Ref: 20200120TG:CB

17 January 2020

Mr Arek Gulbenkoglu
A/General Manager, Distribution
Australian Energy Regulator
GPO Box 520
Melbourne VIC 3001

Dear Arek,

Essential Energy submission to consultation paper on assessing DER integration expenditure

Essential Energy welcomes the opportunity to provide comments on the Australian Energy Regulator (AER) consultation paper on its approach to assessing expenditure related to the integration of distributed energy resources (DER). As the penetration of DER continues to increase and customer preferences and expectations change, this type of expenditure will be increasingly important for distribution networks.

It is important to recognise that expenditure related to DER integration is different from traditional network expenditure in a number of ways. This type of expenditure is relatively new and will require consideration of different potential options to meet identified needs. Further, this type of investment may include both capital and operational expenditure. Finally, customer preferences will need to be understood so that investments reflect the services that customers want from their distribution network service provider (DNSP) and at a cost that they are willing to pay.

Given these important differences, the approach taken by the AER in assessing expenditure proposals on DER-related expenditure will need to be carefully considered. The inherent uncertainty associated with this expenditure means that prescribed and detailed guidance may not be appropriate but principles that may guide the AER's assessment may be more useful. It will also be necessary to learn from experience dynamically as various networks will deal with DER integration issues at different times.

In addition, spending in this area is also subject to a large degree of uncertainty. Firstly, as noted in the consultation paper, the technologies involved are changing at a rapid pace both in terms of cost and technical capabilities. Secondly, there is a large degree of uncertainty as to what the future regulatory arrangements will look like and there are a number of complementary processes underway that are examining these issues. The AER approach to assessing DER integration expenditure will need to be flexible and able to accommodate a range of possible future states.

Our submission, focusing on the specific issues identified in the consultation paper, is attached to this letter. If you have any questions on the submission, please contact Therese Grace, Regulatory Strategy Manager on [redacted] or [redacted]

Yours sincerely

[redacted]

Chantelle Bramley
General Manager, Strategy, Regulation and Corporate Affairs

Essential Energy submission to consultation on assessing DER integration expenditure

DER integration expenditure is different to traditional network investment

The expenditure required to effectively integrate DER with distribution networks and the wider energy system is a relatively new development. It will continue to grow in importance as the penetration of DER continues to increase, as the costs of DER are expected to fall and the technical capabilities of these resources improve. Effective and efficient integration of DER into the energy system has the potential to reduce customer bills, provide vital system security and reliability services, and reduce total system costs to the benefit of all energy consumers.

As DER integration issues are relatively new, DNSPs have limited experience to draw from in putting together appropriate expenditure programs. In addition, the penetration of DER in Australia is among the highest in the world and therefore there is limited international experience of this type of expenditure - there are no established best practices for DNSPs to use as an example to guide this decision making.

The challenges and issues facing distribution networks across the National Electricity Market (NEM) are not uniform and are occurring at different times. Therefore, there is no 'one size fits all' approach that Australian DNSPs can use in assessing their DER integration expenditure needs.

As the industry transitions to a higher DER penetration future, there will be an inevitable 'learning by doing'. Essential Energy welcomes the consultative approach taken by the AER in undertaking this public consultation on its approach to assessing DER integration expenditure. However, this consultation and engagement will need to be on an ongoing basis. The industry will need to work collaboratively to share and draw lessons from DNSPs that are facing DER integration issues first. This continual knowledge sharing should aim to identify practices that the AER, consumer groups and networks consider to be appropriate and consistent with the economic regulatory framework of the NEM.

Technology is changing rapidly, adding to uncertainty

As noted in the consultation paper, the pace of technological change is rapid. The cost of DER technologies has decreased substantially, and this trend is expected to continue. With falling technology costs, the types of DER being installed will change over time. Currently most DER installations are 'passive' in that they cannot adjust to conditions, for example, rooftop solar PV. As battery costs fall the projected uptake will rise. This means that an increasing proportion of DER will be able to be dynamically controlled and react to conditions such as a wholesale price spike or a Lack of Reserve situation.

Dynamically controllable DER provides opportunities, such as contribution to system security and reliability, and the ability to moderate wholesale prices - but it also creates challenges. For example, if large amounts of DER respond to the same price signal simultaneously this may create local voltage and other technical issues. Careful management of DER operations will therefore be needed, requiring significant network investment over time.

Despite knowing in broad terms what the trends in DER uptake will be, it is difficult at this stage to predict where DER will be located and when different DNSPs will reach a 'tipping point', where large amounts of DER-related expenditure will be required in the future. It is therefore important that all distribution networks begin planning for a higher DER penetration future and make incremental investments now to gradually build the skills and capabilities that are likely to be required in the future. The longer-term benefits of building the required capabilities may be difficult to fully value in the short term but will be an important part of the transition to a higher DER future.

DER integration expenditure has a number of different but closely related elements, and as such blurs the line between operating and capital expenditure. For example, in order to improve network monitoring and visibility, the following types of expenditure are likely to be required:

- investment in new IT systems and processes;
- operating expenditure to procure data and services from third party providers; and
- capital expenditure on network monitoring equipment and devices.

These different expenditures must be coordinated and contribute to a consistent strategy to deal with immediate DER integration issues as well as preparing for the future. These expenditure programs will be closely inter-related and therefore the traditional approach of assessing capital and operating expenditure forecasts in isolation may not be appropriate. Essential Energy notes that in evaluating a recent expenditure proposal related to DER integration, a holistic assessment of all related expenditure was used by the AER and this should be continued going forward.

A more dynamic distribution network may also be a more efficient solution to minimising total system costs in the longer term. For example, there is much discussion currently on the need for additional transmission and generation investment to meet long-term system security and reliability needs. The value of a more dynamic use of DER to provide security services such as ancillary services and help maintain reliability through demand response is very difficult to quantify at this point in time but may add significant value to the electricity system. To achieve these potentially large benefits DNSPs will have to begin the process of improving their capability to monitor and dynamically control the network in the short term.

The potential for long-term benefits to be derived from investments made now poses a challenge when assessing DER integration expenditure. The full value of these investments may not be realised immediately, and the full quantum of benefits is subject to uncertainty. However, the AER approach to assessing DER integration expenditure should be cognisant of the potential future benefits and the future role of DER in the electricity system.

Customer preferences will be central to DER integration

Network expenditure to facilitate greater and more efficient integration of DER is different from traditional network expenditure as it will impact directly on investment decisions made by our customers. The ability to export excess solar generation to the grid will impact on the return on investment for customers and the economics of investing in DER. Therefore, customer preferences will need to be central to all network investment decisions with respect to DER.

It should be noted, however, that not all customers are in a position to invest in DER and the distribution of the costs and benefits of DER integration expenditure will need to be carefully considered.

It will be important for distribution networks to consult widely and gain a clear understanding of the preferences of our diverse customer base when designing a DER integration strategy and expenditure forecast. In assessing DER integration expenditure, the AER should consider the extent to which the DNSP has engaged with stakeholders in preparing its proposed expenditure forecast.

Interaction with other work

The consultation paper has been published amid a large number of current, planned and anticipated regulatory change processes in this area. It is important that the AER take account of these other processes and make sure that the resulting regulatory changes are coherent, appropriately timed and sequenced, and support each other to realise benefits for customers over the long term.

Essential Energy notes that this consultation paper was recommended by the Australian Energy Market Commission (AEMC) in its *Integrating distributed energy resources for the grid of the future* final report. This work is an important first step, and Essential Energy is supportive of the continued implementation of the AEMC's recommended work program.

Through the Open Energy Networks Project, the Australian Energy Market Operator (AEMO) and Energy Networks Australia (ENA) have identified a number of 'no regrets' capabilities, that distribution networks will need to develop in order to address the challenges and take advantage of the opportunities associated with higher DER uptake. These required capabilities include:

- increased monitoring of low voltage networks;
- defining dynamic 'operating envelopes' that accurately reflect network operating constraints;
- establishing standardised methods to communicate technical information to interested parties; and
- establishing new distribution-level markets for services that DER can provide.

It is clear from the above list, that the role of distribution network is changing, and investment will be required to make sure that distribution networks have the right information and skills to facilitate the transition, from one-way energy flows to a transactional platform for energy services. The approach taken by the AER in assessing DER integration expenditure should take account of these identified required capabilities and ensure that the regulatory framework can allow DNSPs to make investments to prepare for the future.

The regulatory framework is not static and will need to evolve as technology and consumer preferences change. One area that is currently being considered is distribution access and charging arrangements. Essential Energy notes that this work is currently being progressed through the ARENA Distributed Energy Integration Program (DEIP).

Changes to access and charging arrangements may help DNSPs to justify DER integration expenditure and to value the associated benefits. This is because it will allow DNSPs to design network tariffs that reflect the true cost of providing DER related services to customers. It will also provide certainty regarding what services DNSPs provide on a regulated basis For example, the introduction of some form of 'firm' distribution access rights will require DNSPs to provide a defined standard of service to generators, similar to the current reliability standards for load. The AER should monitor work in this area and consider how changes to these arrangements may impact on how networks will justify DER integration business cases and, in turn, how the AER will assess this expenditure.

Finally, the Energy Security Board (ESB) is currently considering whether changes to the NEM market design are required to ensure that the market is fit-for-purpose over the longer term as part of its post-2025 review. The AER approach to assessing DER integration expenditure should be consistent with any proposed changes to distribution network arrangements arising from this work.