

A few
words.

Dr Ron Ben-David
Chairperson
Essential Services Commission

By email: DGInquiry@esc.vic.au



1 August 2016

Dear Dr Ben-David,

Re The Network Value of Distributed Generation – Distributed Generation Inquiry Stage 2 Discussion Paper

AGL welcomes the opportunity to comment on the Essential Services Commission 2016, *The Network Value of Distributed Generation – Distributed Generation Inquiry Stage 2 Discussion Paper (Discussion Paper)*, June 2016.

AGL is one of Australia's leading integrated energy companies and the largest ASX listed operator and developer of renewable generation. Our diverse power generation portfolio includes base, peaking and intermediate generation plants, spread across traditional thermal generation as well as renewable sources. AGL is also a significant retailer of energy, providing energy solutions to over 3.7 million customers throughout eastern Australia. In 2015, AGL established a New Energy division, with a dedicated focus on distributed energy services and solutions.

This Inquiry comes at an interesting time for the electricity market. New distributed energy technologies that are beginning to enter the market (adopted by households around Australia) seem likely to cause a fundamental change in the extent to which distributed generation can provide tangible and reliable network benefits. The major factor distinguishing these technologies from 'first wave' distributed generation is their capacity to be intelligently controlled and dispatched according to algorithms that balance multiple needs (e.g. in home comfort, tariff optimisation and potentially participation in the provision of network and wholesale market services).

As it is evolving customer preferences that are leading the transformation of the electricity market, in AGL's view it is unnecessary (even unhelpful) for the Inquiry to distinguish between network-led and proponent-led distributed generation. Customers have shown great appetite for technologies which enable them to exert greater control over their energy usage and costs, the adoption of solar PV systems being a prime example. As this customer-led evolution continues with the installation of battery energy storage systems and smart-enabled appliances, this will present a very powerful resource for the provision of localised network support services. As customers increasingly look to 'stack' multiple value streams (personal, network and wholesale), a successful framework will seek to maximise both customer choice and economic benefit across multiple realms.

Against this background, this submission is focussed on four key areas that AGL considers are of primary relevance to the Commission's current deliberations:

1. Ensuring that the Inquiry articulates an overarching public policy objective. That is, rather than constructing a regulatory mechanism to reward the network benefits of

distributed generation *as an end in itself*, the ultimate objective may be to encourage efficient investment in and operation of distributed generation.

2. Undertaking the Inquiry with a clear view to developments and reforms being pursued at the national level and focussing recommendations as a contribution to those developments.
3. In light of the various factors that influence whether a particular distributed generation installation can or will deliver network benefits (location, availability, controllability and size), considering whether methodologically constructing a regulated payment is the best approach or whether the focus would more usefully be on refining incentives on network businesses to procure grid support services from competitive markets – with that competitive process essentially revealing a network value.
4. Ensuring that the Inquiry takes a holistic approach which also takes account of the costs of distributed generation on the network and the manner in which those costs are recovered from the broad customer base.



Articulating an overarching public policy objective

The Commission summarises its task in this Inquiry as being to:

- to identify the various direct and indirect benefits that may be attributed to distributed generation and, to the extent possible, place a monetary value on those benefits; and
- to provide advice to Government on how those monetary values might be reflected in an appropriately designed payment mechanism.

To AGL, it is critical that this Inquiry and any recommendations that fall out of it consider not only whether the network benefits of distributed generation can be quantified and reflected in a payment mechanism, but also to articulate what the broader purpose of a regulatory mechanism to reward those network benefits is. In AGL's view, this should be to encourage efficient investment in and operation of distributed generation and other demand side resources where that would reduce the overall costs of network investment and operation.

AGL considers that the Commission's decision to exclude certain matters from its examination (including consideration of the optimal profile of future investment in distributed generation, how the benefits of that investment might be maximised, or whether those benefits could be delivered by alternative means) is potentially at odds with this broader objective. Taking this broader view would also align with the Commission's overarching obligation to promote the long term interests of Victorian consumers with regard to the price, quality and reliability of essential services. We understand this to incorporate the promotion of dynamic, productive and allocative efficiency in the provision of electricity network services.

In answer to Question 15 of the Discussion Paper, an overarching purpose such as this is inherently forward looking. Subsequently rewarding the network benefits of pre-existing distributed generation (as canvassed in the Discussion Paper) would run counter to this objective. Where the network savings from existing distributed generation is already reflected in tariffs approved by the Australian Energy Regulator (**AER**) (that are lower than they otherwise would have been) then there may be no incremental benefit to dispense and nor would any such payment influence investment decisions that have already been made.

National reforms

The National Electricity Market (**NEM**) is undergoing a major transformation, moving away from the linear, traditional model to a more decentralised, bi-directional and customer-led market. This transformation is being driven in a large part by significant technological advancement in distributed energy resources (**DER**) and associated cost reductions. As well as distributed generation, DER encompasses digital metering, battery storage, smart inverters, intelligent control of air conditioners, hot water and other household load, together with software-enabled aggregation platforms. This emerging ability to orchestrate DER offers real potential to involve customers in the delivery of targeted and valuable solutions to identified network needs.

As the Discussion Paper notes, there already exists a suite of regulatory mechanisms at the NEM level that have a direct bearing on the efficient deployment and reward of demand side resources / DER (including distributed generation) that provide network benefits. These include the:

- Regulatory Investment Test for Distribution (**RIT-D**);
- Demand Management Incentive Scheme (**DMIS**) and Innovation Allowance (**DMIA**);
- Capital Expenditure Sharing Scheme (**CESS**) and the Efficiency Benefit Sharing Scheme (**EBSS**); and
- Requirement for distribution businesses to develop more cost-reflective distribution network tariffs.



In recognition of the major transformation currently underway, the Australian Energy Market Commission (**AEMC**) in its *Integration of Energy Storage, Final Report*, identified a need to review these incentive schemes (the RIT-D, DMIS/DMIA, CESS and EBSS) to ensure they remain fit for purpose and are appropriately incentivising the use of non-network solutions (including demand management and distributed generation) where that would be most efficient from a network investment and operation perspective.¹ The AEMC also recommended a number of complementary reforms (updated distribution ring-fencing guidelines, a review of the rules to clarify the contestability of 'behind-the-meter' services) to ensure that the full compendium of rules work together to achieve outcomes in the long term interests of customers.

The review of distribution ring-fencing guidelines is already underway, with updated guidelines to be in place by December 2016.² The Australian Energy Regulator (**AER**) has also recently lodged a rule change focussed on updating the RIT-T/D to ensure this framework remain fit for purpose.³ The AEMC is taking the opportunity presented by the LGNC rule change proposal to identify and clarify any gaps in the regulatory framework as it applies to incentivising efficient deployment of distributed generation – and in this way bears many similarities to the Commission's current Inquiry. Thus momentum is truly gathering at the NEM level to update regulatory and market frameworks to encourage an efficient, customer-led deployment of DER (including distributed generation), including ensuring that any network value is recognised and valued.

AGL appreciates the Commission's detailed consideration of the potential for distributed generation to provide network value, however we strongly urge that effort and any recommendations falling out of the Inquiry have a national focus. This is especially the case as economic regulation of networks is now managed by the AER. Any divergence between the NEM-wide and jurisdictional network regulatory framework risks becoming unwieldy and difficult to manage and may inadvertently interfere with the efficient operation of those NEM-wide schemes and frameworks. State-based regulatory frameworks will ultimately slow down uptake of new technologies due to higher transaction costs for producers and consumers.

Regulated versus market mechanism for recognising network value

The Commission has identified a range of characteristics of distributed generation (and in fact other DER) that will influence its capacity of provide network benefits. These include location, availability, controllability / dispatchability and size.

As the Commission notes, because the capacity of distributed generation to provide network value is so dependent on these factors, any methodology to determine a regulated price (or credit) for this value would necessarily be granular and computationally intensive. This indicates that the kind of averaged price signals that make up current network tariff arrangements may not be the most appropriate means of rewarding any network benefits of distributed generation. This may change in future when customer appetite and enabling technology moves us to an environment where highly dynamic pricing is possible. However we appear to be some way from that point yet (demand tariffs are only just being introduced with customer take-up tentative at best).

Therefore at this stage in the electricity industry transformation, it appears that the regulatory framework should focus on ensuring that networks have the right incentives to identify and procure 'non-network solutions' (including distributed generation and other demand side response) where that would be the most efficient investment and operation

¹ AEMC, *Integration of Storage: Regulatory Implications, Final report*, 3 December 2015, Sydney.

² AER, *Electricity ring-fencing guidelines 2016*, review homepage: <https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/electricity-ring-fencing-guideline-2016>

³ AER rule change proposal has been submitted to the AEMC which will be published on the AEMC website as a pending rule change.

pathway. If working as intended the CESS/EBSS should incentivise the efficient substitute of opex for capex, and such opex might theoretically include the procurement of network services (capacity or grid support) from behind-the-meter installations in the competitive market (most likely via third party aggregators). As discussed in the section above, there are a number of reviews at the national level aimed at ensuring that this is not only a theoretical outcome.



If the reforms being pursued at the NEM-level are successful in establishing a framework that requires networks to consider and invest in non-network solutions that are procured from competitive markets, then that competitive process will itself reveal a network value of distributed generation and other DER and not require a regulated assessment. Accordingly, in AGL's view the current focus should be on developing market based mechanisms for networks to procure grid support services. Given the heterogeneous nature of potential solutions (e.g. batteries, in-home displays, solar PV, electric vehicles), a market based solution will be more efficient than a regulated one.

As the Commission recognises in its paper, various players are trialling 'virtual power plant' (VPP) technology that can be used in aggregating DER in the delivery of network support services (capacity, grid stability services). AGL's own trial in Carrum Downs is yet another example of this.⁴ The trial offers some insight into the role that a distributed, controllable fleet of DER can play in alleviating network constraints and deferring more costly network expenditure.

The trial with local network provider United Energy involved 68 residential customers who had had cloud-interfaced air conditioning units installed and connected to virtual power plant software. Six of the homes had batteries installed, which integrate with existing solar PV systems. The main aim of the trial was to prove technical capability in reducing energy being drawn from the grid for the duration of each hot weather event as a demonstration of alternative ways to balance peaks in energy demand.

This aggregated and controlled response seems to be the logical pathway to unlocking and realising the network value delivered by a portfolio of small-scale distributed generation and other DER. It is telling that the various reported trials investigating the ability of DER to offer network support all involve controllable / dispatchable elements.

Clarification of the ability and incentives for network businesses to procure network support from behind-the-meter installations may also have implications for the helpfulness of the Commission's proposed distinction between network-led and proponent-led distributed generation. It seems likely that as the market develops, distributed generators (through third party intermediaries or facilitators) will increasingly look to 'stack' multiple value streams (personal, network and energy value) in order to maximise the efficient use and investment in distributed generation.

Finally, it is important to note that 'non-network solutions' is a technologically neutral concept and not limited to distributed generation. Non-network solutions might also include controllable loads and other demand response measures. This is important as the regulatory framework should not bias the deployment of one type of solution to a network constraint over another more efficient solution, as this would not be in the long term interests of customers.

Holistic approach to network tariff design

The Commission has interpreted the Inquiry terms of reference to exclude consideration of all costs associated with initiating and maintaining a connection between distributed generation and the network. It notes further that these costs, once approved by the AER, are recovered from all electricity consumers and are therefore already accounted for.

In seeking to implement a regulatory mechanism to reward distributed generators for any network benefits they provide, it is critical to take into account not just *whether* the costs of connecting and operating distributed generation on the network are already recovered, but how and from whom they are recovered. Most Victorian customers with distributed generation continue to be charged on a volumetric basis for their energy consumption. This is despite the fact that a large portion of network costs are driven by the extent and timing of a network user's peak demand (rather than total demand).

Accordingly, before the construction of a regulatory mechanism to *explicitly* reward any network benefits of distributed generation, it is necessary to consider the extent to which

⁴ <https://www.agl.com.au/about-agl/media-centre/article-list/2016/march/agl-trials-impacts-of-emerging-technologies-on-the-grid-and-energy-bills>

distributed generation customers are already *implicitly* rewarded by virtue of network charges avoided under existing volumetric pricing. Failure to take a holistic approach to consumption and export pricing runs a real risk of exacerbating cross-subsidies inherent in the volumetric network pricing which continues to predominate. Cost-reflective network tariffs are therefore a necessary and logical forerunner to any regulatory pricing scheme to reward any network benefits of distributed generation.



As the Commission notes, where the network benefits of distributed generation are already factored into pricing decisions by the AER, then the distributed generator (assuming they are also an electricity customer) will share in these benefits. Socialising the benefits of distributed generation in this way may be appropriate where the costs of distributed generation on the network are also socialised.

There are substantial network benefits associated with customers managing their own maximum demand on the network. Cost reflective network tariffs are intended to signal this value and to enable the customer to capture this value by managing their own demand on the network. Cost reflective network tariffs will therefore be an important driver of investment in embedded generation and complementary technologies, like batteries and electric vehicles, where these allow the customer to reduce their grid consumption during network peaks.

Should you have any questions related to this submission, please contact Eleanor McCracken-Hewson, Policy and Regulatory Manager, New Energy, on .

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Stephanie Bashir', is positioned above the typed name.

Stephanie Bashir

Head of Policy & Regulation New Energy