Assessing DER Integration Expenditure

Evoenergy submission to AER in response to the Consultation Paper

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evoenergy

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1. Introduction

Evoenergy welcomes the opportunity to comment on the Australian Energy Regulator's (AER's) November 2019 "Consultation paper assessing Distributed Energy Resources (DER) integration expenditure'. Evoenergy supports the key messages of the Energy Networks Australia (ENA) submission and makes this submission to emphasise a number of additional points.

Evoenergy agrees with the AER that there is scope for clarification of the AER's approach to the assessment of DER driven network investments. Clarification of the approach will improve transparency, consistency and predictability in the AER decision-making and improve outcomes for customers.

Evoenergy suggests expansion of the existing assessment processes outlined in the Expenditure Forecasting Assessment (EFA) Guideline for electricity distribution to include principles that apply specifically to DNSP proposals for expenditure to integrate DER investment. Evoenergy supports the addition of DER integration principles to the Expenditure Forecast Assessment Guideline (EFA Guideline) rather than development of a separate guideline.

The use of specific DER related principles will provide a broader assessment framework for the AER to consider Distributor Network Service Providers' (DNSPs) DER related expenditures. Evoenergy considers that appropriate DNSP expenditure will facilitate efficient utilisation of DNSP networks and customer investments in technologies related to DER such as photo-voltaic (PV) systems, electricity storage batteries and electric vehicles.

Section 2 of this submission explains why Evoenergy prefers the principles approach over the prescriptive approach to assessing DER integration expenditure.

Section 3 of this submission contains Evoenergy's proposed principles that the AER may consider adopting to assess DER integration expenditure by DNSPs.

Section 4 of this submission contains Evoenergy's response to the specific questions raised in the consultation paper.

2. AER's approach to assessing DER integration expenditure

In deciding between principles-based regulation and prescriptive regulations[1], Evoenergy prefers that the AER take a principles-based approach to the assessment of DNSP's DER integration projects. New DER integration assessment principles would complement the existing quantitative methodologies outlined in the EFA Guideline that the AER use to assess all DNSP expenditure proposals.

[1] AER (Nov 2019) "Consultation Paper – Assessing DER integration expenditure" p.5.

The inclusion of DER principles will keep the EFA Guideline relevant during this time of rapidly changing technologies and avoid compliance costs for customers that can arise from prescriptive approaches to regulation as noted by the AER.[2] A prescriptive approach would be inappropriate for assessing DNSP expenditure in DER related expenditure due to the wide range of potential integration solutions, the rapid changes to technologies and cost as well as the different levels of DER penetration and impacts on networks across jurisdictions. A prescriptive assessment approach will not have the flexibility to assess the varied approaches required in different locations at different points in time and would rapidly become out dated.

Updating the EFA Guideline to include specific principles for assessing DER integration investment, would be preferable to the AER developing a supplementary DER expenditure guidance paper.[3] The addition of principles is a relatively simple change that does not justify a new guideline. Retaining the DER principles within the EFA Guideline will prevent further proliferation of subsidiary guidelines for different expenditure types and the risk of developing contradictions as complexity increases.

Evoenergy proposes a number of principles that are relevant to the assessment of DER integration expenditure for both broad-scale and smaller-scale, targeted projects. The Regulatory Investment Test – Distribution (RIT-D) assessment will remain an important contribution to the AER's quantitative evaluation of network investments that have expected costs over the $6 million threshold.[4] DNSPs will also have small-scale DER integration proposals that resolve local network constraints and have benefits beyond those included in net present value assessments. The key reasons for including DER integration investment principles within the EFA Guideline are to provide additional guidance to DNSPs' proposals and broaden the scope of the AER's assessment for DER integration investments. This will be particularly beneficial for projects:

- with difficult to quantify benefits;
- projects with expenditures across different categories of capex and projects with trade-offs between capital and operating expenditure;
- smaller tactical projects; and
- development of DNSPs' DER integration programs.

[2] AER (Nov 2019) Op. cit. p.17.

[3] AER (Nov 2019) Op. cit. p.5, 17-19.

[4] AER (Dec 2018) Application Guidelines Regulatory Investment Test for Distribution p.11.

3. Proposed principles

Evoenergy proposes a number of principles for the AER's consideration in assessing DER integration investment put forward by DNSPs in regulatory proposals. The AER would outline in its decisions how the consideration of principles contributed to the AER's decision to accept or reject a DER integration expenditure. This will provide transparency of the AER's decision-making framework for assessing DER integration expenditure.

Below are five suggested principles that Evoenergy considers relevant to the AER's assessment for DER integration expenditure.

3.1 Depth of analysis for justification of a project is commensurate with the level of expenditure

The level of detail required to demonstrate the prudency and efficiency of the project should be commensurate with the level of expenditure proposed. Evoenergy supports net positive market benefits being the primary driver and method of assessment of DER integration expenditure.[5]

3.2 Consideration of policy driving the need for expenditure

Changes in both federal and jurisdictional government policies and regulations do impact the rate of DER uptake and hence the timing of DNSP investment in DER integration. Consideration by the AER of government policies that will apply to the future regulatory control periods and that promote investment in DER will facilitate assessment of DNSP expenditure proposals. The AER should have consideration of the jurisdictional government's policy outlook for forthcoming regulatory control periods when assessing the prudency of any proposed DER integration expenditure.

3.3 Alignment with industry development path

DNSPs are submitting proposals for DER integration expenditure at a time when the pathways for transition of the energy industry to lower carbon emissions are continuing to develop. The stages of transition of the industry, the DNSP and its customers, along the development pathways are relevant to the AER's assessment of DNSP proposals.

Significant work has been undertaken by both local and international bodies to understand the credible development pathways for the operation of an electricity system in an environment with significant levels of DER investment. Much of this work also includes macro-scale cost benefit analyses (CBAs) that can inform the appropriateness of the smaller 'no regret' investments required to be undertaken to enable the industry to transition. The AER should consider work, such as the Open Energy Networks (OpEN) process by the ENA and Australian Energy Market Operator (AEMO), in assessing any proposed DER integration expenditure.

[5] There may be circumstances as noted in the NER clause 5.17.1 (b) where the net economic benefits are negative but the identified need requires reliability corrective action.

3.4 The role of customer engagement in developing and supporting proposed expenditure

The preferences of DNSP customers who are funding the DNSP investment is a relevant consideration for the AER's decision-making. It is not clear how the AER assesses customer preferences alongside econometric modelling of the net benefits of proposed expenditures.

Customer support for DER integration proposals is important for proposals with business cases that do not generate strong positive benefits, where benefits are not readily quantifiable, or where there is uncertainty in the timing of the investment.

3.5 Recognition of the enabling nature of DER integration expenditure

DNSP's DER integration expenditure typically facilitates the development of competitive markets in the DER industry. For example, investment in an Information Technology integration platform to support interface with third party service provides may be initially proposed to support a single demand management project or provider. This investment is likely to have an enabling effect, removing barriers of entry for other demand management providers and developing economies of scale for providers to expand into other locations. While the value of this 'enabling' effect is not readily quantifiable, it is worthy of consideration.

4. Example of principles applied to the Ginninderry development

The Ginninderry development is a new estate development within the Evoenergy network that has a strong focus on DER investment, driven by local jurisdictional policy and customer preferences. The Ginninderry development is part of an emerging trend of very high DER penetration land developments in the ACT. It provides an example of DER integration expenditure that could be assessed using the principles- based approach and could be applied to other sites similar to Ginninderry.

The Ginninderry development is a joint venture between the ACT Suburban Land Agency and Riverview Developments. The first stage of land releases are in the suburb of Strathnairn. The development is expected to accommodate a population of approximately 30,000 within an estimated 11,500 dwellings plus shopping centres, schools and community facilities. Maximum demand in the Strathnairn suburb is forecast to increase to at least 14.7 MVA by 2026.

The developers have stipulated that housing developments are required to meet a range of sustainability objectives. For example, the energy efficiency rating for all homes is a minimum of 6 stars, which is consistent with ACT Planning requirements. At Ginninderry, every home will be required to install a PV system, a hybrid invertor capable to connecting to energy storage batteries and a Demand Management System (DMS) according to

housing design guidelines.[6] The development is referred to in the ACT Government's Climate Change Strategy 2019-25[7] as an example of a solar suburb innovation in the housing development sector.

The AER accepted Evoenergy's regulatory proposal for expenditure in 2019 for Strathnairn, which was to defer the construction of a permanent Strathnairn Substation (and extend a feeder instead) in response to forecast high uptake of PV and batteries. The AER also accepted Evoenergy's proposal to increase opex to support demand management activities in Strathnairn. Evoenergy is planning to make incremental investment in both specific local network infrastructure (Online Tap Changer (OLTC) based LV voltage regulation), as well as proposing incentivising increased residential 'behind the meter' storage in combination with cost reflective tariffs.

Evoenergy considers that for localised suburban developments, which involve relatively small DNSP expenditure like Ginninderry, a basic CBA[8] and assessment against a pre-defined set of principles would be the most appropriate approach for the AER to assess a DNSP's expenditure plans for prudency and efficiency. Where appropriate, information from studies undertaken by other DNSPs or as part of industry-wide projects (such as the OpEN initiative), may also be used to support investment in small-scale DER integration projects.

For similar small-scale expenditures, Evoenergy considers that a prescriptive assessment approach is not required to assess the prudency and efficiency of investment. A requirement to conduct a full market benefit based CBA will add material costs that are disproportionate to the size of the proposed investment, and would not be in the best interests of consumers.

Table 1 below sets out the application of the proposed principles to the Ginninderry example.

Table 1. Example of the application of principles to Ginninderry

Proposed Principle	**Application to Ginninderry**
Depth of analysis for justification of a project is commensurate with the level of expenditure	Small-scale DNSP investment of less than $500k. Basic CBA or business case required and description of non-quantifiable benefits.

[6] https://ginninderry.com/wp-content/uploads/2019/04/GIN_42472_Ginninderry_Design_Guidelines.pdf p.29-32

[7] ACT Government (2019) ACT Climate Change Strategy 2019-2025 p.89.

[8] AER (Nov 2013) Expenditure Forecast Assessment Guideline for Electricity Distribution p.14.

Proposed Principle	Application to Ginninderry
Consideration of policy driving the need for expenditure	ACT Government (2019) ACT Climate Change Strategy 2019-2025 objective of 100% net zero emissions by 2045.
Alignment with industry development path	Aligns with the OpEN's 'no regret' actions, using storage resources to respond to basic network constraints.
The role of customer engagement in developing and supporting proposed expenditure	Liaison with the developer has informed the proposed approach, with the demographic moving into the development keenly focused on enabling a new low carbon emissions suburb.
Recognition of the enabling nature of DER integration expenditure	Investment to be made in infrastructure to enable network constraints to be identified and dispatch of DER, will enable the use of other DER resources for network support.

AER's consideration of these principles would facilitate a broader analysis by assessing the appropriateness of the expenditure in the context of the size of the expenditure, government policy objectives, the trajectory of industry development, customer preferences and promoting development of DER related industries.

5. Responses to questions

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

Although the key categories of expenditure in the EFA Guideline are still relevant to the assessment of DER integration expenditure, there is an opportunity for the AER to update its EFA Guideline to assess expenditure in a more holistic manor, considering the interaction between expenditure categories. The AER identified that the assessment of each expenditure category separately creates difficulties for assessing DER integration projects which may cross a number of cost categories such as augmentation capital, non-network capital and operational expenditure.[9]

DNSPs have a greater opportunity through DER integration projects to make trade-offs in expenditure across categories to deliver overall reductions in expenditure that can be passed on to customers.[10] It is important that the EFA Guideline is updated to recognise cross category trade-offs so that DNSPs have confidence that investment in these proposals will be considered appropriately in order to enable the benefits to be realised.

Question ii – What form of guidance should we include to clarify how our 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?

Evoenergy would welcome the inclusion of principles in the EFA Guideline that will inform DNSPs about the approach the AER will take in assessing future DER integration expenditure. We consider that in the context of rapid transition across the energy system and increasing interaction between expenditure categories, principles are the most useful approach to improve the assessment of DER integration expenditure.

Evoenergy does not support a prescriptive approach to assessment of DER integration investments because it reduces flexibility in applying different assessment techniques depending on the circumstances of the identified need and potential solutions. This could limit DNSPs approach to innovation.

[9] AER (Nov 2019) "Consultation Paper – Assessing DER integration expenditure" p. 14-16.

[10] the substitution possibilities between operating and capital expenditure is an expenditure factor in the NER 6.5.6 (e) (7) for opex and 6.5.7 (e)(7) for capex.

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?

Evoenergy considers that a reasonable requirement for proposed projects is that they maximise the net economic benefit (or minimise the net economic cost) across the National Electricity Market (NEM) in order for the AER to approve the project.[11] Given that there is a wide range in the levels of expenditure for DER integration, the level of information that is required to demonstrate that market benefits exist should be proportional to the size of the investment.

Evoenergy also considers that approval by the AER of DER integration proposals should not be solely dependent on the presentation of high quality historic cost and benefit data. As many DER integration projects are at the preliminary stage of development and do not have a history of known cost or benefit data over time. For example, a proposed investment project to increase the visibility of network utilisation would typically use evidence based on statistical samples, extrapolation of available data or translation of results from other national and international jurisdictions.

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?

In contrast to other RIT-D projects, there is a wide variety of DER integration network solutions, across different expenditure categories and levels of costs. Flexibility in how different projects and elements are assessed should be retained. The extent of information and analysis required for assessment should be commensurate with the cost of the proposal

For proposals with significant expenditures, the RIT-D approach of identification of the option which maximises the economic benefit to all those who produce, consume and transport electricity in the NEM is a reasonable approach to apply in assessing DER integration expenditure. The RIT-D Guideline includes consumer engagement processes.

For relatively inexpensive and straightforward DER integration investments, option analysis would not be required to the same level and projects based on positive CBA or market benefit tests should be sufficient. For projects with low CBA or highly uncertain values, proposals that meet principles will assist in providing positive results to assessments.

[11] AER (Dec 2018) “Applicable guidelines Regulatory investment test for distribution” p. 23.

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 affective 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?

DNSPs balance their investment in network monitoring equipment that delivers key measurement data against the ongoing use of sampling and modelling to estimate network performance. Over time the balance is likely to change as more evidence from the trials becomes available.

Sampling and modelling have a role to play in forecasting energy demand to inform business strategy and the development of DER integration investment plans. The exact role of sampling and modelling in delivering dynamic network services, such as real-time customer communications, is yet to be determined. It is likely that in areas where DER penetrations are low, the use of sampling and modelling will remain, especially in informing the point at which alternative energy flow strategies may be required to be employed. However reliance on sampling and modelling to forecast utilisation would be less appropriate in locations where there is significant reliance on DER investments and high degrees or accuracy are important to manage the network.

We would expect the AER to have regard to the results from the range of innovation projects occurring nationally in this area as those results become available. The AER should accept DNSP use of this data as evidence in assessing the likely performance of any future approach to DER management.

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?

The AER may consider the following aspects when reviewing a DNSP's use of third party data: the maturity of the metering data market, the characteristics of the available data, the flexibility in the price of the data and the number of third parties to be engaged with to obtain the desired quantity and reliability of data.

DER integration projects should not be rejected on the basis of a lack of third party sourced data.

As data markets evolve and suitable voltage data becomes more readily available, the cost of obtaining the data from the third parties and the cost to Evoenergy of managing the externally obtained data are relevant considerations for AER assessments.

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?

The interaction between these factors are important to enable optimal use of the network and customer outcomes. It takes considerable resources to assess, develop and integrate optimal responses across all these areas. Small-scale DNSP's are not best placed to consider large ranges of options. Collaboration across market bodies would be desirable.

In assessing DER integration proposals the AER should have regard to best practice within the NEM.

There is a risk of over reliance on the development of national standards to support approval for investments. Existing and forecast customer requirements for connecting PVs should be a key driver of AER approval of proposals on a case-by-case basis irrespective of the status of broader standard development.

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?

Consistent with taking a principle-based approach to the assessment of DER integration expenditure, the AER should take a scalable approach where the analysis is proportional to the level of expenditure proposed. It is not necessary for each alternative option to be assessed fully.

DNSP analysis would generally demonstrate market benefit, including benefits that accrue directly to DER users, by using readily available data and transparent assumptions.

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?

There may be a role for the development of a common approach where there is high overhead costs of each DNSP developing models and approaches to assess some of the more complex market benefits, i.e. those models involving wholesale pricing models or dispatch optimisation. This common approach could be applied while still allowing for

adjustments, where proposed variations can be supported, due to the variations across the NEM.

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?

Assessment of 'option value' can be complex and highly dependent on forecast assumptions. While 'option value' should be considered, it should not be a requirement for all DER integration expenditure - particularly for small projects.

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?

There should not be a requirement on DNSPs to demonstrate their consideration of other common solution alternatives apart from those required under existing option analyses. Access to information about other DNSP IT projects and platforms may not be readily available and DNSPs may require systems that integrate with their existing IT arrangements.

Networks are currently focusing development of strategies, plans and actions to address the challenge of DER uptake, with unprecedented levels of collaboration. A large amount of this collaboration has occurred nationally and been enabled by the Australian Renewable Energy Agency (ARENA). Examples include:

- Evolve project (Energy Queensland, Essential Energy, Ausgrid and Endeavour Energy)
- National Low-Voltage Feeder Taxonomy Study (Energy Networks Australia, Ausgrid, AusNet Electricity Services, Western Power, Endeavour Energy, Energy Queensland, Essential Energy, Horizon Power, SA Power Networks, TasNetworks)
- Network Renewed (Reposit Power, Essential Energy, AusNet Services, Australian PV Institute, United Energy)

There are a number of other large cross collaborations currently being developed, and yet to be announced.

Evoenergy consider that the AER should have regard to the role that the AER and other energy industry bodies such as the Energy Security Board, Australian Energy Market

Commission and AEMO have to promote and support successful DER integration projects and trials.

The AER and other regulators should continue to drive collaboration between energy market participants, especially when ARENA's role is phased-out after 2021-22. The AER should continue to publish the reasons for accepting and rejecting DER integration proposals, and contribute to open forum discussions and conferences. Other industry participants should continue to engage with online web portals such as the ENA and publish discussion papers and journal articles promoting solutions.

International approaches to collaborative innovation are also useful such as the Electricity Network Innovation Competition operated by OFGEM in the UK where reverse auctions are used.

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?

Evoenergy considers that collaboration between networks, industry participants and regulators is the best approach to ensuring that industry alignment emerges, rather than prescriptive tests that may act to limit innovation. The publication of results by regulatory bodies and research institutes from trials and collaborations that have occurred will facilitate leadership and alignment across DNSPs. This will enable DNSPs to reference relevant published results or internally produced results in support of their DER integration proposals.