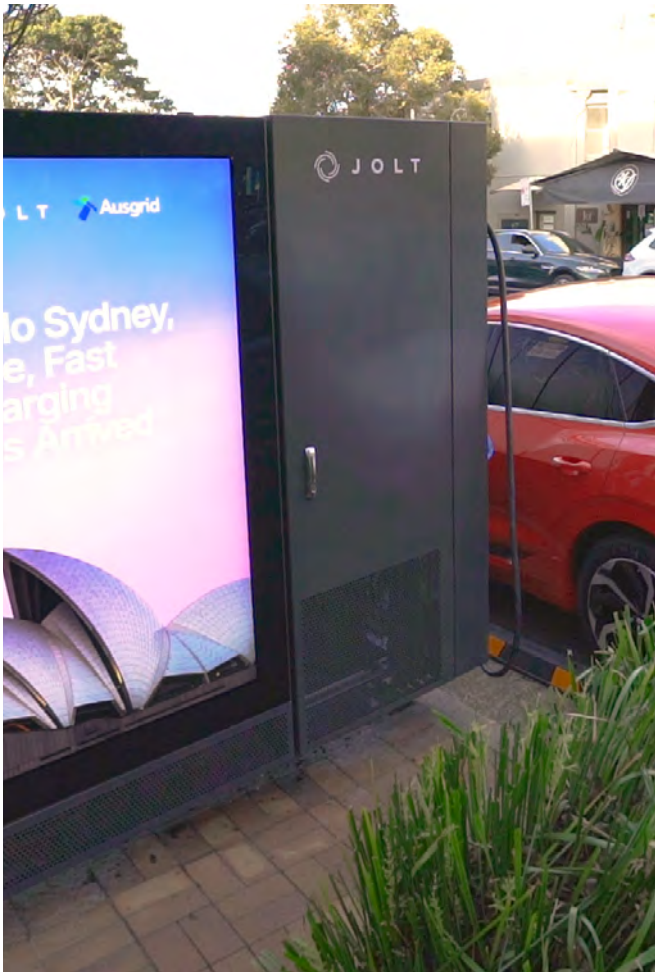
- Do you have any feedback on our pricing principles?
- Do you disagree with any of the principles?
- Are any important principles missing?

1.4 What the rest of this paper covers

The sections that follow outline:

- **The challenges and opportunities** in the energy sector our proposed pricing reforms are responding to;
- How we are engaging with our communities to inform the development of our pricing reforms;
- **Our proposed pricing reforms for 2024-29**, including how they meet our pricing principles and respond to what we are hearing in our engagement with our communities;
- **Our proposed tariff innovation for 2024-29**, including tariff trials to test and guide future pricing reforms; and
- **Where we think our network tariffs are heading**, as we look beyond 2030.

Throughout these sections, we identify the questions we particularly seek your feedback on. The final section of the paper includes a complete list of these questions for ease of reference.



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We are responding to challenges and seizing opportunities

The energy sector – and energy customers – around the world are experiencing a period of profound change. The impacts of climate change – and the importance of transitioning to net zero emissions – are more apparent than ever before. New ways of living and working are leading to new patterns of energy use and customers are expecting individualised and affordable, zero emissions energy solutions. These changes create new opportunities for customers to be rewarded for using energy more flexibly, improving the utilisation of the grid, and lowering the overall cost of the system.

In the 2024-29 period, we want to build on the pricing reforms we have already introduced to maximise the opportunities for retailers and other partners, such as aggregators, to reward customers for their flexible use of the grid. We also want to continue trialling innovative tariffs, for example to provide new incentives for customers to realise the shared value of rooftop solar, battery storage and electric vehicles (**EVs**). This innovation is critical to help us prepare for the future, from a distribution network to distribution system operator and offer more dynamic network prices (see **Section 5.3**).

In developing our pricing reform and tariff innovation proposals for 2024-29, we need to respond to three main changes in our operating environment:

- New government policies to drive the transition to a net zero economy;
- Expected growth in our customers' uptake of DER – such as rooftop solar, battery storage and EVs – to support the transition to net zero as well as control their own energy costs; and
- Upward pressure on energy bills.

2.1 New government policies to drive the transition to net zero

While Australia has been transitioning towards a cleaner and more sustainable energy system for some time, the pace and urgency of change is picking up. Federal and state governments are implementing policies that commit to net zero by 2050 and facilitate the electrification of the economy needed to achieve this ambition.

The NSW Government has recently introduced three new policies that we need to respond to in developing our TSS proposal. These include the Electricity Infrastructure Roadmap, its 2021 Hydrogen Strategy, and the 2021 Electric Vehicle Strategy.

2.1.1 Electricity Infrastructure Roadmap

The NSW Government's Electricity Infrastructure Roadmap (**Roadmap**) aims to deliver significantly more renewable generation capacity by 2030. It includes projects to provide 12 GW of renewable generation capacity and 2 GW of large-scale storage, which will be located in Renewable Energy Zones across NSW.

The government requires Ausgrid and the other NSW distributors (Endeavour Energy and Essential Energy) to pass through a range of costs associated with implementing the Roadmap to our customers from 1 July 2023. We understand that we are to include these in our prices as two new jurisdictional schemes; one scheme will pass through costs known as 'contribution determinations'. The other scheme will pass through costs of administering exemptions for entities from paying Roadmap costs, as nominated by NSW Government.

We have not formed a view on how we should pass through the Roadmap costs to our customers. The costs of the existing NSW Climate Change Fund (**CCF**) are passed through as an energy usage charge applied to all distribution network customers. Under a similar approach, we estimate that every $100 million of Roadmap costs we pass through would result in a $20 per annum bill increase for the typical residential customer.

We welcome feedback on the approach we should use to allocate Roadmap costs across our tariffs. This could include more cost-reflective approaches, such as including a forward-looking price signal in our peak demand and capacity charges.

Consultation question 2:

- How should Ausgrid recover Roadmap scheme costs? For example, should we send a cost-reflective price signal (eg. a demand charge) for the recovery of Roadmap costs, or recover the scheme in a similar way to the existing CCF (e.g. as an energy charge)?

2.1.2 Hydrogen Strategy

The 2021 NSW Hydrogen Strategy is expected to result in a significant number of green hydrogen electrolysers connecting to our network in the Hunter region. The strategy requires:

- Distributors like Ausgrid to provide these green hydrogen producers a 90% reduction off their network charges;
- Green hydrogen producers to be located in parts of the network where there is spare capacity; and
- Network or market operator to be able to direct the electrolyser to turn off during peak events, or in response to dynamic price signals.

One way would be to introduce dynamic pricing, such as a critical peak price. Under this approach, the network charge for hydrogen producers would be a low, cost-reflective 'off-peak' energy charge when the costs of providing network services in its location are low. When we call critical peak events – that is, in periods when the costs of providing network services to hydrogen producers are high – these customers could either choose to stop producing during those periods or pay higher prices. We could design a tariff so that, if a hydrogen producer always responds to critical peak events by shutting down production, its annual network charges would be 10% of the costs of operating at all hours on a standard capacity tariff. This pricing option could be initially introduced as a trial tariff.

Consultation question 3:

- What are your views on how Ausgrid should set prices for hydrogen electrolysers in the 2024-29 period to provide them with the 90% discount on network charges?
- Should we introduce a dynamic tariff for large load customers such as hydrogen electrolysers?

2.1.3 Electric Vehicle Strategy

The NSW Government's 2021 Electric Vehicle Strategy provides $500 million in tax cuts and incentives to increase uptake of EVs over the next 4 years. It includes $171 million to build a road network of ultra-fast charging stations. As the uptake increases, the energy consumption associated with charging EVs will increase (see **Section 4.6**)

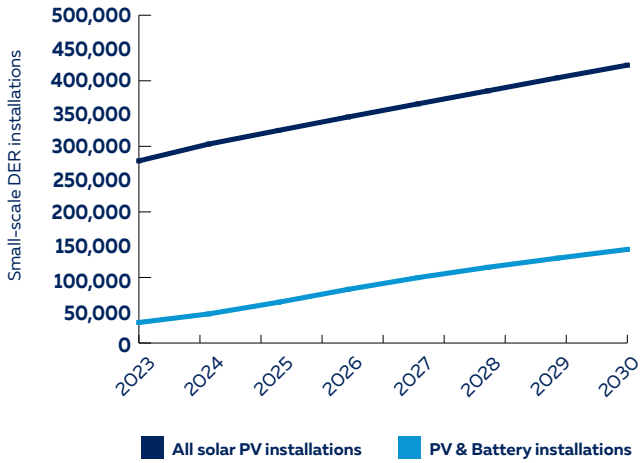
2.2 Growth in customer uptake of DER

In our engagement with our communities, we are hearing that our residential and small business customers will be investing more in DER – including rooftop solar, battery storage systems and EVs. Modelling by the Australian Energy Market Operator (**AEMO**) and our own forecasts indicate the growth in customer DER over the 2024-29 period will be significant.

2.2.1 Forecast growth in rooftop solar uptake

The number of residential and small business customers generating electricity through their rooftop solar systems has been growing over the past 15 years. We are expecting to see strong growth over the 2024-29 period, both in the number of customers with solar in our network and the average system size. We are also starting to see growth in small residential and business customers installing batteries (see **Figure 2**).

Figure 2: Ausgrid network area DER installations (Ausgrid projection)



We are working hard to minimise the barriers for customers installing rooftop solar within our network. We recognise that customers want to play a major part in the transition to net zero, as well as use their generation to meet their own energy needs and reduce their energy costs.

In parts of our network, we are quickly reaching or have started to exceed the limits of the exports we can accept without augmenting the network (also known as the intrinsic hosting capacity). When the volume of energy exported to the grid at the same time exceeds the intrinsic hosting capacity, customers with solar will experience reduced solar generation and export reliability. This is because when the network exceeds its intrinsic hosting ability, the voltage level exceeds the standards. This causes solar customers' inverters to automatically turn off, and they cannot generate electricity (for export or self-use) until voltage returns to within standards. Alternatively, if we spend more money to manage these voltage swings or augment the capacity of our network so we accept more exports, customers may face higher prices.

In 2021, the Australian Energy Market Commission (**AEMC**) changed the National Electricity Rules (**NER**). The AEMC recognised that exports onto distribution networks can reach or exceed the intrinsic hosting capacity and drive network costs. To address this, the NER now allow distribution networks to charge for exports.

We are proposing to introduce export pricing in the 2024-29 period. We think export pricing aligns with our pricing principles:

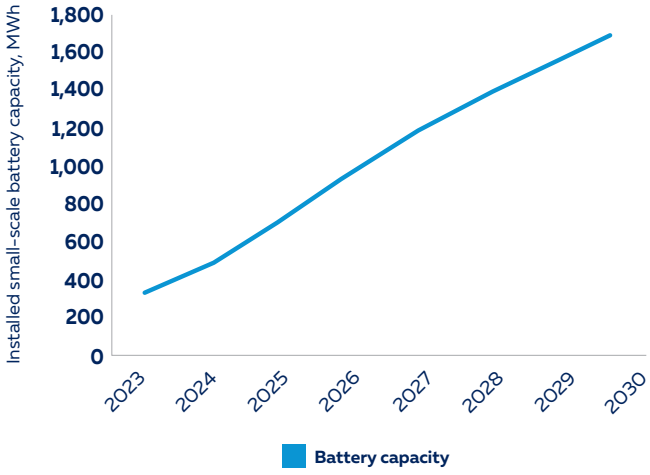
- **Export charges create more efficient outcomes**. By seeing the costs of exports, customers can make more informed decisions about the sizing of their DER like rooftop solar, when it is optimal to self-consume their generation, invest in a home battery, or, if possible, subscribe to a community battery scheme;
- **Export charges can reward flexibility**. The flexibility principle builds on the efficiency principle as it involves sending efficient price signals that allow customers that can be flexible to save money. Customers who can self-consume their generation or move when they export (e.g. by installing western facing rooftop solar or batteries) will share in the benefits this provides our network through lower bills; and
- **Export charges can create a fairer outcome**. Our fairness principle means our network charges minimise situations where some of our customers are paying more so we can supply other customers. When we were able to accept all customers' exports without any costs it was fair that customers exporting did not pay for exporting. However, as we incur costs to accept exports we are creating a situation where customers are receiving a service for less than it costs us to provide it.

Our current proposal for introducing export pricing, and our consultation questions on this proposal, are set out in **Section 4.1**.

2.2.2 Forecast growth in battery storage uptake

Between now and 2029, we expect to see new and existing network customers investing in energy storage. This includes residential, commercial, community and grid-scale batteries. We expect that the installed capacity of batteries on our network will grow to 1.7 GW by around 2040 see **Figure 3**.

Figure 3: Ausgrid network area small-scale battery installed capacity (Ausgrid projection)



Customers with batteries can help us manage our network during times of:

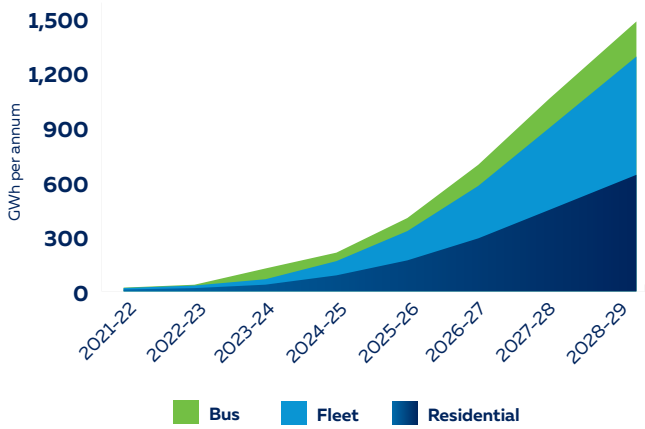
- Low demand and high voltage, by providing voltage support through storing excess energy on the grid; and
- Peak demand, by exporting stored energy during peak usage times which can avoid us needing to augment our networks.

Tariffs that encourage customers with batteries to consider network costs and respond at times when we experience high voltages and maximum demand could benefit all our customers. We are not proposing to introduce energy storage tariffs during the 2024-29 period. However, we will continue to develop and trial innovative tariffs so we could potentially introduce these tariffs in the future. Our proposed innovation in this area is discussed in **Section 5.1**.

2.2.3 Forecast growth in EV uptake

We expect to see significant growth in the number of customers owning EVs in our network area over the 2024-29 period and beyond. We forecast that the annual energy consumption from EV charging will increase from around 20 GWh today to over 1,500 GWh by the end of the period (see **Figure 4**).

Figure 4: Forecast electric vehicle energy consumption in Ausgrid's network



Source: Ausgrid/Evenergi modelling

Charging EVs can use a lot of electricity over a very short period. For example, we are already seeing on the market:

- Commercial chargers with up to 350 kW capacity; and
- Home smart chargers with a typical capacity of 7 kW chargers.

These are substantial capacities, which could lead to significant new demand peaks on the network. The time of day when customers charge their vehicles will be crucial, in addition to the location where this occurs – for example, at home, at a public charging station, or in an area of the network with a lot of solar generation. We expect EV charging will increasingly influence peak demand on our network even with tariff options that incentivise vehicle charging outside peak times.

Price signals can play an important role in encouraging customers to charge their EVs at times when electricity is abundant. We note that an increasing number of retailers[3] are offering EV pricing products, and our cost-reflective network tariffs have a role to play in supporting these offerings.

At this stage, we are not proposing to introduce EV charging tariffs in 2024-29, mainly because we consider our existing TOU and demand tariffs send efficient price signals. **Section 4.6** sets our thinking on this issue in more detail. It also outlines what we have heard through our community engagement on this issue to date, and sets out our consultation questions.

2.3 Affordability pressures

After a period when our customers saw their bills go down, a range of factors are now putting upward pressure on the costs of supplying electricity, and thus on its affordability for our customers. These factors are largely outside of Ausgrid's control or affect the non-network components of electricity bills. For example:

- Rising interest rates and higher inflation are increasing our network costs, as well as the overall cost of energy supply, while also increasing our customers' cost of living;
- Disruptions in the energy supply chain due to gas shortages and an aging fleet of coal fired power stations are factors which are driving up the generation component of bills; and
- Significant investments in transmission infrastructure are expected to increase the transmission component of bills.

In our Draft Plan, we set out our proposals for ensuring customers pay no more than necessary for our network services, and facilitating an affordable transition to net zero. Many of our proposed pricing reforms also aim to support an affordable transition by giving our customers more choice and control over their energy services and bills – for example, our proposed export pricing (see **Section 4.1**).

3 Emodi, N.V.; Dwyer, S.; Nagrath, K.; Alabi, J. *Electromobility in Australia: Tariff Design Structure and Consumer Preferences for Mobile Distributed Energy Storage.* Sustainability 2022

3

Engaging with our communities

We are engaging extensively with our customers and other stakeholders as we develop the pricing reforms we will include in our proposals to the AER in January 2023. We will continue our engagement as we refine our proposed reforms and prepare our regulatory and TSS proposals.

In this section, we provide an overview of our engagement on pricing reforms to date. What we are hearing through our engagement, and how we are proposing to respond, is woven into the discussion of our proposed reforms and tariff innovation in **Section 4** and **Section 5**. Details of how you can provide feedback on this paper are set out on **page 6**.

3.1 Pricing Working Group

We continue to work closely with our Pricing Working Group to develop our proposed pricing reforms. The group's members include a range customer and electricity industry advocates, as well as energy retailers and aggregators. To date, the group has met 13 times in the last year and discussed a wide range of topics relevant to the changes and opportunities facing the energy sector, and how our tariff structures and policies could be reformed to respond to these trends and provide better outcomes for our customers.

For example, the diverse members of the group have provided their perspectives on our pricing principles, and the options for and trade-offs involved in introducing and designing export pricing, changing our charging windows and our controlled load tariffs, streamlining our residential and business tariffs, reforming our policies for assigning customers to these tariffs, and introducing EV charging tariffs. Representatives from the AER and the NSW Government also attended most of the group's meetings, to provide comments and observe. We greatly appreciate each member's insights, contributions and assistance in developing our initial pricing reform proposals.

3.2 Voice of Community Panel

To help us understand the experiences and perspectives of our residential customers, we have established a Voice of Community Panel. The panel includes 45 randomly selected members of the public who represent the diverse range of households our network serves across the Hunter, the Central Coast and Greater Sydney.

The feedback we are receiving from the panel is helping us to test whether our proposed pricing reforms reflect our customers' expectations for fairness and value for money. It is also helping us to gauge the extent to which customer behaviour could be influenced by price signals and pricing reforms that aim to optimise electricity supply and demand, balancing time of use, time of export, and reliability.

3.3 Large and medium customers

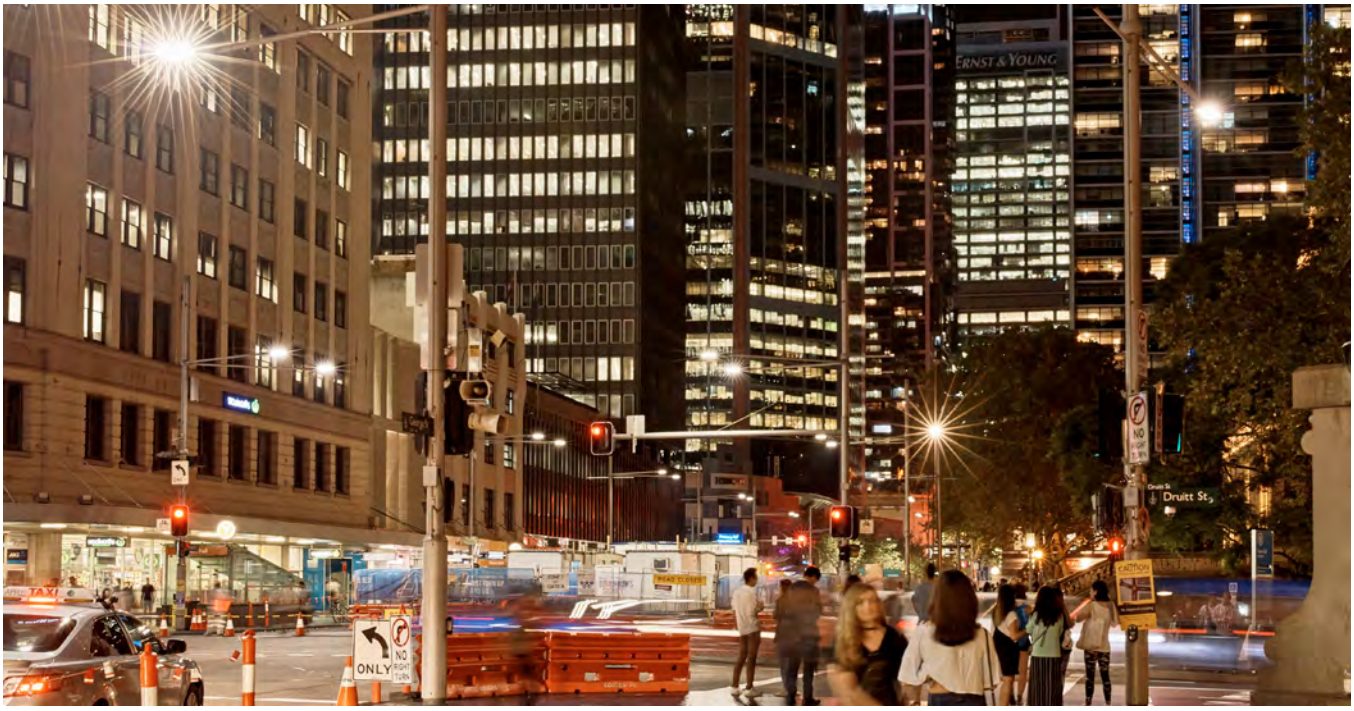
To better understand the perspectives of our large commercial and industrial customers, we interviewed representatives from 11 large customers during March and April 2022. We also held two forums for large customers in May 2022, to get their input and test our thinking on reforms, such as moving the peak period to later in the day and combining the existing shoulder and off-peak charging windows.

When our Pricing Working Group workshopped options for introducing embedded network tariffs, we invited several embedded network operators to attend. Lendlease and Compass Housing Services were able to attend. Lendlease gave a presentation on the benefits provided by the embedded networks they operate.

3.4 Retailers and aggregators

We held a virtual forum for our retailer partners where we presented our thinking on reforms to our tariff and tariff policies. Origin, Powershop, Shell Energy, EnergyAustralia, Globird, AGL, Alinta, Nectr, Energy Locals, Tango, Energy On, and ReAmped attended the forum, and gave us valuable feedback on how we could make it easier for them to engage with our tariffs and pass our price signals on to our customers.

We are working with aggregators to trial innovative tariffs. Most recently, we have partnered with Reposit Power to develop and demonstrate dynamic network tariff models as part of Project Edith (see **section 5.3**). In March 2022, we hosted a round table with representatives from more than 20 retailers and aggregators to discuss the potential of more dynamic network tariffs.



4

Proposed pricing reforms for the 2024-29 period

In response to the changes and opportunities ahead for the energy sector, and to what we are hearing in our engagement with our customers and communities, we propose to reform our standard tariff offerings for the 2024-29 period.

We are proposing five main changes:

- **Introducing export pricing for residential and small business customers** to reflect the increasing costs that receiving DER customers' exports imposes on the network and provide an incentive for DER customers to self-consume or time their exports to minimise these costs and maximise the benefits they receive;
- **Simplifying and updating the charging windows for our demand, capacity and TOU tariffs** to make it easier for retailers to pass through our price signals to customers, and ensure peak charges apply when demand on our network is highest;
- **Updating our controlled load tariffs for residential and small business customers** to reflect changes in the times of day when demand on our network is lowest, and allow our 470,000 controlled load customers to operate their hot water systems during the day when solar energy production is highest;
- **Introducing tariffs for embedded network operators** that better reflect the costs that these business customers impose on our network, so they make a fairer contribution to funding these costs; and
- **Streamlining our existing tariff offerings and tariff assignment policies for our customers**, to make it easier for retailers to respond to or pass through our price signals to our customers.

We are not currently considering introducing residential or small business tariffs for EV charging or medium business tariffs for EV charging stations.

We think our proposed reforms would make our tariffs more efficient, flexible, fair, and sufficiently caters for the anticipated electrification of transport. We will continue to trial tariffs throughout the 2024-29 period as the EV market and charging business models in Australia matures. We are also keen to receive feedback from our customers and stakeholders so we can refine our proposed tariff reforms before we submit our proposed TSS to the AER.

The sections below discuss each of the changes we are considering in more detail and set out the questions we seek comments on.

4.1 Introducing export pricing

When we assess whether to introduce export pricing, we take into account the impact of DER on the grid now and into the future. Currently, DER can largely be accommodated by intrinsic hosting capacity on the network. If AEMO's Step Change scenario for DER uptake proves to be reasonably accurate, between 2024-29 we expect intrinsic hosting capacity to be exhausted in parts of the network. However, it is challenging to accurately forecast DER uptake. Actual DER uptake could be lower or higher than this forecast. Beyond 2029 the forecasts are even more uncertain.

For this reason we think it is prudent to start sending our customers price signals about the costs and benefits their exports can have on grid costs. However, given the uncertainty with current DER forecasts, we are proposing a very small export price.

What we heard for our communities on introducing export pricing

Our engagement with our Pricing Working Group highlighted that introducing export pricing is a complex issue, which particularly concerns customers who have already invested in DER. Some of the issues we explored were whether export prices should only be introduced for customers who have invested in DER, and whether the price signals provided should be on a locational basis, given different impacts of energy exports across different parts of our network.

Our Voice of Community Panel recommended that recovering the costs associated with customers' exports by introducing a TOU for these customers that optimises customer pricing and network stability and cost. In particular, export services could be priced differently at different times of day, to reflect periods of peak demand (and peak exports). The panel also recommended we should allow DER customers to opt-in to this tariff initially, with a view to transitioning to all-in over the 2024-29 period.

We are proposing the introduction of an export pricing structure from 1 July 2024. The proposed structure will:

- **Include both a charge component and a reward component**. Customers would be charged for the volume of electricity they export above a basic level during the peak export period. They would receive a payment or credit for the volume they export during the peak demand period;
- **Have a Basic Export Level[4] (BEL) of 3 kW over the 2024-29 period**. Customers would not be charged for energy exports below this threshold. Our analysis indicates that most customers with 3 kW systems export up to 600 kWh per quarter (and within the 10am-3pm charging window). This means 600 kWh is the appropriate level for the basic export level;
- **Be available to all new and existing[5] residential and small business customers** on cost-reflective tariffs on a postage stamp[6] basis so we treat customers equally, regardless of where they connect to the network, and when they invest in DER;
- **Be initially available on an opt-in basis only**. From 1 July 2024, only customers who choose to opt-in would receive the tariff; and
- **Become our default tariff in the second year of the period, with potentially an option for the customer to opt-out**. From 1 July 2025, all residential and small business customers on demand or TOU tariffs would be automatically assigned to the tariff.[7] We think our current approach strikes a balance between simplicity and fairness, however we could consider delaying this or doing a staged introduction. We seek feedback on this, and whether customers should be able to opt-out of the export tariff.
- **Those who choose to opt-out would not face our export charges nor be able to access our export rewards**. Note that non-DER customers would not need to opt-out, as being assigned to the pricing structure would have no impact on their bills. A key consideration when designing a tariff with an opt-out option is why customers would opt-out and the implications of this. For example, under the proposed model customers with large solar systems are more likely to opt-out to avoid charges. To overcome this challenge we could consider changing the overall bill outcome for these customers to be more favourable, however this would reduce the cost reflectivity of these tariffs and put a burden on customers without solar.

4 Required under the new export tariff transitional rule.

5 The export tariff transitional rule defines an existing DER customer as one that was connected as of 19 August 2021.

6 Under the new export tariff transitional rule, an existing DER customer cannot be assigned to an export tariff until after 30 June 2024.

7 A system of charging network customers in which the price per unit is the same regardless of a customer's location in the network.

The sections below outline the proposed level for the charge and reward components of the proposed export tariff, the approach we used to set the proposed BEL, and our reasons for proposing to apply the tariff to new and existing customers on a postage stamp basis.

4.1.1 Proposed charge and reward levels

Our proposed tariff would include an:

- **Export charge component** of 1.85 cents per kWh (ex GST) of energy exported above the BEL between 10am and 3pm. This period is when total exports from our customers' rooftop solar systems are highest, and therefore when these exports impose most cost on the network; and
- **Export reward component** of 1.85 cents per kWh (ex GST) of energy exported between 3pm and 9pm. This period is when total demand on our network is highest, and therefore when customer exports provide most benefit to the network.

One option we are considering is to include a gap between the export charging window and export reward window. This could incentivise customers with storage to delay exports to later in the peak window when it is likely to provide more support to the local network.

The proposed charge and reward level reflects our current long run marginal cost (**LRMC**) supplying export services, which we estimate is around $30 per kW. This is significantly lower than our current LRMC of supplying consumption energy services. When combined with the proposed BEL and the proposed reward component, we estimate that the export charge will have a minimal impact on the bills of DER customers over the 2024-29 period (**Table 2**). The table below shows the average bill impacts and the impacts by the amount of energy exported. The customers who export more energy are more likely to face a net charge, rather than reward.

Table 2: Estimated annual bill impacts of our proposed export charge and reward (excluding GST)

Export customers	Average annual export charge	Average annual export reward	Average annual net bill impact
All export customers	-$14.81	$7.63	-$7.18
Median	*-$2.36*	*$5.88*	*$0.39*
Annual exports			
0 to 2,000 kWh	-$0.06	$2.07	$2.01
2,000 to 4,000 kWh	-$5.80	$6.91	$1.11
4,000 to 6,000 kWh	-$25.22	$11.74	-$13.47
6,0000 to 8,000 kWh	-$47.64	$16.70	-$30.94
8,000 to 10,000 kWh	-$70.34	$21.98	-$48.36
10,000 + kWh	-$113.75	$29.99	-$83.76

We think a weak signal initially is an appropriate way to introduce export pricing. This approach enables our customers to become familiar with export pricing structures without incurring meaningful cost impacts for this component. Putting these structures in place from 2024 will prepare Ausgrid and customers for subsequent regulatory periods and the continued uptake of DER technology. Export charges are likely to be a much smaller portion of the bill than consumption charges.

4.1.2 How we estimated the proposed BEL

To estimate a basic export level that customers would receive, we estimated our network's current capacity to receive additional DER customer exports over the period to 2050 at no additional cost to the network (its intrinsic hosting capacity). We then apportioned this estimated volume of exports across the forecast number of new DER customers that will connect to the network over this period. This resulted in an average BEL of 3kW.

We think apportioning the intrinsic hosting capacity across future customers only is appropriate because these customers will be making decisions about whether to invest in DER, and how much generation capacity to invest in, and thus have the greatest ability to respond to the BEL. We think focusing on the period to 2050 is appropriate, as it provides for greater stability in the BEL level for customers over the economic lives of their DER investments (which is typically longer than one regulatory period).[8]

We are also currently trialling an export pricing structure for residential customer with a BEL of 1.5 kW between the hours of 10am and 2pm. We will consider the results of this trial when we finalise the BEL included in our TSS, as well as updated forecasts of the demand for export services (both in the 2024-29 and subsequent regulatory periods).[9]

8 In our submission to the AER's Export Tariff Guidelines Ausgrid proposed five possible approaches to calculating basic export levels for the AER's guidance.

9 NER cl 11.141.13(b)(1) and AER, Export Tariff Guidelines, May 2022, pp18-19.

4.1.3 Our reasons for applying the export price to new and existing customers on a postage stamp basis

Our Pricing Working Group noted that the proportion of customers who have already invested in DER varies by location within our network area, and the intrinsic hosting ability of the network also varies by location. They suggested it may be more cost-reflective to apply the export tariff (including the level of the BEL). on a locational basis price.

While we agree there would by some benefits in introducing export pricing on a locational basis, we consider these are outweighed by the costs. In particular, we think it is more important to avoid the complexity of differentiated pricing for a relatively small component of the bills of our small customers, and to retain the simplicity of postage-stamp pricing.

In our engagement with our communities, we also discussed whether we should provide 'grandfathering provisions', so that price customers who invested in DER before the export was introduced are exempt from the tariff. Our Voice of Community Panel indicated a preference to avoid these provisions, and to treat all small customers in the same way. In line with this feedback, we propose to assign all residential and small business customers on demand and TOU tariffs to the export pricing structure from July 2025. Whether an opt out option should be made available is a question we would like to consult on.

At this stage, we do not propose to introduce export pricing for large commercial and industrial customers in the 2024-29 period, as currently most of the DER exports to our network come from small customers. However, we will trial export pricing for large customers over this period, and these customers will be able to opt-in to these trials.

We note that our export pricing proposal may differ to the proposals of other NSW distributors. This is due to a number of reasons, including different DER penetration rates, customer usage profiles, and billing systems capabilities.

Consultation question 4:

- Do you think our overall approach for introducing an export pricing structure is appropriate? Are there any changes you think we should make? If so, why?
- Do you agree we should apply the export pricing structure to all new and existing residential and small business customers on cost-reflective tariffs from July 2025? Should an opt out option be available for the export pricing structure?
- Do you think there is merit in exploring a 1–2 hour gap between the export charge window and export reward window?
- Should we consider aligning more closely with the other NSW distributors on export tariffs?

4.2 Simplifying and updating the charging windows

Residential and small business customers on our demand and TOU tariffs are charged more in summer and winter, when there is peak demand on our network. This is efficient because peak demand is a major driver of our network costs. Charging higher prices in peak demand periods signals these higher costs to customers, who can then make informed decisions about whether to consume energy when it is most convenient for them, or when costs them less.[10]

However, over the past 4 years, only around half of retailers have passed through our demand charges. As a result, many of our customers do not receive their intended price signals. This may be because our current charging windows are more complex than those of other distribution networks.

10 This ensures that customers are exposed to the long-run marginal cost of their decisions when to consume or export electricity so that we can maximise long-run allocative efficiency.

to pass them through, and to reflect changes in when peak demand on our network occurs across the day and week. We are considering:

- Making the peak charging window consistent in summer and winter, and moving it to later in the day, so that from 1 July 2024 peak pricing applies from 3pm to 9pm in both seasons;
- Having the option to further move the peak charging window from 1 July 2027, so that peak pricing could apply from 4pm to 10pm in both seasons;
- Extending the number of days per week that the peak charging window applies from five to seven for residential customers;
- Combining the off-peak and shoulder charging windows so that off-peak charges apply at all times in spring and autumn and outside of the peak charging window in summer and winter; and
- Removing the low season peak demand charge so that demand charges do not apply outside of the summer and winter periods.

The sections below discuss each of these changes in more detail. **Table 3** provides an overview of proposed charging windows for small customers and compares them to the existing charging windows.

Table 3: Comparison of current and proposed seasonal peak charging windows for our small customers

Time of use tariff	Current residential	Proposed residential	Current small business	Proposed small business
November to March (summer) and June to August (winter)	**Peak:** 2pm-8pm weekdays (summer) **Peak:** 5pm-9pm weekdays (winter) **Shoulder:** 7am-10pm all days except when peak applies **Off-peak:** 10pm-7am all days	**From 1 July 2024:** **Peak**: 3pm-9pm all days **Off-peak:** all other times **Option:** **From 1 July 2027:** Peak: 4pm-10pm all days **Off-peak:** all other times	**Peak:** 2pm-8pm weekdays **Shoulder:** 7am-10pm weekdays except when peak applies **Off-peak:** 24 hours on weekends and 10pm-7am weekdays	**From 1 July 2024:** **Peak**: 3pm-9pm weekdays **Off-peak:** all other times **Option:** **From 1 July 2027:** Peak: 4pm-10pm weekdays **Off-peak:** all other times
April, May, September, and October	**Shoulder:** 7am-10pm all days **Off-peak:** 10pm-7am all days	**Off-peak:** all times	**Shoulder:** 7am-10pm weekdays days **Off-peak:** 24 hours on weekends and 10pm-7am weekdays	**Off-peak:** all times

Demand tariff	Current residential	Proposed residential	Current small business	Proposed small business
November to March (summer) and June to August (winter)	**High season peak:** 2pm to 8pm weekdays (summer) **High season peak:** 5pm to 9pm weekdays (winter)	**From 1 July 2024:** 3pm-9pm all days **Option:** **From 1 July 2027:** 4pm-10pm all days	**High season peak:** 2pm to 8pm weekdays	**From 1 July 2024:** 3pm-9pm weekdays **Option:** **From 1 July 2027:** 4pm-10pm weekdays
April, May, September, and October	**Low season peak:** 2pm to 8pm weekdays	No demand charge	**Low season peak:** 2pm to 8pm weekdays	No demand charge

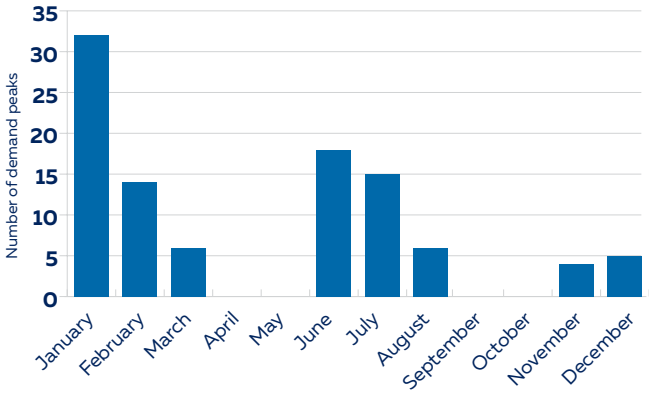
Note: For large business customers the peak window will also move to 3pm to 9pm. Capacity charges will continue to apply on working weekdays and energy charges in high season months.
The shoulder and off-peak periods will also be combined for these customers.

4.2.1 Making seasonal peak charging window consistent in summer and winter and moving it to later in the day

Currently, our demand and TOU tariffs include higher charges at specified times of the weekday November to March (summer) and from June to August (winter). This is because, when we introduced these tariffs, the system-wide demand on our network occurred almost entirely in these seasons.

We have reviewed the system-wide demand on the network over the past 4 years. As **Figure 5** shows, this seasonal pattern of demand has not changed. Therefore, we think it remains efficient and fair to charge customers more for using the network in those peak seasons than we do in the other months of the year. We also propose to withdraw low season demand charges which will remove demand-based charging from the April, May, September and October months.

Figure 5: Count of top 100 system peak demands (2017-2021) by month



However, we propose to adjust the length and timing of the peak charging window so it is consistent in both seasons, and occurs later in the day. Currently, this window includes the 6 hours from 2pm to 8pm in summer, and the 4 hours from 5pm and 9pm in winter. We are considering changing it to the 6 hours from 3pm to 9pm in both summer and winter from 1 July 2024.

Our review of the timing of peak demand suggests that the benefits of maintaining the differences in these charging windows (in terms of improved cost reflectivity) are outweighed by the costs (in terms of increased complexity). To address this, we think we should increase the length of the winter charging window to 6 hours. We consider this is more efficient than shortening the summer charging window to 4 hours.

For example:

- Shortening the summer charging window could lead to an increase in the level of peak prices. This level is set to recover the LRMC of consumption services. Allocating this cost over a 4-hour period instead of a 6-hour period would result in a higher unit price (all other things being equal).
- If the peak price level were to become too high relative to other times of the day, it may lead to new demand peaks immediately after this charging window, as more customers delay using the network until the window closes. We want to avoid creating new demand peaks on our network, particularly as EV time-based charging becomes more common.

Our review of the timing of peak demand also indicates that the period of the day when there is peak demand on our network has shifted to later in the day, and we expect this shift will continue over the 2024-29 period. **Figure 6** and **7** shows our forecast of the time of day that each zone substation will be at or near its peak demand in summer and winter in 2029, and our proposed peak charging window of 3pm to 9pm.

Figure 6: Forecast 2029 distribution of zone substation summer peak demand [11]

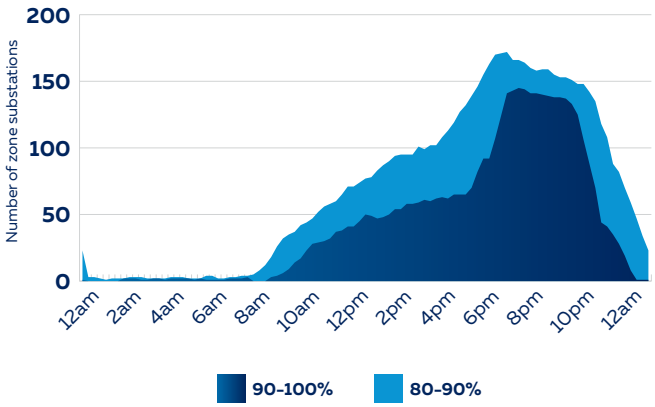
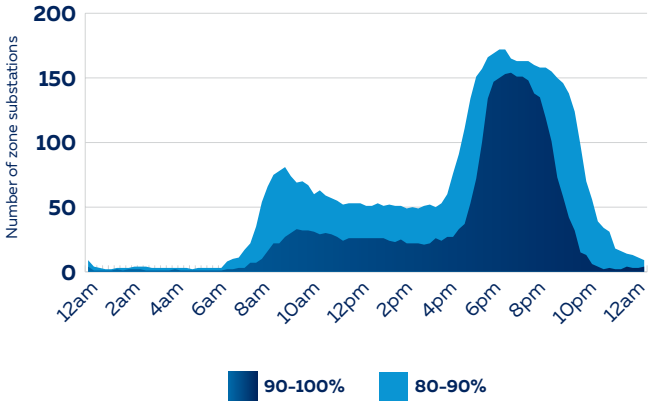


Figure 7: Forecast 2029 distribution of zone substation winter peak demand



11 These two charts show a count of substations where forecast demand as a percentage of the zone substation's forecast peak is greater than 80%.

We consider the proposed peak charging window better matches the timing of peak demand than the current windows. Our analysis indicates that it will significantly increase the number of peak demand events that fall within this window:

- Over the past 5 years, 92% of system-wide peaks have occurred in the proposed window of 3pm to 9pm, while only 83% have occurred in the current peak window; and
- Over the past 3 years, 82% of annual zone substation peaks have occurred in the proposed window, compared to 52% in the current peak window.

4.2.2 Having the option to move the peak charging window again from 1 July 2027

As noted above, our proposed peak charging window from 1 July 2024 is based on our forecasts of the timing of peak demand over the 2024-29 period. While we are reasonably confident in these forecasts, we have two concerns.

First, the EV uptake rate and EV charging patterns over this period are highly uncertain. If the take-up rate exceeds current expectations, the associated additional load could drive new evening demand peaks.

Second, the increasing uptake of rooftop solar is reducing the demand on our network in the afternoon, when the volume of customer-generated energy typically peaks. In locations where solar penetration is already high, high levels of customer exports and low levels of demand for imports is resulting in a lower 'minimum system load' in the afternoon than previously experienced overnight. If this continues, it could increasingly drive additional voltage management costs in the low voltage network in the future.

We consider that having the option to move the peak charging window to 4pm to 10pm from 1 July 2027 would help us address these issues if they eventuate:

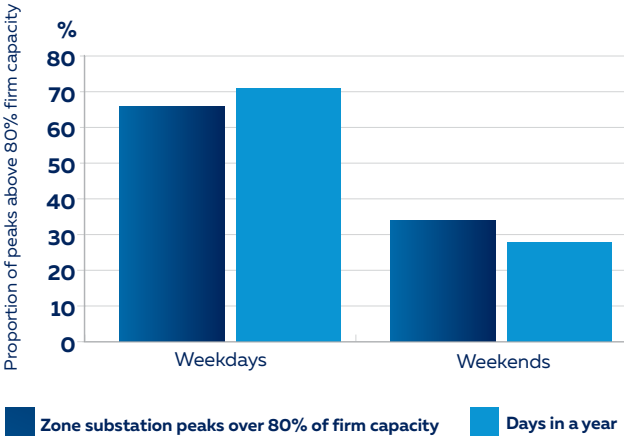
- Extending the window to 10pm would create an incentive for customers to move their EV charging activity to after this time, ensuring it does not coincide with other (non-EV-related) load. Existing loads typically decline rapidly around 10pm and we expect this pattern to continue, particularly in the residential segment; and
- Moving the start of the window back to 4pm could increase demand for imports from the grid in the afternoon by removing the peak charge from 3pm to 4pm, and thus it could help moderate the impact on future minimum system load costs.

4.2.3 Extending the peak charging window to weekends for residential customers

Currently, our peak charging windows apply only from Monday to Friday. This is because historically, the periods of peak demand across the whole network have occurred predominantly on working days. Of the top 160 coincident network peaks[12] in the last 5 years, only 14% occurred on weekends.

However, when we analysed the periods of peak demand in individual zone substation areas (we have around 190 zone substations with the necessary data), we found that these localised peaks are as common on weekends as on weekdays (see **Figure 8**).

Figure 8: Zone substation peaks by day of the week



Looking closer at this data, we found that localised peaks on the weekend are most common in highly residential areas or holiday areas. Weekend peaks are significantly less likely in predominantly commercial areas, and the probability of weekend peaks declines as the proportion of residential customers in these areas declines.

Given these findings, we are considering extending our peak charging window so that it applies on weekends as well as weekdays for residential customers only. This would improve the cost reflectivity of our peak pricing for these customers.

This change would increase the total number of hours that the peak charging window applies per year for residential customers. Because the peak price level is set to recover the LRMC of meeting peak demand, increasing the hours over which it can be recovered would decrease in the price level (all other things being equal).

12 The coincident network peak is the aggregate maximum demand that occurs across the Ausgrid network at the same point in time.

4.2.4 Combining the peak charging window and the shoulder charging window

Retailers have indicated that the existing shoulder charging windows for small customers involves an additional degree of complexity. In response to this feedback, we propose to set our TOU off-peak and shoulder charges to the same rate in the next regulatory period. Our proposal is simple to implement and avoids the operational complexity of removing the shoulder period and extending the off-peak period.

Shoulder period prices have historically played a role in keeping peak demand within the peak charging window. By providing a 2-hour separation between evening peak and off-peak charges, they allowed demand to fall from peak levels before price-responsive demand was added to the network. We don't anticipate this change will have a significant impact on the efficiency of our tariffs. There has been a decrease in peak events occurring outside the peak charging window. This means there would likely be little difference in an efficient price for a shoulder and an off-peak charge.

Our energy rates have been progressively reduced in the current regulatory period, as per the AER's 2019 decision[13]. The shoulder rates will soon be at similar levels to the corresponding off-peak rate, indicating limited gain in retaining a separate shoulder rate. This is can be seen in the rates on our current network price list. Our proposed change will have a minimal impact on customer bills, given the two charging rates are already approaching alignment.

Consultation question 5:

- Do you support a consistent 6-hour peak charging window in summer and winter for residential and small business customers?
- Do you support moving the peak charging window to later in the day, so it applies from 3pm to 9pm?
- Should we have the option to move the peak charging window to 4pm to 10pm during the 2024-29 period, if we encounter new peaks in demand or increasing minimum system load costs in the afternoons?
- Should we extend the seasonal peak charging window to weekends for residential customers? If not, how should we address the localised demand peaks on the weekend, which are most common in highly residential areas?

4.3 Updating our controlled load tariffs

Our controlled load tariffs make supply available to residential and small business customers at a very low cost per kWh for a specified number of hours a day, in particular to heat electric hot water systems.

In return, we have the ability to control when we make this supply available, to help us manage system demand peaks. Historically, these peaks have occurred during the day and early evening, so our controlled load tariffs have specified that supply will be available within certain windows (mostly overnight).

Currently, almost half a million customers are assigned to these tariffs (mostly residential customers). We estimate that the associated controlled load reduces our system demand peaks by 300 MW in winter and 100 MW in summer.[14]

However, the number of customers on controlled load tariffs has been slowly decreasing by about 1% per year, as electric hot water systems are replaced with gas and solar thermal alternatives. This trend may continue if more customers with rooftop solar seek to move their hot water load to their primary meter, so they can benefit from offsetting their consumption with locally generated energy.

To stem this decline, we want to update our controlled load tariffs to make them more attractive to customers, while continuing to maximise the benefits for the network. We propose to make the changes shown in **Table 4** in the current 2019-24 period.[15]

13 Ausgrid, Revised Proposal – *Attachment 10.01 Tariff Structure Statement*, January 2019, p 6w7, and AER's final decision for the 2019-24 regulatory period (attachment 18, page 17).

14 Ausgrid Demand Side Participation submission to AEMO 1 May 2022.

15 The new arrangements will be published in the next release of Ausgrid's ES7 Network Pricing Guide, once consultation with our retailers is complete.

Table 4: Proposed changes to controlled tariffs in current period

Tariff	Current arrangements	Proposed arrangements
EA030 controlled load 1 (suitable for large hot water systems)	Supply is usually available for up to 6 hours duration from 10 pm to 7 am	Supply is usually available for at least 6 hours in any 24-hour period, from midnight to midnight
EA040 controlled load 2 (suitable for smaller hot water systems)	Supply is usually available for 16 hours a day including more than 6 hours between 8 pm and 7 am and more than 4 hours between 7 am and 5 pm.	Supply is usually available for at least 16 hours duration within any 24-hour period, from midnight to midnight, with more than 4 hours between 7 am and 5 pm.

We think that these changes will improve the relevance of our controlled load tariffs as the uptake of rooftop solar continues to increase over the 2024-29 period. As daytime wholesale energy prices continue to decline, moving more of the controlled load window to these times is expected to reduce retail prices for customers. This will mean we can continue using controlled load to manage system demand peaks while also helping to 'soak up' some of the abundant solar export energy available in the afternoon and reduce the impact on the low voltage network.

We will also continue to work with retailers and metering providers to allow greater scope for optimisation by retailers for customers with smart meters, within the nominated tariff times.

Because these changes will be implemented just before the end of the current 2019-24 period, at this stage we are not proposing further reforms to our controlled load tariffs within the 2024-29 TSS. However, we intend to explore reforms through trial tariffs throughout the 2024-2029 period.

Ausgrid is currently undertaking a flexible load tariff trial (for electric vehicles) with at least 22 hours of supply availability per day. This controlled load pricing structure may be adopted in the next regulatory period, depending on the results from the trial data.

Further initiatives being contemplated for tariff trials in the next period include helping solar customers self-consume on controlled load tariffs (which is not currently possible) and testing critical peak pricing as an alternative. Through this program, we intend to trial other tariffs, where control of the load is shared on a dynamic basis for the mutual benefit of customer and network.

Consultation question 6:

- Will our proposed changes to switching times retain the relevance of controlled load tariffs for our customers?
- How else could controlled load tariffs be reformed to respond to new loads such as electric vehicles?

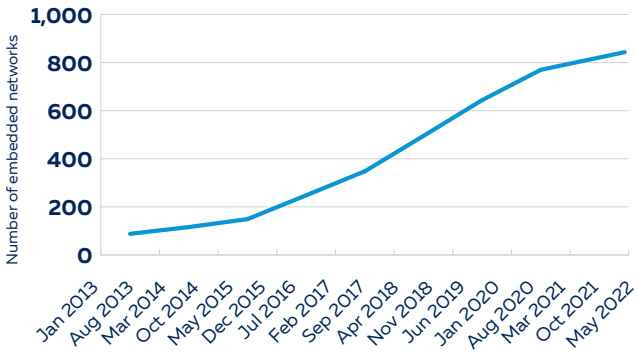
4.4 Introducing tariffs for embedded network operators

Embedded networks (**EN**) are private electricity networks that supply multiple homes or businesses – for example, within developments such as apartment buildings, shopping centres, retirement villages, industrial estates or caravan parks. The EN operator typically connects to the distribution network via a single point, and purchases and on-sells energy to the customers located within its network.

As **Figure 8** shows, the number of ENs connected to our network has grown significantly over the past 10 years. There are currently more than 800 in our network with an additional 5-6 connecting each month.

A typical EN in our network has an average annual consumption of around 1,000 MWh, which is equivalent to about 200 households or 50 small businesses. Most ENs are connected to our low voltage network, although some are connected at higher voltage levels.

Figure 8: Number of ENs connected to the Ausgrid network



Currently, none of our tariffs are specifically designed for EN customers. Under our tariff assignment policies, most are assigned to a low voltage medium business network tariff (either EA305 or EA310). Those that connect to our high voltage networks are assigned to our high voltage large business network tariff (EA370).

We have reviewed what EN customers pay in network charges and compared their load profiles to those of other customers on the same tariff. This analysis suggests our current tariff arrangements for EN customers are not as efficient or fair as they could be. To address this, we are proposing to introduce three EN tariffs from 1 July 2024 to better reflect the costs EN customers impose on our network costs and ensure they make a fair contribution to funding these costs. These include a tariff for:

- ENs connected to the low voltage network using between 160 and 750 MWh per annum (for ENs currently on tariff EA305);
- ENs connected to the low voltage network using more than 750 MWh per annum (for ENs currently on tariff EA310); and
- ENs connected to the high voltage network (for ENs currently on tariff EA370).

The sections below outline why we want to introduce EN tariffs, our current view on how these tariffs would work, and their likely bill impacts for EN customers.

4.4.1 Why we want to introduce EN tariffs

Our review of EN customers' charges and load profiles identified two problems that we want to address.

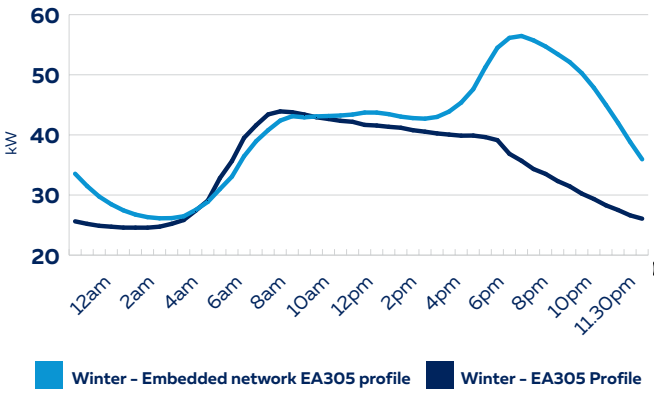
The first is a tariff arbitrage problem. The tariffs we currently assign EN customers to include lower energy charges than those in our residential and small business rates. This means that a development's choice to connect to our network as an EN instead of connecting each individual energy user may be partly driven by a reduction in the total network bill (known as tariff arbitrage).

There are good reasons why a development (such as an apartment building or industrial estate) might choose to connect as an EN. But in our view, tariff arbitrage should not be one of them. This is because the cost savings that accrue to ENs must be recovered from other customers. Tariff arbitrage may also encourage the growth of ENs in our area, which is a distortion of efficient price signals. It also results in less equitable recovery of residual costs from our customers. For these reasons, it is not consistent with our pricing principles.

The second problem stems from ENs' load profiles. To meet the requirement for distribution networks to assign customers to tariffs based on the nature and extent of their usage, we currently assign ENs to tariffs designed for medium or large businesses. However, the load profiles for ENs are different to the other customers on those tariffs.

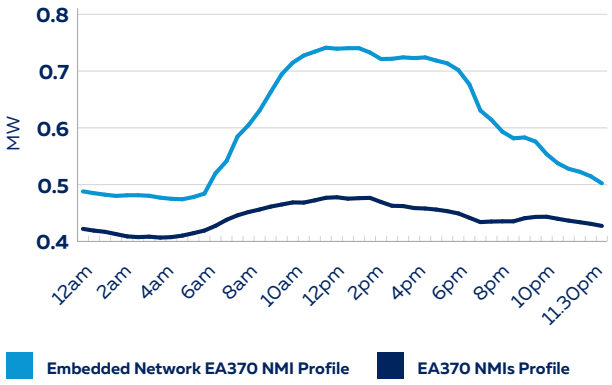
For example, **Figure 9** compares the winter profile of an average customer on our low voltage EA305 tariff (a medium business using between 160 and 750 MWh per annum) to the average winter profile of a EN assigned this tariff. It shows that the EN has a peakier load shape and a peak that occurs later in the day. This load shape is more closely aligned with a residential customer than a medium business customer.

Figure 9: Embedded network profile versus other customers on the same tariff (EA305)



Similarly, **Figure 10** compares the summer profile of an average customer on our high voltage EA370 tariff (a large business using a high volume of energy) to the average summer profile of a EN assigned this tariff. It shows that these profiles are very different. The average customer's profile is much flatter, which indicates a high utilisation of the network. The EN's load profile is more like that of a smaller business customer connected to the low voltage network (such as a customer assigned to EA305).

Figure 10: Embedded network profile versus other customers on the same tariff (EA370)



The differences between the load profiles of ENs and other customers on the same business tariff meant that our costs are not being shared equitably between customers within ENs and those outside ENs. If we don't address this, non-EN customers will continue to pay more to receive network services than EN customers. Introducing EN tariffs would help to ensure a fair contribution by all customers to funding network costs. They would also help protect the long-term interests of current and future customers who share our network assets. We therefore consider EN tariffs are consistent with our pricing principles and the National Electricity Objective.

4.4.2 How our proposed EN tariffs would work

These proposed tariffs would have the same fixed and energy charges as the equivalent medium or large business tariff, but they would include an increased capacity charge. This is an efficient way to address the load profiles observed among ENs as this charging component is applied to the maximum peak demand[16] over the prior 12 months. An EN that uses the network less frequently than an average medium business customer (and has a peak demand profile similar to a residential or small business customer) should be charged a rate appropriate to that usage.

We considered including a higher fixed charge in these tariffs. However, there is limited information on the number of sub-metered customers within each EN in our network area, and therefore what the size of the fixed charge should be. A fixed charge applied on a postage stamp basis would not be an efficient way to recover network revenue and it would trigger a wide range of bill outcomes.

The new tariffs would be applied to all connections (**NMIs**) within our network area that are identified as ENs in MSATS[17] and use above 160 MWh per annum[18]. This would allow small ENs such as caravan parks and small retirement villages to be exempt from the proposed changes. We welcome feedback on whether this is an appropriate way of applying the proposed tariffs to ENs, and whether there should be any further exemptions applied to this approach.

Importantly, the new EN tariffs would not result in Ausgrid earning more revenue because we are subject to a revenue cap. The AER ensures that any additional revenue earned from ENs is offset by lower charges from other customers.

4.4.3 Likely bill impacts for EN customers

Our proposed reform will increase EN network charges by 30% on average. This achieves an appropriate balance between managing bill impacts across the EN customer segment and achieving greater fairness for our other customers.

We also used case studies to compare the network charges currently paid by ENs with those paid by equivalent customers not in ENs, and the charges they would pay under our proposed EN tariffs. The case studies included a residential EN with 315 sub-metered customers (such as an apartment building) and a business EN with 35 sub-metered customers (such as an industrial precinct). They were based on actual ENs currently connected to our network, and use FY21 consumption data and our FY22 prices.

The results of this analysis are summarised in **Tables 5** and **6**. They demonstrate that under our current tariffs, EN network charges are significantly less than the total charges their sub-metered customers would pay if they were billed as other customers (that is, as individual NMIs). They also show the under our proposed EN tariffs, EN charges would still be less but the difference is reduced.

16 Applied to peak demand occurring in the peak period window, 2pm-8pm on working weekdays.

17 Market Settlements and Transfers System.

18 And are connected at low or high voltage.

Table 5: Comparative analysis of network charges for a residential EN with 315 sub-metered customers

	Normal customer billing (315 units on EA025)	Embedded network on EA310	With proposed embedded network tariff
Consumption per NMI, (kWh)	3,143	–	–
Total consumption, (kWh)	989,913	–	–
Fixed – network access charges	$45,480	$12,054	$12,054
Energy consumption charge (kWh)	$22,176	$13,745	$13,745
Capacity charge (kVA)	$100,268	$43,153	$64,730
Total network bill (per annum)	$167,924	$68,952	$90,529
Difference ($)		**-$98,972**	**-$77,396**
Difference (%)	–	-59%	-46%

Below is a summary of the charges for a business example – businesses in an **industrial precinct**. The charges for the individual NMIs are compared to a single embedded network on EA310. The EN will remain better off (by 8%) on the proposed tariff compared to what customers would pay under normal customer billing.

Table 6: Comparative analysis of network charges for business EN with 35 sub-metered customers

	Normal customer billing (35 customers)	Embedded network on EA310	With proposed embedded network tariff
Consumption per NMI, (kWh)	42,172	–	–
Total consumption, (kWh)	1,476,020	–	–
Fixed – network access charges	$25,984	$12,054	$12,054
Energy consumption charge (kWh)	$42,898	$20,732	$20,732
Demand/Capacity charge (kW/kVA)	$84,802	$72,144	$108,216
Total network bill per annum	$153,684	$104,930	$141,002
Difference ($)	–	**$48,754**	**-$12,682**
Difference (%)	–	**-32%**	**-8%**

Consultation question 7:

- Do you agree we should introduce EN tariffs? Is this an appropriate response to address the tariff inequity between EN operators and other network users?
- Should minimum consumption thresholds be applied to allow for exemptions to the proposed EN tariffs?

4.5 Streamlining our existing tariff offerings and tariff assignment policies

In our engagement with our communities to date, we heard from retailers and aggregators that our tariff offerings and tariff assignment policies could be simplified. For example, the number of available tariffs makes it difficult to understand the differences between charging components and pass through our price signals in retail price offers. We also heard that some of our medium and large business tariff assignment policies could be improved, so that they are fairer for customers.

In response to this feedback, we want to streamline our tariffs and modify our tariff assignment policies for the 2024-29 period. We are keen to simplify our tariffs where possible, particularly as we expect some parts of our tariff schedule may become more complex in the future as we explore more dynamic tariffs (see **Section 5.3**). We are proposing to make the following changes from 1 July 2024:

- Withdrawing some residential and small business tariffs that are very similar to other tariffs or have few customers assigned to them; and
- Withdrawing some medium and large business tariffs that have few customers assigned to them or were introduced as an interim measure.

4.5.1 Withdraw some residential and small business tariffs

We propose to withdraw three tariffs for residential customers and the equivalent tariffs for small business customers. These include our transitional TOU tariffs (EA011 and EA051), our residential and small business TOU Demand tariffs (EA115 and EA255), and our introductory demand tariffs (EA111 and EA251). **Table 7** shows the number of customers currently assigned to these tariffs, and the tariffs we propose to transfer these customers to. For more details on these tariffs, including the current price levels, please follow to the link to the network tariff list on our website.

Table 7: Residential and small business tariffs we propose to withdraw from 1 July 2024

Tariff to be withdrawn	Number of customers affected	Reason for withdrawal	The tariff affected customers would be transferred to
Transitional TOU (EA011 and EA051)	170,000 residential 3,700 small business	The tariff structure is flat, so customers are not receiving cost-reflective price signals despite having a capable meter. This means they have no flexibility to manage their bills by responding to our price signals	Customers would be moved to a cost-reflective tariff: • Those on Type 4 meters would move to EA116 or EA256 • Those on Type 5 meters would move to EA025 or EA225
Residential and small business TOU Demand (EA115 and EA255)	51 residential 23 small business	These tariffs have very few customers	Customer would be moved to a standard TOU tariff (EA025 or EA225)
Introductory Demand (EA111 and EA251)	7,500 residential. 735 small business	These tariffs delay retailer ability to adopt the demand charge price signal by 12 months. When this period ends they involve additional transactional costs associated with these customers transfers	Existing customers will be transferred to demand tariffs EA116/EA256 at 12 months as per existing policies Small customers with meter upgrades will be transferred to demand tariffs EA116/EA256 without the 12 month delay

The transitional TOU tariffs (EA011 and EA051) were introduced in July 2018. Unlike standard TOU tariffs, these peak, shoulder, and off-peak rates are set to be equal. This approach was intended to provide customers visibility of their consumption volumes within the TOU tariff structure, but without applying the actual TOU prices when calculating their network charges. We intended to transfer the customers to cost-reflective tariffs on 1 September 2019[19], but the 2019 regulatory decision prevented this from occurring.

Retailers have told us these tariffs are simply duplicating existing flat tariffs without providing any material benefit to customers. Therefore, we propose to withdraw them and move customers assigned to them to our standard TOU tariffs. These tariffs are more cost-reflective, and send price signals about the different costs of using the network at different times. This provides customers with flexibility to manage their bills by responding to our price signals.

The residential and small business TOU demand tariffs (EA115 and EA255) were introduced in 2019 as an option for TOU tariff customers who did not want to receive the full demand component rate. We propose to withdraw them as less than 100 customers have chosen to opt into them.

The introductory demand tariffs (EA111 and EA251) were introduced in 2019. We currently assign small customers with meter replacements (due to failures) to these tariffs for 12 months before they are assigned to their respective 'full' demand tariff. This introduces these customers to demand pricing over an extended period.

Some members of our Pricing Working Group noted that the price signal offered by these tariffs might be so weak as to be confusing rather than educational. They also said the intent of these tariffs might be better achieved by providing information on their ability to opt-out of demand tariffs.

We think that withdrawing this tariff, so that customers are assigned to a standard demand tariff and start receiving the price signals immediately (without a 12-month delay or the need to transfer them to the standard tariff) will make it more likely that retailers will pass through the demand tariff structures. It will also support streamlining our network tariffs with the goal of improving retailer understanding of our price offerings and the likelihood of adopting our price structures and signals.

Consultation question 8:

- Do the current transitional TOU tariffs provide any benefits to customers?
- Do you support the withdrawal of the introductory demand tariffs? Do they provide any benefits to customers, or do they create an unnecessary step as customers move to demand tariffs?
- Are there currently sufficient choices available for customers who want to opt out of demand tariffs?

4.5.2 Withdraw some medium and large business tariffs

We also propose to withdraw some medium business tariffs and the equivalent large business tariffs. These tariffs are listed in **Table 8**. As this table shows, few customers are currently assigned some these tariffs. Therefore, we expect the withdrawal of these tariffs would have little impact on customers. It could make it easier for retailers to understand our tariffs.

The other tariffs – our transitional capacity tariffs (EA316 and EA317) - were introduced in 2018 as an interim measure to reduce bill impacts associated with the introduction of cost-reflective tariffs. We are already in the process of transitioning these customers, to meet our regulatory requirement to transfer customers on those tariffs to the cost-reflective equivalent tariff by 2024.[20] This process is on track, despite a postponement for in 2020-21 due to the COVID-19 pandemic. We expect it to be complete by 1 July 2024.

19 Ausgrid, *Ausgrid - amendment to the revised TSS*, Attachment A and AER, *Ausgrid Distribution Determination 2019 to 2024 Attachment 18 Tariff Structure Statement*, p 10.

20 Ausgrid, *Ausgrid - amendment to the revised TSS*, 28 February 2019 and AER decision for the 2014-19 regulatory period (attachment 18, page 17).

Table 8: Medium and large business tariffs we propose to withdraw from 1 July 2024

Tariff	Customers	Why should this tariff be withdrawn	Tariff that customers will be transferred to
EA325 (LV Standby)	3	These tariffs have very few customers	Demand tariff EA256
EA360 (HV Standby)	7		High voltage tariff EA370
EA380 (HV Substation)	21		High voltage tariff EA370
EA391 (Substation)	0	This tariff has no customers	Not applicable
Transitional capacity (EA316 and EA317)	3,150 and 19	The AER requires us to transfer all customers from these tariffs by 30 June 2024	Equivalent cost-reflective tariffs (EA302 and EA305)

4.5.3 Reform our small and medium business tariff assignment policies

In our consultations to date, retailers and customers have raised two concerns about the bill impacts for small and medium business customers, when we transfer them to another tariff in line with our current tariff assignment polices.

First, when a small business customer on our demand tariff (EA256) uses more than 40 MWh per annum over a 2-year period, our policy is to transfer them to a medium business capacity tariff (EA302). This tariff has different structure to the demand tariff, and this can create adverse bill impacts for customers who use the network infrequently (such as electric vehicle charging stations).

Second, when new business customers connect to our network, they do not have any existing metering data to guide us in assigning them to the most appropriate network tariff. Our current policy assigns them to a demand tariff if they have a single-phase connection, and to a capacity tariff if they have a three-phase connection. However, we understand that many small business customers (using less than 40 MWh pa) are on three-phase supplies. Under this policy, they are assigned to a capacity tariff that is likely to be inappropriate. In addition, under our existing assignment policies a new customer must wait 12 months before they can request a tariff transfer.

To respond to this feedback, we are proposing the following reforms:

- **Increasing the consumption threshold for transferring existing customers from a demand tariff to a capacity tariff from 40 MWh per annum to 100 MWh pa**. This will align with the *National Energy Retail Law (NSW)* definition of a small customer and improve our annual review of tariff assignments by reducing the number of tariff transfers occurring. It will also enable customers using between 40 and 100 MWh per annum to be assigned to the business demand tariff EA256 (and to opt out to time of use tariff, should they choose too). We propose to move the threshold to 100 MWh in 20 MWh steps over three years (FY25, FY26 and FY27) to limit rebalancing of tariff components and possible customer bill impacts.
- **When assigning new business customers to a tariff**, we propose to replace the 'three-phase rule' with a 'greater than 100 amp rule' for assigning customers to capacity tariffs. This will ensure that smaller business customers who have three-phase supply sites are assigned to the business demand tariff (EA256) instead of the capacity tariff (EA302). These customers would still be able to opt out of this demand tariff, and move to the business TOU tariff EA225, should they choose to.

Consultation question 9:

Are the proposed amendments to tariff assignments suitable for new and existing medium business customers?

4.6 Tariffs and EV charging

As **Section 2.2.3** discussed, we expect significant growth in EV ownership in our network area over 2024-29 and beyond. As a result, we also expect the demand for energy to charge EVs to grow significantly, and this has the potential to increasingly influence peak demand on our network. It's important that our tariffs send efficient price signals about the different costs of charging EVs at different times, so this growth does not drive significant increases in our long run costs.

Currently, we are of the view that the proposed cost-reflective tariffs for the 2024-29 period adequately incentivises EV charging to occur outside of peak periods.

- Our residential demand and TOU tariffs signal the higher costs of charging in the evening peak period and encourage charging overnight when network demand is low. Our proposed changes to the charging windows for these tariffs (**Section 4.2**) will strengthen these signals (without these changes we are more likely to incur new demand peaks).
- Similarly, our solar customers already have strong incentives to charge EVs during the day, using their own generation, to avoid all network (and retail) variable charges. Our proposed export prices (**Section 4.1**) and the combined shoulder and off-peak energy charge will add to these incentives.

An increasing number of retailers[21] are offering EV pricing products, and we think our existing network tariffs will work well with these offerings. Time based price signals encourage EV smart chargers to be programmed when to operate.

In September 2021, we engaged with our Pricing Working Group to test a proposal to introduce separate medium business tariffs for EV charging stations. The meeting was attended by the Electric Vehicle Council, the AER, NSW Government, and customer representatives.

New EV charging stations typically have a lower utilisation of the network and can therefore experience a higher cost per unit of energy than other customers on the same tariff. Most stakeholders indicated that Ausgrid should not embed cross subsidies in our pricing to overcome transitional technology challenges. However our proposed reform of raising the threshold at which capacity tariffs apply (**Section 4.5.3**) will go part way in addressing the feedback from the EV industry.

We recognise that we may need further tariff reforms in the future, as the impact of EV charging increases. We are currently trialling a new flexible load tariff with EV customers, and also hope to develop further innovative tariffs to help manage the impacts of EV charging on our network (see **Section 5** for more information). We are keen to hear from our customers and stakeholders on whether we need to do more over 2024-29.

Consultation question 10:

- Are our demand and TOU tariffs suitable for customers who charge their EVs at their home?
- Should technology specific tariffs (such as for EV charging stations) be considered?
- How can our network tariffs facilitate EV charging in apartment buildings?

21 Emodi, N.V.; Dwyer, S.; Nagrath, K.; Alabi, J. *Electromobility in Australia: Tariff Design Structure and Consumer Preferences for Mobile Distributed Energy Storage.* Sustainability 2022.

4.7 Impact of pricing on network investments

Cost-reflective network tariffs can encourage customers to use energy in ways that place less pressure the network. This can reduce the need to augment the network and limit network charge increases for everyone in the long term. To what extent depends on how retailers package up the network tariff with the cost of energy and what other information or tools they make available to improve a customer's awareness, understanding and ability to adapt to tariffs.

Our demand forecasts look at historic trends, economic outlook and population growth to anticipate the likely load on the network. This in turn informs the investments we make to ensure we can meet customers' anticipated demand. With customers increasingly investing in smarter, more flexible assets such as electric vehicles, home batteries and home automation, we anticipate that if we get it right and work collaboratively with customers and retail partners, cost-reflective network tariffs can have a larger impact on the usage patterns we see on the network and minimise the network investments we need to make. This is particularly important as government looks to incentivise the electrification of transport and other sectors, bring on additional load and distributed generation as we work to a Net Zero future.

For the 2024-29 period we have included a response to tariffs in our anticipated EV load profiles, targeting what we consider is the factor that will have the most impact over this period. We will also continue to do trials and collaborate with customers and retailers over this period and strengthen our evidence base for the link between cost-reflective network tariffs and usage profiles. We welcome any feedback on this approach.

5

Proposed tariff innovation for the 2024-29 period

An important part of our pricing reform process is tariff innovation. Across the 2024-29 period, we propose to focus our tariff innovation on providing our customers and retailers, with new choices and more opportunities to respond to incentives to efficiently utilise the network.

In this section, we explain our approach tariff innovation and the trials of energy storage tariffs, flexible load tariffs, and dynamic-cost-reflective tariffs that we propose to continue and develop in the 2024-29 period. Together with our proposed pricing reforms, this innovation improves our ability to facilitate and support the transition to net zero.

5.1 Our approach to tariff innovation

Ausgrid is committed to tariff innovation. We are continuously researching new ideas and ways for tariffs to better serve our customers. However, changing our tariffs can have a significant impact on our customers, our network and the broader energy system. For this reason, we take a staged approach to evolving our tariffs that generally involves:

1. **Concept development**. We research and develop new ideas and ways for tariffs to better serve our customers through desktop studies or small trials.

2. **Tariff trials**. The National Energy Rules allows distribution networks like Ausgrid to add new tariffs each year if they do not recover more than 1% of our revenue each or 5% of our revenue combined. These are known as sub-threshold trial tariffs, or trial tariffs. This provision allows us to implement innovative tariffs alongside our regulated tariffs, testing our capabilities and customer interest.

3. **Tariff reform**. Ultimately the insights from our tariff trials and broader modelling informs the tariff reforms we include in our TSS proposal. Once approved by the AER, these tariffs become our standard tariff offerings. For example, in 2019 we introduced residential demand tariffs and residential TOU demand tariffs through TSS proposal and approval process.

The focus of our tariff innovation is to learn what customers and retailers want, understand what drives efficient network use, and test our capabilities to operate new tariffs.

Consultation question 11:

Given the evolving needs of the energy sector and our customers, how fast should Ausgrid move to develop and implement innovative tariffs? What factors should guide our approach?

5.2 Energy storage tariff trials

As **Section 2.2.2** discussed, we expect to see our new and existing customers investing in residential, commercial, community and grid-scale batteries over the 2024-29 period. Such energy storage systems can help Ausgrid manage network voltage and peak demand. Network tariffs that can efficiently signal network costs with storage, both import and export, will help to optimise both private and Ausgrid investment.

We are currently trialling a critical peak pricing tariff for community batteries as a sub-threshold tariff. This community battery trial tariff includes two components:

- Payments when the battery exports electricity during maximum demand events (and charges when they import electricity during these events and add to the demand); and
- Payments when they consume electricity during minimum demand events (and charges when they export during these events and further reduce demand).

The level of these two payment/charge components is set to reflect the long run marginal cost of consumption and export services. Community batteries that provide network support over 20 events will earn payments equal to their annual network access charge. This effectively gives a community battery free access to the network if it provides Ausgrid[22] with network support throughout the year.

In addition, to support the concept of community electricity, the tariff includes a local use charge. When the local community around the battery is exporting more electricity than the battery consumes,[23] it can charge for free (a discount related to the avoided use of the upstream network use). This would allow retailers with community batteries to offer virtual storage or to allow customers to donate excess exports to charities and customers in need at low cost.

During the 2024-29 period, we want to further develop innovative energy storage tariffs. We are considering tariff trials of the following:

- Locational peak charges and location-based critical peak events for community batteries;
- Critical peak pricing tariffs (potentially locational) that apply to small business and households price responsive electricity technology including batteries, rooftop solar, water heating and electric vehicle charging; and
- Locational critical peak pricing tariffs for grid scale batteries and hydrogen electrolysers. This approach should allow hydrogen electrolysers to receive a 90% reduction in network charges when they are located in areas with no constraint and respond to critical demand events, in line with the NSW Government's 2021 Hydrogen Strategy (see **Section 2.1.2**).

Consultation question 12:

What innovative tariffs would you like to see Ausgrid trial to support energy storage?

22 The Community Battery tariff is available to all batteries connected to the LV Network. Within the Ausgrid Community Battery trial we're testing both direct dispatch and response to price events to compare the effectiveness of these two approaches.

23 This is defined as the local transformer is exporting to the wider grid.

5.3 Flexible load tariff trials

As **Section 2.2.3** discussed, we expect significant growth in EV uptake over the 2024-29 period. By 2050, over 90% of vehicles are expected to be electric. Our tariff settings will help form habits and drive investment in smart charging technology. Our standard demand and TOU tariffs will contribute to this, as will dynamic tariff trials (discussed in **Section 5.4**).

We know that some customers will decide to charge when it is convenient for them. With current prices it is significantly cheaper to charge an EV than to fill a petrol vehicle's tank.[24] To help customers that want to charge whenever they get home, we are currently trialling a flexible load tariff as a sub-threshold tariff. The trial tariff is only available to EV customers. If we were to offer this as a regulated tariff, it would be available to all customers with a flexible load.

Our flexible load trial tariffs allow almost unlimited EV charging for a fixed network charge of $190 per year.[25] In return for this low cost, Ausgrid may interrupt supply for up to 2-hours between 4pm and 8pm, up to 20 times a year. We are only allowed to interrupt customers when we have given the customers' retailer 24 hours' notice.

During the 2024-29 period we plan to further develop innovative flexible load trial tariffs.

Consultation question 13:

- Should Ausgrid trial new tariffs in response to the expected high growth in EV uptake over the 2024-29 period and beyond?

5.4 Dynamic cost-reflective tariff trials

We are currently undertaking a trial, known as Project Edith, as a proof of concept and proof of capability that we can send, and customers (through aggregators) can respond to dynamic network prices. Dynamic network prices allow customers, aggregators and virtual powerplants to get more cost-reflective price signals that vary by forecast network use. This gives customers greater opportunities to trade on energy markets and creates opportunities for price responsive network support.

In many ways, Project Edith reimagines the role and flexibility of network pricing. It is iteratively trialling new dynamic tariff approaches alongside dynamic operating envelopes. We started the first of these trials in June 2022. It involves a weather-based tariff based on our residential TOU tariff:

- During the winter peak charging window of 5pm and 9pm, the peak charge will apply if the forecast temperature is below 10°C. Customers exporting electricity during this time will receive payments;
- Between 10am and 2pm, when we see the most solar exports, an export charge will apply if cloud cover is less than 50%, and customers can import electricity for free; and
- An off-peak import charge will apply at all other times.

We started by setting prices a day ahead with prices changing hourly. We will progressively add more factors that influence price, increase the frequency with which prices can change, reduce the amount of notice we give on price changes (while continuing to provide forecasts), and allow prices to reflect locational differences.

Project Edith is currently a small-scale trial. If our first phase is successful, we hope to increase the scale over time. Project Edith is currently only serving residential customers. We have identified opportunities to work with retailers on dynamic network pricing for business customers and are eager to continue trialling the concept.

Consultation question 14:

- How should we continue to build and test our capability and market interest in dynamic network pricing through the 2024-29 period, including through trial tariffs?
- What other innovative ideas for reinventing pricing should Ausgrid research and trial in this period?

24 For example, a petrol vehicle with a 65L fuel tank would cost $136 per tank (based on prices on 29 June 2022), while an electric vehicle with a 100kWh battery would cost $56 per charge on a DMO based price charging only during the peak (based on AGL's standard contract rates for July 2022).

25 We note retailers will add wholesale costs and their own costs to our tariff.

6

Looking beyond 2030

Australia's energy system is becoming increasingly decentralised, as we change how we generate, consume, and share electricity. By 2035, we are anticipating over 3.5 million flexible customer energy resources such as rooftop solar, home batteries and electric vehicles to be connected to our distribution network.

Ausgrid is excited to continue to collaborate with governments, retailers and other partners to explore and communicate solutions, so all customers can benefit from the opportunities on offer through the transition, if they choose to do so. Together we can improve the outcomes for NSW electricity customers and the communities we serve.

In this section, we outline the reforms the Energy Security Board (**ESB**) has recommended in relation to customer energy resources, and how we see the role of the distribution network changing to facilitate the transition to net zero and enable greater customer choice.

6.1 Energy Security Board reforms

The ESB has been tasked with developing reforms to the design of the NEM to ensure it is fit-for-purpose in an energy system with high levels of renewables.

In August 2021, the ESB recommended market reforms to Energy Ministers, including to efficiently and safely integrating the distribution connected resources into markets at all levels. As part of this, the ESB recommended that the NEM becomes a two-sided market, in which customers' rooftop solar, batteries and other DER participate in the wholesale market through virtual power plants (**VPPs**). Customer DER is becoming increasingly sophisticated, which is giving households and businesses the opportunity to actively manage their energy consumption and bills.

These new capabilities and technology offers the opportunity to move beyond static and average network prices and accounting for differences in location and time. That is creating new opportunities for how we think about network pricing and share value with our customers.

6.2 Becoming a Distributed System Operator

In its final advice to ministers in 2021[26], the ESB proposed that distribution network service providers assume the role of distribution system operators (**DSOs**) and work in co-ordination with AEMO to manage local and whole of system issues in highly distributed and renewable energy system. As part of its advice to ministers, the ESB proposed that 'support[ing] more dynamic network tariff designs that will result in automated responses from DER and flexible load'[27] should be one of the key responsibilities of the DSO.

Ausgrid has taken up this challenge. We see our role as a DSO as dynamically managing network capacity and operating the network to maintain an efficient, safe, and reliable service while optimising value to our customers, the energy system and supporting the renewable energy transition. In addition to uplifting our ability to dynamically manage the network as energy flows become more complex and playing a larger role in supporting the end-to-end security of the system in partnership with AEMO, we are also evolving our network services to support two-sided markets.

Sometimes, however, our current network tariffs can distort market participation by over or under stating the cost of network use and not rewarding beneficial behaviour. In addition, static measures to manage network capacity, such as limits at the time of connection, can reduce allocative efficiency.

We see our services evolving in two key ways to address this:

- Developing dynamic access and connection solutions that provide a range of options for customers in line with their individual needs (but still retaining cost-reflective and efficient pricing principles); and
- Improving system affordability for all our customers through encouraging efficient two-way utilisation of the network through dynamic network pricing.

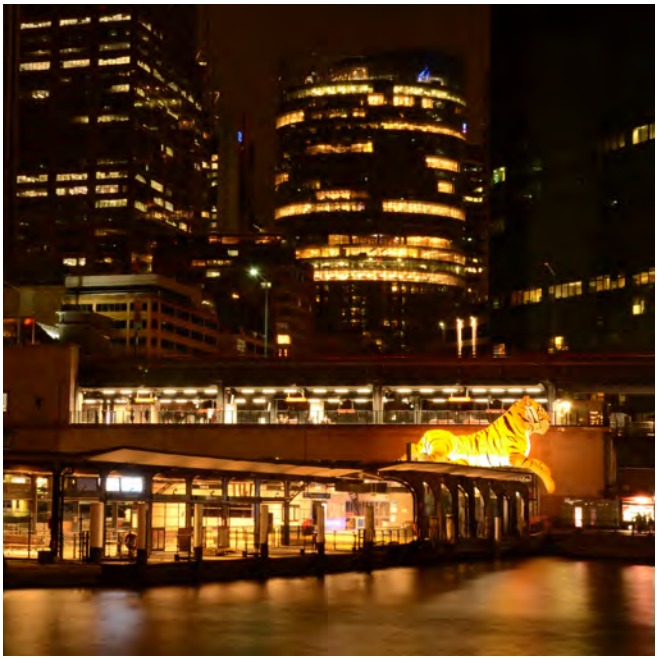
Importantly, we see the role of the DSO is to support customers to participate in local and wholesale markets as they evolve, not to run local energy markets. Similarly, the DSO's role is to support retailers and aggregators by providing a flexible and reliable network service that they can use to aggregate and orchestrate customer resources in commercial products for their customers.

Section 4.2 of our draft plan includes an overview of the activities we are planning on taking to support the net zero transition over the next regulatory period, including foundational investments in systems to enable more flexible connections and more dynamic pricing.

While the dynamic pricing structure offers greater flexibility to DNSPs and supports value for customers, there is diversity in customer participation. Customers are likely to range from those that are extremely involved, or 'active' in the market to those that are content with a static tariff structure. We therefore see in the future needing to have a range of tariff options for customers, depending on their preferences. It will continue to remain important that we consider that we cater for all customers, and to apply our pricing principle (fairness, efficiency and flexibility) to achieve this goal.

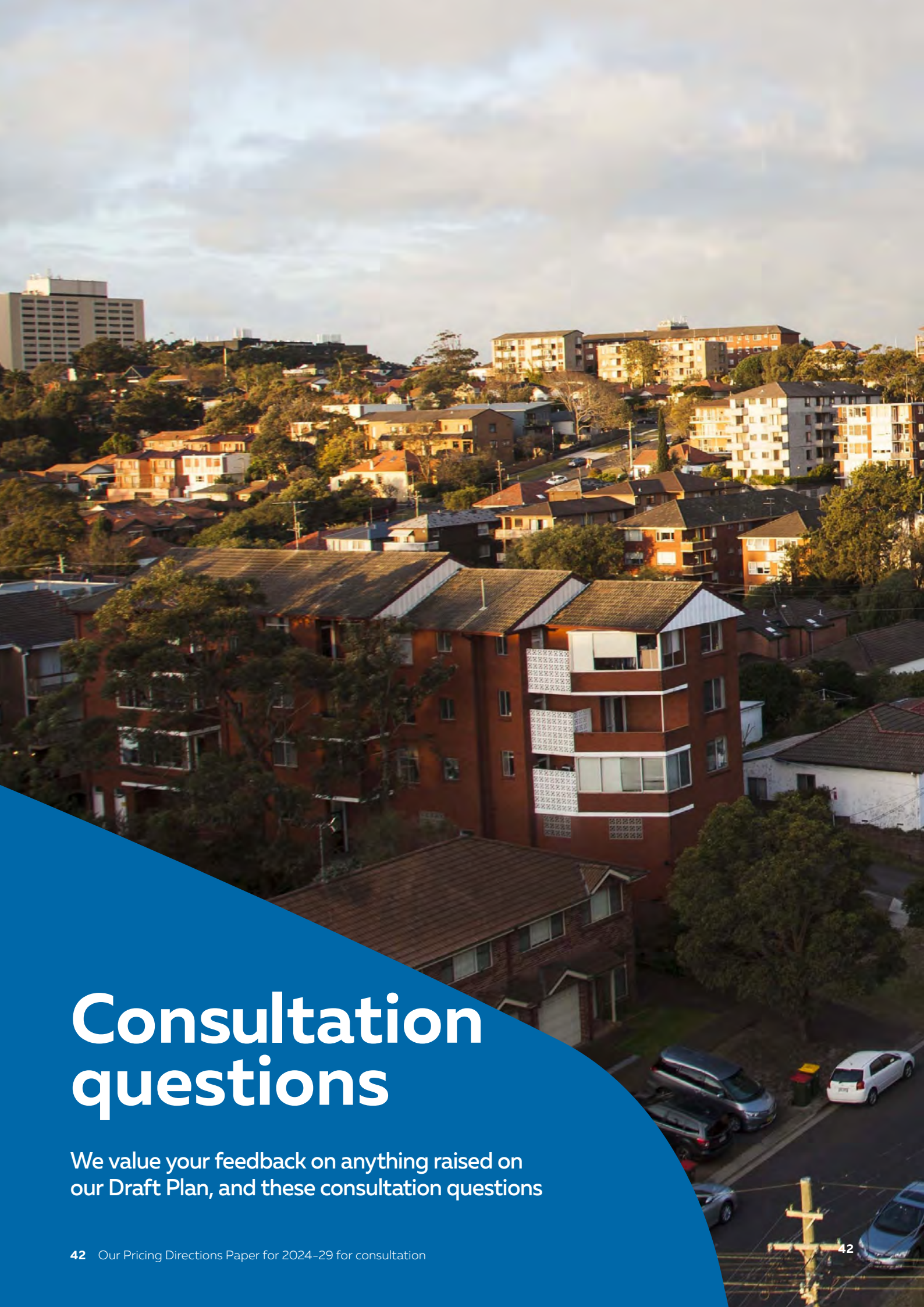
Consultation question 15:

- To what extent should Ausgrid make more dynamic network pricing available over the 2024-29 period (through Demand Management Innovation Allowance trials, sub-threshold tariffs or regulated tariffs)?
- Do you have any feedback on how we are using and plan to use our tariffs to support the net zero transition? What else should we do to support the transition through our network tariffs?



26 ESB Post 2022 market design final advice to energy ministers Part B (released 26 August 2021).

27 Ibid p 70.



Consultation questions

We value your feedback on anything raised on our Draft Plan, and these consultation questions

What we would like your further feedback on

Page 10

1. Do you have any feedback on our pricing principles? Do you disagree with any of the principles? Are any important principles missing?

Page 12

2. How should Ausgrid recover Roadmap scheme costs? For example, should we send a cost-reflective price signal (eg. a demand charge) for the recovery of Roadmap costs, or recover the scheme in a similar way to the existing Climate Change Fund (eg. as an energy charge)?

Page 12

3. What are your views on how Ausgrid should set prices for hydrogen electrolysers in 2024-29 to provide them with the 90% discount on network charges?

Should we introduce a dynamic tariff for large load customers such as hydrogen electrolysers?

Page 22

4. Do you think our overall approach for introducing an export pricing structure is appropriate? Are there any changes you think we should make? If so, why?

Do you agree we should apply the export pricing structure to all new and existing residential and small business customers on cost-reflective tariffs from July 2025? Should an opt out option be available for the export pricing structure?

Do you think there is merit in exploring a 1–2 hour gap between the export charge window and export reward window?

Should we consider aligning more closely with the other NSW distributors on export tariffs?

Page 26

5. Do you support a consistent 6-hour peak charging window in summer and winter for residential and small business customers?

Do you support moving the peak charging window to later in the day, so it applies from 3pm to 9pm?

Should we have the option to move the peak charging window to 4pm to 10pm during the 2024-29 period, if we encounter new peaks in demand or increasing minimum system load costs in the afternoons?

Should we extend the seasonal peak charging window to weekends for residential customers? If not, how should we address the localised demand peaks on the weekend, which are most common in highly residential areas?

Page 27

6. Will our proposed changes to switching times retain the relevance of controlled load tariffs for our customers?

How else could controlled load tariffs be reformed to respond to new loads such as electric vehicles?

Page 31

7. Do you agree we should introduce EN tariffs? Is this an appropriate response to address the tariff inequity between EN operators and other network users?

Should minimum consumption thresholds be applied to allow for exemptions to the proposed EN tariffs?

Page 32

8. Do the current transitional TOU tariffs provide any benefits to customers?

Do you support the withdrawal of the introductory demand tariffs? Do they provide any benefits to customers, or do they create an unnecessary step as customers move to demand tariffs?

Are there currently sufficient choices available for customers who want to opt out of demand tariffs?

continued

What we would like your further feedback on

Page 34

9. Are the proposed amendments to tariff assignments suitable for new and existing medium business customers?

Page 35

10. Are our demand and TOU tariffs suitable for customers who charge their EVs at their home?

Should technology specific tariffs (such as for EV charging stations) be considered?

How can our network tariffs facilitate EV charging in apartment buildings?

Page 38

11. Given the evolving needs of the energy sector and our customers, how fast should Ausgrid move to develop and implement innovative tariffs? What factors should guide our approach?

Page 38

12. What innovative tariffs would you like to see Ausgrid trial to support energy storage?

Page 39

13. Should Ausgrid trial new tariffs in response to the expected high growth in EV uptake over the 2024-29 period and beyond?

Page 39

14. How should we continue to build and test our capability and market interest in dynamic network pricing through the 2024-29 period, including through trial tariffs?

What other innovative ideas for reinventing pricing should Ausgrid research and trial in this period?

Page 41

15. To what extent should Ausgrid make more dynamic network pricing available over the 2024-29 period (through Demand Management Innovation Allowance trials, sub-threshold tariffs or regulated tariffs)?

Do you have any feedback on how we are using and plan to use our tariffs to support the net zero transition? What else should we do to support the transition through our network tariffs?

Contact us

All correspondence in relation to this document should be directed to:
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