Assessing DER integration expenditure

Response to AER consultation paper

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Energy Networks Australia

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Energy Networks Australia www.energynetworks.com.au
Unit 5, Level 12, 385 Bourke Street Melbourne VIC 3000
P: +61 3 9103 0400 **E:** info@energynetworks.com.au
Energy Networks Association T/A Energy Networks Australia
ABN: 75 106 735 406

Key messages

- Customers and governments want networks to take steps to integrate more distributed energy resources into the grid.
- Market benefits need to be displayed, but the RIT-D may be too cumbersome for bespoke areas of the network where a quicker, more flexible solution may be viable.
- Regulatory focus should be on ensuring customer preferences around network capacity and service potential are given effect and weight in AER decisions.
- With changing risk, technologies and customer preferences, there needs to be guidance around option value in the context of 'long-term interests of consumers' to guide efficient and equitable network investment.
- Defining and potentially quantifying the value which DER provides to the energy system would be a key input to determine optimal network solutions.
- Assessment of network DER integration needs to balance the costs and benefits of flexibility, optionality, minimising the cost of delivery and customer preferences and outcomes

Overview

Energy Networks Australia welcomes the opportunity to comment on the AER's Consultation Paper *Assessing Distributed Energy Resources Integration Expenditure*.

Energy Networks Australia is the national industry body representing Australia's electricity transmission and distribution and gas distribution networks. Our members provide more than 16 million electricity and gas connections to almost every home and business across Australia.

Energy Networks Australia agrees that a guidance paper supplementing the existing Expenditure Forecast Assessment Guideline is timely given the uptake and complexity of assessing Distributed Energy Resource (DER) expenditure. DER affects all aspects of the energy system and can be one of the most complex expenditure categories to assess.

Rapidly changing technology and customer preferences have led to Australia being at the forefront of solar PV enablement and the ability for customers to get their solar PV and other DER connected to the grid is one of the most important issues to customers. Customers and governments want networks to take steps to integrate more DER into the grid. Given this, ensuring the right regulatory policy setting on enabling DER integration is critical for networks continuing to empower their customers.

The scale of complexity around DER integration is reinforced by the fact that each area of each Distribution Network Service Provider's (DNSP) network – down to the household level – may comprise a different set of characteristics for DNSPs to consider when assessing network solutions. Each household or business is a different customer with different preferences, the voltage in every street will have different flow-on effects to other parts of the network, DNSPs may have different network visibility or access to data. The circumstances of each DER expenditure assessment will be different and it will be difficult to capture those different circumstances in the assessment framework and evaluate their impact on the optimal network solution.

Additionally, if deployed and coordinated at appropriate scale, DER could be used by Transmission Network Service Providers as a potential non-network solution to network replacements and augmentations.

The following sections outline Energy Networks Australia's response to the AER's Consultation paper in more detail.

1 Market benefits and the Regulatory Investment Test

Energy Networks Australia agrees with the AER that market benefits need to be taken into account when assessing the benefits of DER expenditure. The market benefits assessment in the RIT-D and RIT-T framework is a suitable assessment framework to use for determining the efficient level of DER expenditure. However, it isn't appropriate to apply the entire Regulatory Investment Test framework directly.

The RIT-D framework may not be appropriate for many areas of the network because it is a cumbersome assessment which requires extensive resources to complete. Applying the assessment to bespoke areas of the network may not be cost-effective for networks or customers. Instead, ENA would prefer a quicker and more flexible alternative which still considers the market benefits component of the RIT-D assessment;

Additionally, the market benefits test should not be applied in a narrow way to exclude- environmental considerations from being taken into account insofar as relevant to the National Energy Objective (NEO). The objective is stated as follows:

> *"to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to–*
>
> *a) price, quality, safety and reliability and security of supply of electricity; and*
>
> *b) the reliability, safety and security of the national electricity system."*

The Australian Energy Market Commission (AEMC) has stated that to make decisions that meet the NEO, consideration must be given to whether the decisions are robust (with respect to price, quality and reliability of supply) in the face of 'how policy makers … are responding, or are likely to respond, to the

risks presented by climate change.'[1] Consequently, AER decisions would not be consistent with the NEO if they do not take account of initiatives which advance measures to mitigate climate change.

Environmental considerations will impact most, if not all relevant factors of the NEO in some way when DER integration is at issue. A changing climate will likely affect the operating environment of the electricity system as more DER is deployed. As one example, the recent circumstances leading to current New South Wales, Victorian and South Australian bushfires are likely to become more prevalent in future and enhanced DER capability may allow electricity networks to better mitigate bushfire risks. However, this may be a larger issue which would be better addressed through a wider RIT-D process.

Implications from Government policies such as a potential future carbon price will influence the price and quality of electricity supply as more renewable generation is pursued over traditional carbon-intensive generation. The AER should take into account current and future Government policies which impact factors of the NEO when assessing the extent of DER market benefits.

An economic approach which looks at the total value delivered by DER across the electricity system which includes environmental and policy implications would likely lead to more optimal DER expenditure and better outcomes for consumers.

2 Optimising network capacity for customers

Energy Networks Australia believes that customer preferences are an important input into network planning and decision making.

Customers and their preferences should be properly incorporated into the decision-making process because better customer outcomes can be achieved when customers have a say in discretionary network planning.

Giving customers a voice and listening to it will enable a future energy network that delivers more valuable and desirable services to customers than a decision-making process where customers are absent. Providing customers with the opportunity to engage and collaborate with networks enables the possibility of truly capturing customer preferences and delivering consumer-focused outcomes.

2.1 Network experiences

Electricity distribution businesses have been consulting with customers for some time now to understand how to best serve their customers. Customer research and consultation has often produced results which were not expected and not necessarily what distribution networks or the AER would have hypothesised in isolation.

For example, CitiPower, Powercor and United Energy have undertaken extensive customer consultation on rooftop solar connection and exports. Over 2.4 million customers were contacted over the last three years during consultation about their preferred energy future. Seven DER-enablement options were

[1] AEMC *Applying the energy market objectives* (2019), p. 8-9.

developed through a Future Networks forum with stakeholders and in-depth interviews with customers. These seven options were captured in an options paper for CitiPower, Powercor and United Energy to undertake 'mock bill' workshops with customers.

Across all three networks, residential and small business customers indicated a willingness to pay up to $20 on their annual bill for unlimited solar exports. This finding points to the need to closely examine and test customers' service expectations and to balance customer-desired enablement of DER and efficient distribution charges.

These findings are consistent with an on-line survey of 1,000 customers undertaken for SA Power Networks by independent market research firm Newgate Research in December 2018. This survey tested customers' attitudes towards network investment in DER enablement, and included indicative bill impacts for three alternative approaches:

- (a) capping DER connections to current capacity (presented as zero bill impact),
- (b) investment in systems to enable more effective management of existing network capacity through 'dynamic export limits' (up to $5 bill impact), and
- (c) investment in network augmentation to enable unlimited exports (up to $16 bill impact).

Customers across all demographics strongly favoured some level of network investment to enable DER exports, with 54% preferring the 'dynamic' option, 33% preferring the more expensive 'comprehensive augmentation' option and only 13% in favour of the status quo.

Another example is AusNet's NewReg trial, a collaboration between AusNet, customers and the AER that is putting customers at the heart of AusNet's determination review. The collaborative trial is using detailed and thorough customer engagement with well-informed customer advocates to discern and utilise their customer expertise. The process to date has led to numerous areas of customer collaboration between AusNet and the Customer Forum has been useful and positive. Experience from the New Reg trial demonstrates that customer representatives are supportive of a broader conversation around how the network delivers for them.

All Energy Networks Australia members undertake customer engagement in various forms. Members recognise that to deliver the network which is most beneficial to customers, they must first understand what their customers want from their Network and the extent of their customers' willingness to make trade-offs for a cost-effective bill. Previous customer evidence has been collected, assessed and presented in past and current revenue determinations for the AER to consider. Customer support for certain outcomes in the revenue determinations and other processes should be an important input into AER decision making.

2.2 Defining the long-term interests of consumers

The National Energy Objective guides energy institutions to have regard to the long-term interests of consumers in all of their decision making. One of the difficulties with incorporating customer preferences into decision making is defining the long-term interests of consumers. It is critical to all aspects of decision making for both networks and the AER that there is a clear understanding of how to interpret the objective. This is especially the case as technology advances and more options that address customer needs are becoming available which have different short and long-term implications for customers.

Accounting for ‘options to wait’ and new technology sets

There has traditionally been a relatively stable and narrow set of options available to network service providers when considering network augmentation. The efficient size and timing of investment was a key factor.

Currently there are many more options available to achieve the same outcomes of traditional network augmentation, but with more options potentially comes more complexity.

Assessing the best type of investment and where to put it is now a much larger issue while still also considering the size and location of network investment. There is now a greater need to recognise ‘option value’ concepts of shorter-term solutions that provide quick, adequate relief to current network constraints while allowing the network an opportunity to witness how demand, utilisation and technology advancements play out before investing appropriately in long-term solutions.

The DER integration expenditure assessment needs to give due recognition to the possibility of quicker to implement, shorter-term solutions and the ‘value of waiting’.

Similarly, the incidence of costs of different forms of solutions and their impacts across time on different customers should be considered. An operating and capital investment trade-off which recognises the different costs and benefits of solutions, but which also ensures equitable customer outcomes across time should be part of a prudent regulatory assessment framework.

For example, early network augmentation investment in too much capacity would lead to customers paying for capital investments over long time horizons for network capacity they may no longer be using. On the other end, the framework would recognise that continued ‘band-aid’ operating cost focused solutions which are paid for entirely by current customers may not be ideal either. A framework that recognises equity as well as efficiency goals is likely to flexibly provide customers with ideal solutions in a technologically advancing network.

The Net Present Value assessment has been used in the past because the options considered were standard and technology change wasn’t a large factor. For example, when deciding whether to upgrade a congested line, the options of upgrade now, defer upgrade or no action were easily quantified because circumstantial factors like population growth, asset age, failure rate etc were known.

However, a standard Net Present Value approach is becoming more difficult and less reliable for making investment decisions if applied narrowly. There are more solutions available to networks and technological change is meaning that circumstantial factors are becoming harder to predict and shorter-term solutions which do not involve multi-decade cost recovery may be becoming more in the long-term interests of consumers than in the past. Low-risk 50-year investments for DNSPs are becoming rare because identifying what the network will look like at the street level five years from now is a more difficult task, let alone beyond that.

There are ongoing regulatory processes to plan and coordinate a future network, but those processes are focussing on whole-of-system planning and not necessarily planning at the street-level. Customers may have much stronger preferences than in the past, as well as direct interest in network investment decisions, as they are directly impacting their ability to connect and export increasingly ubiquitous rooftop solar PV and other DER technologies.

Networks and the AER should ensure that customers are able to access and use the network capacity they need to realise value from their DER resources. However, networks are cautious to avoid unnecessarily building long-term assets which may only be efficiently utilised for a short period of time.

For example, customers might prefer lots of exports in the short-term to make better use of their rooftop solar, but there are future scenarios where customers may not want or need the level of exports they have preferred in the past. For example, batteries may become cost-competitive and customers may no longer need their export capacity. Additionally, what customers prefer now may not be what customers prefer in the future. For example, current customer preferences for export capacity to take advantage of premium feed-in tariffs will weaken as those feed-in tariffs sunset. Consumer preferences are likely to evolve as technology progresses.

2.3 DER-enabling investment is required

Many Network Service Providers are seeing constrained areas emerging in their networks today.

Waiting for an external solution like cost-competitive batteries does not adequately address customer concerns around export constraints. As the AER identifies in its paper (p 6-18), shorter-term solutions may be optimal in the context of DER expenditure where there is considerably increased risk of asset stranding.

Regardless of the optimal street-level solution, DNSPs urgently need to invest in systems and capabilities to manage exports in the present. Only after export control systems are operational should processes be developed to target network augmentation in urgent areas and allow for more export capacity. These processes should include customer consultation on their preferred level of exports and DNSPs can open network capacity in a safe and controlled manner.

Failing to proactively manage and plan for DER uptake may end up costing the community significantly more to 'catch up' in the future.

2.4 Hosting capacity and network costs

The report seems to overlook the possibility of a different hosting capacity and operating environment cost trade-off which meets the National Electricity Objective than the one which currently exists as an artefact of past investment decisions. It is important to customers that both the transmission and distribution networks deliver the network capacities and services that customers actually want instead of assuming that customers are content with the current hosting capacity.

Where there are several network augmentation options available to a DNSP, allowing customers to have a direct say in which option is implemented is in customers' interests. In instances with clear trade-offs, giving customers agency to work with network businesses and the AER so that they have a say in the type of implemented network solution is likely to lead to better outcomes.

The Consultation paper refers to using operating expenditure to assess hosting capacity (p.5-15) or to purchase information from metering or DER data providers (p.6-18). Energy Networks Australia notes that operating costs are borne by customers in the following reg period, so on a dollar to dollar basis, operating cost step change solutions have a much bigger impact on customer prices than capex solutions in the short-term. This will be an important consideration for the AER's assessment of regulatory proposals as they are balancing price increases with costs.

It is not an unlikely scenario that a short-term solution which allows a network to remain flexible with an uncertain future may lead to increased operating costs in the short term while the capability and price of technology improves and as consumer expectations and behaviours become more certain.

This option may be in line with customer preferences for prompt action but could lead to higher network charges in the short-term. The AER will need to contemplate options where operating costs rise, but the potential for over-investment and associated stranding risk is reduced – especially given the time it may take for cost-reflective tariffs to be adopted.

It is necessary for networks to have access to a basic level of data in order to evaluate network augmentation options. With the advent of Metering Competition, networks currently have varying levels of access to metering data. It is necessary for networks to have visibility of voltage data at a street level before any assessment of the network impacts of solar exports can begin, let alone determining the best network solution to meet customer needs. Metering competition has meant that networks don't have access to voltage or other necessary types of data at a household level and must rely in most cases on crude substation data. It is in customers' interests for DNSPs to have access to a standard set of household-level data so that they can efficiently provide basic services to customers.

2.5 Valuing DER is key

There will be a requirement to define the value of DER under any chosen framework for assessing DER expenditure. It will be much easier for the decision-making process to assess the best option for customers once the process for valuing DER has been defined. An approach to quantify the value which DER provides to the energy system and externally, though difficult, would be an ideal input for decision making. The three factors guiding decision-making would be the economic cost, the value of DER (financial, environmental and social) and customer preferences.

If energy institutions can deliver reforms to the pricing framework which better guide customers towards efficient usage habits, many of the issues faced in valuing DER would be resolved. For example, if tariff reform were to give customers pricing signals for using electricity, customer behaviour may change and the value of DER may be easier to define because on average, solar exports would be valuable more consistently.

Changes to other factors such as wholesale demand response, data access, technical standards or technology can directly or indirectly influence the value of customer DER. Updates to the value of DER should be made regularly to ensure changes in related areas are captured.

3 Integration with other processes

The AER should be cognisant of other processes which the DER expenditure assessment framework may need to have regard to for it to be fit-for-purpose in achieving efficient DER expenditure outcomes.

3.1 OpEN project and DEIP

The OpEN project has 'least regrets' actions which the Australian Energy Market Operator and Energy Networks Australia view as necessary regardless of what different possibilities for a future network might look like.

One ‘least regrets’ action of particular relevance to DER expenditure is monitoring data for improved visibility and to support dynamic connection arrangements. The Distributed Energy Integration Program, which Energy Networks Australia and the AER are signed on to, has similar objectives to the OpEN project. The AER should factor in any necessary actions arising from the DEIP workstreams in DER expenditure assessments.

Real time monitoring data is essential for DNSPs to understand the state of their networks at a detailed level in operational timeframes and to develop strategies to allow customers to export to the grid in a cost-effective manner. However, monitoring data may not be available in all instances because smart communications equipment requires communication infrastructure which may not be available in rural areas.

3.2 Post-2025

Further uptake of DER could be impacted by the Energy Security Board’s post-2025 Market Design review. It is possible that the ESB’s market design process will contain recommendations which aim to optimise DER in some way. The AER should ensure that its DER expenditure assessment framework does not hinder or restrict the ESB from implementing any DER optimisation recommendations from the post-2025 review.

3.3 Jurisdictional regulations

Each state has a different set of regulatory requirements imposed on DNSPs through different licensing conditions and safety regulations. which DNSPs must comply with. The AER’s DER Expenditure Assessment framework should have regard to the different state requirements which DNSPs must comply with to ensure that no DNSPs are adversely affected by the assessment framework.

3.4 Interdependence of DER integration costs

It is important that the set of DER Expenditure Assessment reforms which are identified to best serve customers are implemented as a complete set. The set of reforms which is identified to work best as a whole may no longer be best if some reforms are implemented but some are not.

As a simple example, tariff reform may be identified by the AER through this process as a necessary part of a more fulsome suite of reforms to achieve optimal customer outcomes. If tariff reform is subsequently disallowed externally, then the suite of reforms less tariff reform may no longer result in an optimal outcome for customers. In this instance the optimal reforms will need to be re-evaluated.

Given the integrated nature of the DER Expenditure Assessment process and its interaction between demand management, Capex, Opex, and tariffs, the AER will need to ensure that DER expenditure proposals from DNSPS are properly assessed as a whole. The AER’s assessment approach has tended to operate in a siloed nature with assessments spanning across different teams for different expenditure categories. A siloed assessment approach may for instance lead to a capex solution which could be better addressed via an opex solution. Teams across the AER will have to closely work together to ensure that proposals are properly assessed as a whole.