PO Box 576
Crows Nest NSW 1585

Tel: +61 2 9431 8680

www.internationalmicrogrids.org

17 January 2020

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

Submitted via email: AERinquiry@aer.gov.au

Dear Mr Gulbenkoglu

RE: Response to Assessing DER Integration Expenditure

Thank you for the opportunity to comment on the Australian Energy Regulator's Assessing DER Integration Expenditure paper published on 19 November 2019. This letter outlines a submission from the International Microgrid Association.

The Australian Energy Regulator (AER) requested input from industry on how to best provide guidance to Distributor Network Service Providers (DSNPs) on the considerations they should undertake to demonstrate that expenditure relating to greater DER penetration are prudent and efficient.

This submission identifies the information and other elements that need to be considered in developing guidelines to assess requests for operational and capital expenditure relating to integration of DERs into existing networks. It is understood that feedback received on the Issues Paper will inform the development of the AER's approach to assessing DER expenditure proposals.

About International Microgrid Association

The International Microgrid Association's vision is to unite organisations who are committed to building global microgrid capability by integrating emerging energy and information technologies to generate, distribute, and consume energy more efficiently, cleanly, and cost-effectively.

Our members are representatives from the global microgrid value chain, including microgrid designers, developers, utilities, technology providers, manufacturers, capital providers, project developers, research organisations and governments.

Overview

Across the globe, the energy industry is witnessing increased penetration of distributed generation resources, such as rooftop solar PV, energy storage, and microgrids – which are small-scale versions of a centralised electricity system.

For most of the past century, electricity systems have experienced gradual change. Electricity has flowed in one direction from centralised utility scale fossil fuelled generation to consumers. Electricity systems were predominantly comprised of long lived and expensive generation and network assets. However, over the past 10 years, those same electricity systems have been forced to confront a transformational period of change. The widespread adoption of distributed energy resources (DER)

such as rooftop solar PV and small scale energy storage and energy-efficiency efforts have led to declining asset utilization rates. This has forced the traditional electricity industry to re-evaluate the way it manages and invests in the electricity network.

Given the anticipated growth rate of DER, within the next five years, whole regions of a traditional electricity system will need to be transformed such that they are capable of operating securely, reliably and efficiently with conceivably 100% of instantaneous demand met by DERs. While central generation is expected to continue to provide supply at higher voltage transmission levels, DERs located at the opposite end of the power lines, and even behind electric meters will more than provide for the energy needs of distribution connected residential customers. Given the need to also maintain the whole system with its technical operating limitations (e.g. voltage and frequency), this presents monumental technical challenges for systems that were designed and built for an entirely different purpose.

Distributor Network Service Provider (DNSP) Expenditure - Background

The various ongoing policy reviews and structural changes occurring in relation to energy transformation, combined with the rapid pace of change creates a high level of risk to consumers if expenditure is excessive, premature, overly late or not aligned with overall system benefits.

Despite some of the highest rates of DER penetration in the world, DER integration expenditure for grid augmentation appears to be small when viewed as an overall proportion of DNSP expense. This may be because expenses are not recorded in such an identifiable way, are captured as other expense types, or because networks are taking protective actions such as limiting the hosted DER capacity on their network. These restrictions however will become less desirable as DER uptake and consumer expectations continue to grow. The IMA anticipates that DNSPs will require additional funding over the coming years to facilitate effective and efficient DER integration. The timing and management of DER deployment should be optimised against system stability, cost and function.

The AER is responsible for administering a regulatory determination process where the Distributor Network Service Provider (DNSP) provides a five-year forecast of its required revenue that it seeks to recover from its customer. This operational and capital expenditure is assessed to determine if they reasonably reflect the expenditure criteria with regard to the expenditure factors specified in the National Electricity Rules. Where the AER is satisfied that the DNSP's forecast reasonably reflect the criteria, the forecast is accepted. Currently, DNSP's forecast DER integration expenditure is assessed using the same approach. Multiple tools and methods exist to assess forecast expenditure including benchmarking, trending, modelling, and engineering reviews. Large capital investment projects are assessed using the Regulatory Investment Test – Distribution test which establishes the processes and criteria for DNSPs to consider before investment decisions are made, ensuring that network and non-network solutions are identified and assessed. Network tariffs must also be considered with the objective of improving cost reflectivity and driving consumer behaviour through efficient price signals.

The IMA considers that the integration and deployment of DER, microgrids, stand alone power systems (and other new technology) is an important option that should be considered in large capital investment decisions and supports assessment methodology that demonstrates system, market and consumer benefits.

DNSP Expenditure - Proposed Approach

The IMA is supportive of the AER developing a guidance paper that provides suitable and achievable parameters for the assessment of DER integration expenditure that recognises the importance of long term, deliberate system outcomes. The IMA supports the guidance paper seeking to achieve the following objectives:

- Promoting **consistency, transparency and predictability** in the regulatory and expenditure assessment processes

- **Flexible, technology neutral and adaptable/dynamic** to help enable future scenarios, technologies and trends
- Considers **whole of system benefit** using standardised, standardised metrics that will assist decision makers to compare the relative financial, system and social benefits of microgrids compared to other technologies;
- **Does not add unnecessary or onerous complexity** to existing regulatory processes or initiatives being developed by other agencies

The application of the existing Expenditure Forecast Assessment Guideline is a sound basis for assessing DER integration expenditure. The proposal of additional guidelines being developed to supplement this is supported, where the focus is on developing general principles that allow for flexibility in assessing expenditure requests. In particular, these principles should emphasise:

- Technology neutral terminology allowing current and future technology types to be considered and assessed;
- How the DER integration solution contributes to or reduces overall whole of system cost;
- How the DER integration solution meets customer needs (not just the technical needs of the DNSP) ensuring the end user customer benefits from the expense through better, more flexible product offerings; and
- Demonstration of standard and measurable cost/benefit outcomes.

The consultation paper specifically highlights the following areas for industry to provide comment on:

Question	IMA Response
Question 1 Information Provision	- Important that AER understands and forms its own independent view and expertise on DER functionality. - DNSP must provide evidence that network integration expenditure is required including demand forecasts and network constraints to validate the need for network augmentation. - If network augmentation is required, it must be determined to be efficient.
Question 2 Options Analysis	- Support the RIT-D as being appropriate starting point for network augmentation analysis. - The AER should also provide published guidelines as to how the network and customer benefits of DER should be calculated. - Different options for the dispatch of DER for system operation will need to be considered.
Question 3 Sampling and Modelling	- All components of the system must be represented in the modelling including DER. It will therefore be important for the AER to access knowledge and experience of DER behind the meter including forecast penetration rates from sources other than a DNP. As data for DER modelling and verification purposes must be collected AER should ensure it has sufficient information gathering powers.
Question 4 Non-network options	- To facilitate consideration of non-network solutions such as standalone power systems there should be obligations on DNPs to share data and information to allow for adequate assessment of future DER deployment by non-network providers. - Further, DNPs should have obligations to utilise and pay for third party DER services when certain principles are met. For example, if DER power control and reliability services are evidenced to be cost effective than network solutions.
Question 5 Policy and Standards	- Agree that retail tariffs, connection standards, technical standards, energy efficiency standards impact DER uptake and network operation and performance. Other factors include reasonable network export conditions (i.e.

Question	IMA Response
	electricity being exported into the grid from DER), choice of network services, reliable transport services at a reasonable cost and eligibility criteria, localised network price signals to enable network users to assess the prospective DER value to networks, wholesale and ancillary markets, transparent, timely and accurate information regarding network constraints especially at the local low voltage level. - It is expected that the AER will take into account these considerations when assessing DER integration capex and opex via the existing regulatory framework, to the extent it is permitted to so.
Question 6 Cost benefit analysis	- Network augmentation must be consistent with NEM objectives. - Must meet regulatory tests under NEM rules such as RIT-D. - DNSP must be compelled to consider alternatives to network augmentation such as SPS. - It is expected DER will increasingly have capabilities for reactive power control and reliability services. AER must consider the cost and benefits of these as an alternative to DNSP augmentation expenditure.
Question 7 Customer Benefit	- If customers face efficient price signals that reflect the true cost of grid supply then customers will form their own view on the economics of investing in DER or not. - Payment or charges for DER services should be priced commensurate to the market benefit or loss that it brings at the time and location the benefit or loss eventuates. - Wherever possible DER users should be incentivised to utilise their excess generation or make new investments to increase load during low demand periods (such as charging electric vehicles) or reduce their load at peak periods or export into the network rather than be subject to excess network charges or export limitations. Incentives do not however mean subsidies. DER incentives could take the form of discount network tariffs when network augmentation is deferred as a result of that investment. - Maximising the long-term interests of consumers is not just about implementing changes that solely benefit some customers. For example, if DER owner actions result in higher electricity network costs on customers who do not own DER then regulatory intervention may be warranted.
Question 8 Options Value	- Assessment of emerging alternative approaches to network investment should be a principle for DNSP and AER consideration when assessing a requirement for DER forecast expenditure.
Question 9 Shared learning and systems	- DNSPs should be required to demonstrate how they have taken steps to encourage the uptake of DER on their networks. This should include obligations to share and provide information. For example, publishing details of network constraints and the network cost of ameliorating those constraints as a means of encouraging DER uptake. In addition, DNSPs should be required to maintain and publish DER registers in situations where a DNSP has contracted for the provision of DER services such as power control and reliability services to provide transparency on the uptake of such services by DNSPs.
Question 10 Rail gauge outcomes	- Jurisdictional requirements should be harmonised and standardised across the NEM to avoid DER barriers to entry wherever possible. Harmonisation should include communication standards, metering requirements, B2B systems, technical rules, connection standards and prudential requirements.

The IMA looks forward to reviewing the AERs draft guidance to the existing Expenditure Forecast Assessment Guideline in March 2020.

If you have any questions or would like to discuss any of these matters further, please do not hesitate to contact me.

Yours sincerely

[redacted]

Terry Mohn
Chair

International Microgrid Association
Level 1, 191 St Georges Terrace Perth WA 6000 | PO Box 576, Crows Nest, NSW 1585|Australia
Tel: +61 (0) 2 9431 8680 Mob: [redacted]
E: [redacted]
W: www.internationalmicrogrids.org