

Network tariffs for the distributed energy future

In March 2022 we engaged Argyle Consulting and Endgame Economics to prepare an exploratory paper (the paper) on future network tariffs for electricity storage (batteries). We published the paper, *Network tariffs for the distributed energy future*, on our website in August 2022. The views expressed in the paper are those of its authors. By publishing this paper, we hope to encourage discussion and ideas on future tariff design in the context of ongoing tariff reform that can be tested by distributors, customers, and retailers.

Ideas explored in the paper and responses from stakeholders

Some of the key ideas explored in the paper include:

- The introduction of several principles which Argyle Consulting and Endgame Economics use to shape their discussion of future tariff designs and which they consider will address network problems and gain acceptance by stakeholders
- The suggestion that two-way pricing offers an opportunity to trial locational pricing (i.e., different rewards and charges for exports to the grid at different locations).
- More efficient use of network infrastructure might be encouraged by charging storage/batteries local use of system (LUoS) tariffs.

We received eight submissions in response to the paper, from AGL, Ausgrid, the Australian Energy Council, Energy Queensland, Public Interest Advocacy Centre, Red and Lumo Energy, SA Power Networks and Simply Energy. We thank those stakeholders for their submissions.

Responses from stakeholders to the paper are summarised in Table 1.

Summary of Argyle Consulting & Endgame Economics exploratory paper

- **Suggests several principles future tariff designs should aim to achieve, including:**
 - **efficiency**
 - **cost reflectivity**
 - **equity**
 - **technological and competitive neutrality**
 - **network revenue and customer bill predictability, and**
 - **simplicity of understanding or practicality of implementing.**¹

Stakeholder submissions

- Ausgrid requested we clarify the extent we will consider the principles suggested by Argyle Consulting and Endgame Economics in our future reviews of tariff structure statements.²
- In response to Ausgrid, we assess tariff structure statements for compliance against the NER pricing principles (cl. 6.18.5). We have regard to secondary principles when coming to a decision. For example, we consider principles identified by distributors through engagement with customers, retailers, and other stakeholders to the extent they contribute to and help achieve tariff structures that comply with the pricing principles set out in the NER, but we do not require compliance with additional principles. In the same way we will not require compliance with the principles suggested by Argyle and Endgame but we welcome their thinking on this issue and we equally welcome stakeholder views provided in response.
- Further, we recognise different distributors have different network characteristics and are at different stages of tariff reform. Secondary principles, whether proposed by distributors or by others, may help contribute to our TSS assessments, but ultimately tariffs must comply with the pricing principles in the NER:
 - tariffs must be based on the long run marginal cost of providing the service
 - revenue from each tariff reflects the costs of customers assigned to the tariff, permits recovery of allowed revenue, and minimises distortions to price signals
 - distributors must consider the impact of changes in tariffs on retail customers
 - each tariff reasonably capable of:

¹ Argyle Consulting and Endgame Economics, *Network tariffs for the distributed energy future*, June 2022, p.6. and p.26.

² Ausgrid submission in response to network tariffs for the distributed energy future, 7 October 2022, p.2.

	<ul style="list-style-type: none"> ▪ being understood by retail customers or ▪ being incorporated by retailers to offer to their customers.
<ul style="list-style-type: none"> • Supports technology neutral tariffs. 	<ul style="list-style-type: none"> • SA Power Networks (SAPN) supports technology neutral tariffs provided they are cost reflective.³
<ul style="list-style-type: none"> • Supports two-way marginal pricing based on the principle of symmetric charges and rewards. 	<ul style="list-style-type: none"> • AGL supports two-way pricing but considers cost reflective network tariffs for the consumption of electricity should be optimised and implemented ahead of charges for export pricing. AGL suggests time-of-use price signals should be prioritised as a solid foundation prior to moving onto two-way tariff design.⁴ • SAPN supports two-way pricing, noting that it was a key proponent of the AEMC's Access and Pricing rule change. And submits it is strongly of the view that with the enabling of pricing for export services, the current framework is now largely fit for purpose.⁵ • The Public Interest Advocacy Centre (PIAC) supports two-way pricing. It considers two-way pricing allows network costs to be attributed to those customers who cause them.⁶ • Energy Queensland supports two-way pricing noting that a fundamental driver of tariff reform is improving the efficiency of price signals for both export and import.⁷
<ul style="list-style-type: none"> • Suggests export charges present a unique opportunity for trialling locational price signals, especially if paired with symmetric rewards. 	<ul style="list-style-type: none"> • PIAC supports locational price signals for exports. It notes hosting capacity constraints are not uniform and locational price signals with a symmetrical charge or reward could lead to more efficient consumption and investment decisions.⁸ • Ausgrid sees potential benefits of locational export charges, however, its consultation found community preference for a single network-wide export price.⁹

³ SA Power Networks submission in response to network tariffs for the distributed energy future, 7 October 2022, p.1.

⁴ AGL submission in response to network tariffs for the distributed energy future, 12 October 2022, p.2.

⁵ SA Power Networks submission in response to network tariffs for the distributed energy future, 7 October 2022, p.1.

⁶ Public Interest Advocacy Centre submission in response to network tariffs for the distributed energy future, 7 October 2022, p.2.

⁷ Energy Queensland submission in response to network tariffs for the distributed energy future, 7 October 2022, p.1.

⁸ Public Interest Advocacy Centre submission in response to network tariffs for the distributed energy future, 7 October 2022, p.2.

⁹ Ausgrid submission in response to network tariffs for the distributed energy future, 7 October 2022, p.2.

	<ul style="list-style-type: none"> • SAPN is not supportive of locational pricing, noting it considers more complex and sophisticated approaches such as locational pricing should be given a lower priority until the basic cost reflective pricing foundations are secure.¹⁰ • Energy Queensland is not supportive of locational pricing. It considers non-tariff solutions, such as traditional demand management approaches and dynamic operating envelopes will be more effective to alleviate localised network constraints.¹¹ • The Australian Energy Council (AEC) does not support locational pricing for small customers. It considers the incentives from locational pricing in the form of tariffs alone is likely to create a barrier to entry for both small CER generators and retailers, subsequently limiting customer choice.¹² The AEC comments that network tariffs are costly and complex to introduce at a locational level and this should be out of scope until the concept is proven using rebates or credits.¹³
<ul style="list-style-type: none"> • Suggests: <ul style="list-style-type: none"> ○ Third party control of customers appliances could be an alternative to manage network costs. ○ If the network is given a technical capability to curtail how batteries charge or discharge in a dynamic way a dynamic tariff might be offered at a discount which reflects the reward to the customer up to the amount of avoided network costs. 	<ul style="list-style-type: none"> • PIAC supports dynamic tariffs combined with some form of control by the network, noting that batteries contribute to a reduction in overall consumer costs and reward customers for changing their consumption or generation behaviour.¹⁴ • Simply Energy does not support distributors offering a lower network tariff in exchange for applying a form of control over the consumers load. It considers market participants (VPP operators, aggregators and retailers) are best placed to optimise network tariff signals on behalf of consumers.¹⁵ • AGL is not supportive of providing control to the network. It considers this has potential to create barriers and disincentivise the emergence of new market entrants and products that provide services competitively, stalling the growth and development of innovative solutions.¹⁶ AGL further submits that it considers that by negotiating

¹⁰ SA Power Networks submission in response to network tariffs for the distributed energy future, 7 October 2022, p.2.

¹¹ Energy Queensland submission in response to network tariffs for the distributed energy future, 7 October 2022, p.1-2.

¹² The Australian Energy Council submission in response to network tariffs for the distributed energy future, 7 October 2022, p.5,

¹³ The Australian Energy Council submission in response to network tariffs for the distributed energy future, 7 October 2022, p.3,

¹⁴ Public Interest Advocacy Centre submission in response to network tariffs for the distributed energy future, 7 October 2022, p.2.

¹⁵ Simply Energy submission in response to network tariffs for the distributed energy future, 7 October 2022, p.3.

¹⁶ AGL submission in response to network tariffs for the distributed energy future, 12 October 2022, p.3.

	<p>agreements for the provision of competitive controlled load services (and other services) to networks and then sharing the rewards with customers that choose to participate, retailers/aggregators are best placed to unlock and deliver the maximum value from the orchestration of CER.¹⁷</p> <ul style="list-style-type: none"> • SAPN is not supportive of dynamic tariffs. SAPN prefers simple static tariffs, as they are easier to understand, simpler from a billing process perspective and encourage customer behavioural change.¹⁸ • Ausgrid submits that it is not seeking to introduce network control of customer batteries and other energy resources. Ausgrid considers that pricing, accompanied by transparency, should create opportunities for customers and their agents to optimise investments in batteries and how they use batteries on our network.¹⁹
<ul style="list-style-type: none"> • Supports localised use of system (LUoS) tariffs for community batteries: <ul style="list-style-type: none"> ○ Batteries that charge at times of peak export congestion and discharge at times of peak demand save augmentation costs as peak energy only travels locally. ○ Batteries would be disadvantaged by standard network tariffs that presume all energy travels the full way from via the transmission network, then the high voltage distribution network. 	<ul style="list-style-type: none"> • PIAC supports LUoS tariffs. It considers it appropriate to price access to these assets at a reduced LUoS level if the service provider can demonstrate that a community battery only uses the local network. This usage arrangement would better reflect the contribution community batteries make to minimising system costs and balancing of load and generation.²⁰ • Ausgrid is supportive of LUoS for community batteries and describes its battery trial, noting that its tariff includes a LUoS charge. Noting this means that energy from local storage or generation (and not from the upstream network) is charged at a discount and it could allow retailers and third parties to offer new products (such as virtual storage) and may enable schemes such as customers donating excess exports to local charities. Ausgrid further notes it will review its tariff as it learns more about how battery operators respond to LUoS pricing.²¹ • Simply Energy supports further considering whether community batteries should be charged at a LUoS level.²² It supports distributors accommodating community batteries as a dynamic resource within their networks rather than treating community batteries

¹⁷ AGL submission in response to network tariffs for the distributed energy future, 12 October 2022, p.3.

¹⁸ SA Power Networks submission in response to network tariffs for the distributed energy future, 7 October 2022, p.2.

¹⁹ Ausgrid submission in response to network tariffs for the distributed energy future, 7 October 2022, p.2.

²⁰ Public Interest Advocacy Centre submission in response to network tariffs for the distributed energy future, 7 October 2022, p.2-3.

²¹ Ausgrid submission in response to network tariffs for the distributed energy future, 7 October 2022, p.2-3.

²² Simply Energy submission in response to network tariffs for the distributed energy future, 7 October 2022, p.2.

	<p>the same as other ‘customers’. Simply Energy further submits the distributor should share the benefits of avoided augmentation expenditure with the source of that benefit (in this case, the operators of community batteries).²³</p> <ul style="list-style-type: none"> • SAPN is not supportive of LUoS pricing in circumstances where network charges are for multiple customers or multiple properties within a local area. It considers the current tariff structure and pricing mechanisms it has in place ensures that distributed energy resources (DER) are appropriately contributing to the efficient use of the distribution network and a cost reflective outcome.²⁴ However, in circumstances where there is a single customer with multiple connections located on the same or adjacent site which is being supplied from the same part of the distribution network, it will accommodate this in the calculation of the distribution network charges.²⁵
<ul style="list-style-type: none"> • Suggests: <ul style="list-style-type: none"> ○ To ensure that the race for batteries does not end up with inefficient location of storage assets on the grid, it is important to maintain competitive neutrality between distribution and transmission connected assets. ○ Without a transparent methodology to establish the negotiated service price, there is a risk of transmission network service providers underpricing access to attract batteries connecting at transmission level while it might be more efficient for them to connect at distribution level. 	<ul style="list-style-type: none"> • Ausgrid supports a level playing field for transmission and distribution connected batteries. The current regulatory framework allows negotiated connection arrangements for transmission and dual function asset connections but not for distribution connections. This means distribution networks are at a disadvantage from connecting new large-scale batteries and this inconsistency could delay or even deter the efficient introduction of this new technology in its network.²⁶ • SAPN supports treating all batteries equally. That is, there is no distinction between a community battery and a battery connected to a higher voltage step in the network. All grid-based batteries are considered homogenous.²⁷ • AGL supports a level playing field for all battery service providers for the competitive benefits to be realised.²⁸

²³ Simply Energy submission in response to network tariffs for the distributed energy future, 7 October 2022, p.3-4.

²⁴ SA Power Networks submission in response to network tariffs for the distributed energy future, 7 October 2022, p.1.

²⁵ SA Power Networks submission in response to network tariffs for the distributed energy future, 7 October 2022, p.3.

²⁶ Ausgrid submission in response to network tariffs for the distributed energy future, 7 October 2022, p.2.

²⁷ SA Power Networks submission in response to network tariffs for the distributed energy future, 7 October 2022, p.3.

²⁸ AGL submission in response to network tariffs for the distributed energy future, 12 October 2022, p.4.

<ul style="list-style-type: none"> • Suggests residual costs should be recovered via a capacity charge as opposed to increasing the fixed charge because it alleviates concerns about equity. This is because the capacity charge can be scaled with the size of the customer (their maximum demand). 	<ul style="list-style-type: none"> • Energy Queensland supports a capacity charge. Recovering more residual costs via a capacity charge as opposed to increasing the fixed charge alleviates concerns about equity, with small customers contributing less to total network cost recovery.²⁹
<ul style="list-style-type: none"> • Suggests: <ul style="list-style-type: none"> ○ Volumetric energy-based tariffs are no longer cost reflective nor equitable with the increasing penetration of DER. ○ Demand tariffs offer a solution that avoids this pitfall in the high DER environment, by introducing a variable charging parameter (kW or kVA) different from energy consumption (kWh). 	<ul style="list-style-type: none"> • SAPN supports demand-based charges noting them as a key component in large and major business tariff classes.³⁰
<ul style="list-style-type: none"> • Suggests: <ul style="list-style-type: none"> ○ different long run marginal costs (LRMCs) would apply to consumption and export services. ○ The average LRMC for exports can be low when there is sufficient headroom in hosting capacity. However, in localised pockets augmentation might be required relatively soon, and localised LRMC would be much higher. A localised LRMC might become a basis for a locational price signal. 	<ul style="list-style-type: none"> • Ausgrid comments that it is currently exploring whether prices for batteries should be based on long-run or short-run marginal cost in Project Edith. Noting that with the introduction of batteries and information technology that can respond to price in real time, some customers may have greater control of when they import, export or island from the network, potentially making short-run marginal cost pricing an effective pricing method for these customers.³¹ • Energy Queensland considers that in terms of improving the cost reflectivity of price signals, the long-term interests of electricity users are best served by continuing to base network tariffs on LRMC for both import and export. It further notes that to the extent that it is economically desirable to alleviate localised network constraints, it

²⁹ Energy Queensland submission in response to network tariffs for the distributed energy future, 7 October 2022, p.2.

³⁰ SA Power Networks submission in response to network tariffs for the distributed energy future, 7 October 2022, p.2.

³¹ Ausgrid submission in response to network tariffs for the distributed energy future, 7 October 2022, p.2.

<ul style="list-style-type: none"> ○ Short Run Marginal Cost (SRMC) might provide even a sharper locational signal, especially in the dynamic pricing context. ○ More accurate signalling of locational costs would lead to more efficient consumption and investment decisions, including the customers' decisions to invest in batteries and other DER. 	<p>considers that non-tariff solutions, such as traditional demand management approaches, and dynamic operating envelopes (DOE) will be more effective.³²</p>
<ul style="list-style-type: none"> ● Notes that retailers are the primary recipients of the network price signals and agents for their customers in achieving savings on the total electricity bill. Retailers know their customers and their preferences and can design retail plans and offerings that suit different customer needs. 	<ul style="list-style-type: none"> ● Simply Energy suggests that distributors need to develop network tariffs that are simple for retailers to apply in their retail tariffs for customers. It considers distributors should work closely with retailers to develop network tariffs that will provide useful and effective price signals to consumers.³³ ● Red and Lumo submit that retailers already offer both simple and more complex retail products with network price signals that provide incentives to use the network more efficiently. Red and Lumo note that customers do not want to be exposed to pricing risk through sharper price signals and expect their retailer to manage this exposure on their behalf and that it is inaccurate to suggest that retailers are an obstacle to reform in this context.³⁴ ● Ausgrid supports retailers having the freedom to package network charges how they see fit. It considers that it is the retailers' role to translate the complexity of the energy system into end-use products tailored to their customers' needs.³⁵

³² Energy Queensland submission in response to network tariffs for the distributed energy future, 7 October 2022, p.2-3.

³³ Simply Energy submission in response to network tariffs for the distributed energy future, 7 October 2022, p.2-3.

³⁴ Red and Lumo submission in response to network tariffs for the distributed energy future, 12 October 2022, p.1.

³⁵ Ausgrid submission in response to network tariffs for the distributed energy future, 7 October 2022, p.2.