



AGL Energy Limited

ABN: 74 115 061 375
Level 24, 200 George St
Sydney NSW 2000
Locked Bag 1837
St Leonards NSW 2065
t: 02 9921 2999
f: 02 9921 2552
agl.com.au

Arek Gulbenkoglou

A/General Manager, Distribution
Australian Energy Regulator

Submitted by email to: AERinquiry@aer.gov.au

20 January 2020

Dear Arek

AER Consultation Paper, Assessing DER Integration Expenditure, November 2019

AGL Energy (**AGL**) welcomes the opportunity to respond to the Australian Energy Regulator's (**AER**) Consultation Paper, *Assessing DER Integration expenditure*, November 2019 (**Consultation Paper**).

The AER's Consultation Paper is timely, given the energy industry's continued transition with the uptake in distributed energy resources (**DER**), the advent of new business models such as orchestration, and the industry's current focus on ensuring that the regulatory framework supports DER integration for the benefit of all energy users.

AGL's focus on technology to enable increased customer engagement is reflected in our refreshed strategy, under which a range of emerging growth opportunities in distributed energy have been identified, including bringing to market residential battery offerings, expanding our view to consider e-mobility more broadly, and utilising smart home and energy efficiency technologies that aim to leverage the convergence of data and energy. We are also working with other market participants to trial innovative programs that draw upon customers' distributed energy assets, most notably our Virtual Power Plant (**VPP**) Program in South Australia and our Demand Response Program in New South Wales that are both funded in partnership with the Australian Renewable Energy Agency's (**ARENA**) Advancing Renewables Program.

AGL's South Australian Virtual Power Plant (**SA VPP**) Program, that commenced in 2016 comprises the sale, installation and orchestration of 1,000 energy storage systems installed behind-the-meter in homes and small businesses in South Australia. When complete, the VPP will deliver up to 5MW of peak generation and 12 MWh of storage capacity to homes, the National Electricity Market (**NEM**) and a range of network services across metropolitan Adelaide.¹ AGL has since expanded its orchestration service offerings to enable customers in New South Wales, Queensland, South Australia and Victoria to bring their own battery to AGL's Virtual Power Plant, and for customers in South Australia to purchase a more affordable battery through AGL.²

¹ For further information regarding AGL's ARENA SA VPP program, including the two milestone reports published to date, please refer to <https://arena.gov.au/projects/agl-virtual-power-plant/>.

² For further information regarding AGL's Virtual Power Plant, please refer to https://www.agl.com.au/solar-renewables/solar-energy/bring-your-own-battery?cide=sem-r&gclid=EAlaIqobChMlicjKmKuP5wIVyjUrCh2eXwvVEAAYASAAEgLRPD_BwE&gclsrc=aw.ds.



Through AGL's trialling of innovative programs that draw upon customers' DER, including our SA VPP, we have been able to draw upon operational data to develop a range of important insights into the interaction of DER with the low voltage distribution network. We therefore provide our feedback based on insights from our SA VPP in the **Attachment** and how these insights may assist the AER inform itself in addressing the consultation questions.

AGL does not consider that the AER's Expenditure Forecast Assessment Guideline (**the EFA Guideline**) is fit for purpose to assess DER integration expenditure as the latest revision was in November 2013 and the EFA Guideline did not contemplate DER integration.

We consider that the AER's network expenditure assessment framework needs to be revised to ensure that networks effectively facilitate the interaction of DER with the broader energy market system, so that networks become platforms for multiple services, facilitating electricity flows in multiple directions and facilitating efficient access for DER where consumers can realise the full potential of their DER investment by providing wholesale and network services that promote a reliable and affordable energy system.

AGL suggests the AER's assessment framework could be revised in a range of key respects, including:

- Sampling and modelling;
- Options analysis and options value;
- DER visibility;
- A common approach methodology to valuing consumer exported electricity; and
- DER integration expenditure categories.

The AER's network expenditure assessment framework will also need to be cognisant of and offer 'no regret' arrangements as policy and rule makers work through the design of more fundamental market design reforms, including the establishment a distribution market operator and reforms to network connection and access arrangements.

In terms of how the AER undertakes its inquiry, we recommend that the EFA Guideline be reviewed in a holistic manner to provide more fit for purpose guidance on DER integration rather than establishing a stand-alone guidance document for DER integration. We consider the AER should be guided by a coherent network expenditure assessment framework that effectively addresses DER integration considerations alongside traditional energy supply expenditure, given the interdependency between distributed energy and more transitional energy supply arrangements.

Should you have any questions in relation to this submission, please contact Kurt Winter, Regulatory Strategy Manager, on [REDACTED]

Yours sincerely

[REDACTED]

Con Hristodoulidis

A/ General Manager, Energy Market Regulation

ATTACHMENT

Foundational Questions

Question i Is the AER assessment techniques outlined in the Expenditure Forecast Assessment Guideline (the EFA Guideline) sufficient to assess DER integration expenditure?

Question ii What form of guidance should the AER include to clarify how its assessment techniques apply to DER integration expenditure? For example, should we update the EFA Guideline to be more prescriptive, or only include principles to allow for greater flexibility in our assessment and information requirements as DER integration matures?

AGL does not consider that the EFA Guideline is sufficient to assess DER integration expenditure.

Since the AER's adoption of the EFA Guideline in November 2013, the energy industry has undergone and is continuing a substantial transition with the uptake in DER and the advent of new business models, such as orchestration, that seek to unlock the value of DER for the benefit of all electricity users. The integration of DER into the energy market system has become a key focus for the industry, as is evidenced by the Australian Energy Market Commission's (AEMC) 2019 Economic regulatory framework review³ that proposed a suite of actions and reforms to support DER integration. As the AEMC concluded in its Final Report, 'the potential benefits of efficient integration of DER for all customers are substantial and the timely development of a supportive regulatory framework is essential'.⁴ It is in this context that AGL welcomes the AER's Consultation Paper to ensure a fit-for-purpose DER integration expenditure assessment framework into the future.

We agree with the AER's assessment of why further guidance is required on DER integration expenditure, as elaborated in the Consultation Paper.

More broadly, we consider that the AER's network expenditure assessment framework needs to facilitate new operational modes for distribution networks to ensure that networks effectively facilitate the interaction of DER with the energy market system. Indeed, as the AEMC observed in its 2019 Economic regulatory framework review, Final Report:

[While] the core roles of networks in a high DER future are likely to remain the same as today [...] how they undertake this role could be different in a number of key respects. In particular, how the electricity distribution network is operated and the services provided by distribution network service providers could change. A high DER environment could mean that DNSPs need to alter aspects of their operation, from transporting electricity one way to being platforms for multiple services, facilitating electricity flows in multiple directions and facilitating efficient access for DER so that they can provide the greatest benefits to the system as a whole. This change is likely to have implications on aspects of the regulatory framework.⁵

³ See AEMC, Integrating distributed energy resources for the grid of the future, Economic regulatory framework review, 26 September 2019, available at <https://www.aemc.gov.au/sites/default/files/2019-09/Final%20report%20-%20ENERFR%202019%20-%20EPR0068.PDF>

⁴ Ibid, page ii.

⁵ Ibid, page v.



To support this change, we believe the EFA Guideline could be revised in a range of ways to improve the AER's assessment framework with respect to efficient DER integration, including:

1. Empowering the AER to undertake a more active role in assessing sampling and modelling to support regulatory expenditure proposals;
2. Building an options value into the assessment framework for traditional network solutions (augmentation and replacement expenditure solutions) as well as into non-network solutions once they are adopted;
3. Developing an assessment framework for DER visibility expenditure;
4. Developing a common approach methodology to valuing consumer exported electricity; and
5. Articulating DER integration expenditure categories to draw upon shared learning and guard against 'rail gauge' outcomes.

The AER's network expenditure assessment framework will also need to be cognizant and make 'no regrets' changes to the EFA guideline to avoid influencing the direction of the fundamental market design reforms currently on the horizon that may also work to reorient networks' operating modes, including:

- the establishment of a distribution market operator (**DMO**) and supporting communications infrastructure to enable co-optimisation of bidding from DER to support both network and wholesale markets; and
- reform to connection and access arrangements to better incentivize networks to support DER services and enable greater certainty for DER market participation (**connection, access and pricing**).

AGL has been engaging closely with recent industry consultations to advance these key reforms, including through the Distributed Energy Integration Program (**DEIP**) Access and Pricing Working Group and the Open Energy Networks (**OpEn**) consultations. We also encourage the AER to continue to participate in these processes and use the information to inform its inquiry.

We address each of these matters in more detail below, in response to the questions raised.

In terms of how the AER undertakes its inquiry, we recommend that the EFA Guideline be reviewed in a holistic manner to provide more fit for purpose guidance on DER integration rather than establishing a stand-alone guidance document for DER integration. We consider the AER should be guided by a coherent network expenditure assessment framework that effectively addresses DER integration considerations alongside traditional energy supply expenditure, given the interdependency between distributed energy and more transitional energy supply arrangements.



Question 1. Information provision

What information is reasonable and necessary in identifying and evidencing the impact of DER on the demand for standard control services and hence on maintaining the quality, reliability or security of supply of standard control services?

AGL considers that the EFA Guideline should be amended to contemplate data and information on localised demand and geographical factors, in addition to those factors already included. In our view, this information would assist in improving network businesses' analysis of DER related issues in their expenditure proposals. It would also assist the AER and industry, who would have more transparent information to assess whether a network issue is DER related as well as whether DER integration expenditure is justified.

In providing relevant information to the AER to support the AER's assessment of DER integration expenditure, we consider that network businesses should be required to provide information beyond the projected impact to the network in terms of demand for standard control services, to contemplate:

- the projected impact to the market (through DER export and DER participation in market); and
- the projected impact to customer value in potential lost exports.

We would also recommend the AER consider options to enable the provision of network data and information to the competitive market, including on network constraints, load at risk, and annual deferment value on the low voltage network. We consider that this would enable the market to better assess providing non-network standard control services.

Question 2. Options analysis

What range of options should DNSPs consider for DER related investments? Does the Regulatory Investment Test – Distribution provide the appropriate starting point for this analysis?

AGL agrees that the Regulatory Investment Test – Distribution (**RIT-D**) provides the appropriate starting point for analysing the range of options network businesses should consider for DER related investment. We understand that option analysis and options value is already built into the assessment framework for non-network solutions. However, we would recommend building an options value into the assessment framework for traditional network solutions as well as non-network solutions, given the increased risk associated with longer-life traditional network assets. This would mean that options analysis is undertaken with respect to augmentation and replacement expenditure solutions.

We also recommend that the RIT-D threshold be reduced from \$5M to \$50,000 for distribution network investments. This would substantially improve opportunities for the competitive market to provide more cost-effective solutions within network businesses' standard control services.



Question 3. Sampling and modelling

Electricity networks have utilised sampling and modelling techniques to forecast energy demand and consumption for decades. These processes have proven effective for large cohorts of consumers where diversified behaviours can be predicted with sufficient accuracy. Is it reasonable to assume that sampling and modelling techniques will play a part in developing dynamic models of the electricity networks?

AGL envisages that sampling and modelling will play an enduring role as network businesses develop dynamic models for the operation of their networks, including for example in the development of dynamic export operating envelopes. While we see value in continued sampling and modeling, it is important that these practices align with Australian Standards to mitigate the risk that network businesses' sampling does not accurately reflect what is occurring on a distribution network.

By way of example, in our own distributed energy fleet operations, we have also observed inherent risks associated with networks' modelling of cause and effect. Through AGL's trialling programs that draw upon customers' DER, including our South Australian Virtual Power Plant (**SA VPP**),⁶ we have been able to draw upon operational data to develop a range of important insights into the interaction of DER with the low voltage distribution network, including on voltage management. While network businesses' have frequently diagnosed sustained overvoltage issues as being caused by the increased uptake of solar, our studies have revealed that network businesses were already experiencing high voltage levels, suggesting that solar had minimal if any impact and that DER is therefore not the sole cause of the problem.

Accordingly, we would recommend the AER look to play a more active role in assessing networks' sampling and modelling to support regulatory expenditure proposals. To the extent possible, we consider that the AER should establish a regulatory assessment framework that incentivised the use of real data. Improving networks' sampling and data practices would ensure more robust regulatory expenditure proposals and may, in some cases, avert the need for infrastructure expenditure altogether.

We note that in some jurisdictions where there is a penetration of smart meters, there is an opportunity to establish real data benchmarks against which modeled results could be developed. For example, the Victorian Essential Services Commission's proposed reforms to the Victorian Distribution Code that would require network businesses to provide a certain degree of reporting on voltage could provide a useful benchmark against which to model expenditure proposals.

Alternatively, the AER's assessment framework could empower the AER to select an appropriate sample size of sites to assess expenditure proposals and ensure compliance with Australian Standards. We note, that the way in which sampling is currently undertaken to assess compliance with AS61000 can mean a very small sample size is utilized that may not provide the AER with the appropriate level of visibility on the magnitude of the overvoltage problems experienced by customers (both DER and non-DER). Improving networks' sampling and data practices would ensure more robust regulatory expenditure proposals and may, in some cases, avert the need for infrastructure expenditure altogether.

⁶ For further information regarding AGL's ARENA SA VPP program, including the two milestone reports published to date, please refer to <https://arena.gov.au/projects/agl-virtual-power-plant/>.



Question 4. Non-network options

Distributed energy resources are, by definition, located at the end of the electricity network. Typically networks have less visibility of this part of the network. What approaches or information is reasonable to assess whether DNSPs have considered purchasing the necessary information from metering or DER data providers rather than building their own assets and systems?

AGL considers that the AER should develop an assessment framework for DER visibility expenditure, that effectively weighs the costs associated with networks acquiring metering data from Metering Data Providers against the costs associated with networks establishing effective modelling systems to extrapolate sampled data.

While we note that in Victoria the penetration of smart meters enables networks businesses to readily acquire metering information, in other State we consider it may be appropriate to require that network businesses procure the necessary metering information so that they can accurately assess the system impacts of DER.

We also note that the AEMC has committed to commencing a review of competitive metering arrangement in December 2020, which could also impact upon the development of an appropriate assessment framework to determine efficient DER visibility expenditure.

Question 5. Policy and standards

The optimisation of DER can be improved through many different approaches. Factors such as tariff reform, connection standards, technical standards, energy efficiency standards, etc. can greatly impact the way that DER operates on the network and impact on network performance. How should these options be integrated with the development of network DER proposals?

AGL recognizes that the optimisation of DER can be improved through many different approaches.

AGL considers that reform should seeks to transition distribution networks' operating model towards the model envisaged by the AEMC as 'platforms for multiple services, facilitating electricity flows in multiple directions and facilitating efficient access for DER'. In our view, these reforms should be taken forward by market participants, and policy and regulatory makers, including through the current established industry consultations to address the establishment of the DMO model and relevant connection, access and pricing reforms.

Whilst the AER's network expenditure assessment framework will need to complement these market design reforms, the AER should be careful not to establish an assessment framework that pre-empts these reforms or that places networks businesses in the position of determining how different approaches to optimisation should be integrated. In our view, this approach risks creating detriment to DER asset owners and to non-DER asset owners by empowering the network to optimise the value of DER assets for benefit of networks alone (and without regard to the impact to customer and wholesale market value).

We acknowledge that the current regulatory framework enables networks to determine appropriate tariff structures, connection and access arrangements and technical standards (almost interchangeably) to ensure optimal network performance. However, going forward, in a future distribution market characterised by high DER penetration, it may be more appropriate that network performance is judged by how effectively networks facilitate the interaction of DER with the energy market system. We do not consider it appropriate that



networks seek to control DER assets through connection agreements and technical standards, thereby circumventing the opportunity for market-based solutions, such as orchestration and demand response, to the optimisation challenge that may deliver more efficient outcomes.

Question 6. Cost benefit analysis

Project justifications will require detailed analysis on the costs and benefits of each option. Many of these benefits may be external to the DNSP's cost base and may accrue directly to DER users. What level of analysis is required?

We acknowledge that in some instances, the benefits of particular expenditure proposals may be external to the network business' cost base and may for example accrue to the DER asset owner and/ or the broader customer base through the ability of DER assets to participate in broader energy markets. In the interests of establishing an assessment framework that fully accounts for the value of DER (and by extension the value of DER integration expenditure), we would encourage the AER to explore ways in which these external economic benefits could be valued.

Question 7. Customer Benefit

With DER being able to provide services across the electricity supply chain, how should DNSPs identify and value customer benefits? These benefits can include reliability outcomes, increased export potential, greater access to energy markets, access to network support services, etc. Should a common approach to valuing consumer exported electricity be established?

AGL supports the development of a common approach methodology to valuing consumer exported electricity. In our view, this would provide an important new metric to rebalance the AER's assessment framework from a consumption/ demand-based assessment towards one that also accounts for the role of DER in exporting and actively participating in the energy market system.

While we appreciate that different geographical locations may require different inputs in the application of such a methodology, as far as possible the methodology should establish an approach that leads to outcomes that are transparent on how customer exports and grid support services are valued (taking into account all relevant wholesale and network value pools associated with DER). In our view, this approach would provide greater confidence to the broader industry and enable useful economic analysis to further substantiate networks' DER integration expenditure proposals.

Question 8. Options value

Noting the technological rate of change and the typical asset life of 65 years of many network assets, it is important to test whether current research could provide a more efficient option in the near future. Should an assessment of emerging alternative approaches be a requirement for DER forecast expenditure? Should there be an 'options value' placed on this?

AGL considers that there may be value in the use of options value in network expenditure proposals so that they can better cater for non-network solutions. This would assist in mitigating the risks associated with

networks seeking to implement network approaches that have long asset life periods and may not be future-proofed (depending on whether they are consistent with common market platforms and technical standards). Establishing an options value could also be used to create a more supportive regulatory environment for non-network solutions by enabling the risks associated with those non-network solutions to be borne by everyone (i.e. once a network has determined to adopt a non-network solution, the option value could entail a cost envelope, mitigating the risk of increased cost during a regulatory period).

Question 9. Shared learning and systems

The development of common platforms, communication standards and shared systems may reduce the overall cost and complexity of facilitating DER. Should DNSPs need to show how they have considered options that leverage shared learning, common standards and common systems to provide efficient solutions, and that they have consulted and implemented learnings from prior works and trials across the NEM?

Question 10. Rail gauge outcomes

As a corollary to the above question, it will be increasingly important for the industry to work together to provide customer outcomes that are consistent across the NEM (or with international standards if applicable). What approaches or information is reasonable to show that any DNSP-specific communication protocols, interfaces, connection standards, etc. will not lead to increased cost and complexity for consumers and industry providers?

AGL recognises the substantial efficiency gains associated with the development of common platforms, communications and shared systems which would reduce the overall cost and complexity of facilitating DER.

This issue is particularly relevant to the market design reform associated with the DMO model and supporting communications infrastructure that will enable co-optimisation of bidding from DERs to support both network and wholesale markets. AGL believes there is substantial risk in networks seeking to implement divergent approaches to information and communications technology (ICT) infrastructure in this scenario. We also believe the development of divergent dynamic export operating envelopes will also generate substantial cost on consumers not only through networks' regulatory proposals but also through the broader industry's efforts to align with divergent network approaches.

Accordingly, we would recommend that the AER articulate additional specific categories of DER integration expenditure to enable certain categories of spending to be subject to benchmarking. This would enable the AER to effectively assess the materiality of any proposed expenditure in these unique categories and determine whether a proposed approach may lead to any 'rail gauge' issues and/or risks creating stranded assets. In our view, the following DER integration expenditure categories could be useful:

- ICT expenditure; and
- Dynamic export operating envelopes.

We would also recommend that the AER's assessment of dynamic export operating envelopes be informed by an established customer export value methodology that appropriately values customer impacts.