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31 August 2021

Dr Kris Funston
Executive General Manager, Network Regulation
Australian Energy Regulator
GPO Box 520
MELBOURNE VIC 3001

Dear Dr Funston,

AER's draft distributed energy resources (DER) integration expenditure guidance note

Jemena Electricity Networks (**JEN**) welcomes the opportunity to respond to the Australian Energy Regulator's (**AER**) draft DER integration expenditure guidance note (**guidance note**). We strongly support the AER's continued work developing and refining its expenditure assessment methodologies and tools in consultation with stakeholders. This refinement will ensure that the AER is well placed to make expenditure assessment decisions that are in the long-term interests of consumers and also give certainty to businesses like JEN on how the AER will assess regulatory proposals.

JEN supports a principles-based approach to DER integration expenditure investments rather than an overly prescriptive approach. DER-related investment proposals and assessments should be fit-for-purpose and undertaken on a case-by-case basis. Better methodologies for DER-related investment proposals and business cases can and will be developed over time, and therefore any guidance should be flexible enough to account for changing best practice approaches. This flexibility will help to serve the long-term interests of consumers.

JEN also supports the guidance note requirements for distribution network service providers to develop a DER integration strategy (**DERIS**) in their regulatory proposals. In our recent engagement with our People's Panel, we demonstrated that our customers are highly engaged and interested in DER-related issues, including matters such as constraining DER

exports and investment trade-offs. An overall DERIS will be valuable in helping our customers to understand our broader DER integration strategy and reassure consumers that we are proposing prudent and efficient investments. Relatedly, the AEMC's recent access, pricing & incentive arrangements for DER final rule change also highlighted the importance of an overarching DERIS, including how networks have consulted with customers and incorporated feedback into the regulatory proposal.

However, we are concerned with some aspects of the guidance note, including how the base case or counterfactual scenario is presented and discussed, the definition of DER, and the scope of the guidance note. In addition, we agree that establishing consistent methodologies and frameworks for DER investments is important. However, we have questions around the proportionality of these proposals and assessments, particularly for incremental investments that are likely to account for a small proportion of total expenditure forecasts in future regulatory periods. Our full response to the guidance note, including our responses to the AER's 15 consultation questions, is provided in the attached submission.

If you have any questions regarding this letter, please contact Spencer Little on [redacted] or [redacted]

Kind regards,

[Signed]

Matthew Serpell
Manager Electricity Regulation
Jemena Electricity Networks

Jemena Electricity Networks (Vic) Ltd

Submission on the AER's draft DER integration expenditure guidance note

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Submission on the AER's draft DER integration expenditure guidance note

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Abbreviations

AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AMI	advanced metering infrastructure
BAU	business-as-usual
CECV	customer export curtailment values
DER	distributed energy resources
DERIS	DER integration strategy
DNSPs	distribution network service providers
DVMS	dynamic voltage management system
EVs	electric vehicles
JEN	Jemena Electricity Networks
LV	low-voltage
NEM	National Electricity Market
NPV	net present value
PV	photovoltaic
VaDER	value of DER

1. Preliminary concerns with the draft guidance note

Jemena Electricity Networks (**JEN**) welcomes the opportunity to respond to the Australian Energy Regulator's (**AER**) draft distributed energy resources (**DER**) integration expenditure guidance note (**guidance note**). We strongly support the AER's continued work developing and refining its expenditure assessment methodologies and tools in consultation with stakeholders. This refinement will ensure that the AER is well placed to make expenditure assessment decisions that are in the long-term interests of consumers and also give certainty to businesses like JEN on how the AER will assess regulatory proposals. However, we are concerned with some aspects of the guidance note, which are detailed below.

JEN supports a principles-based approach to DER integration expenditure investments rather than an overly prescriptive approach. DER-related investment proposals and assessments should be fit-for-purpose and undertaken on a case-by-case basis. Better methodologies for DER-related investment proposals and business cases can and will be developed over time, and therefore any guidance should be flexible enough to account for changing best practice approaches.

1.1 Scope of the guidance

The guidance note does not explicitly define what DER is in the context of these expenditure assessments. The guidance note explanatory statement (**explanatory statement**) includes a brief definition but lists technology types rather than discussing what a distributed energy resource could be and how these resources can be used. In the eyes of distribution network service providers (**DNSPs**), a resource could be anything that is used to balance the operation of the electricity distribution network. For customers, a resource could be defined by their energy and lifestyle needs and choices. From both a network and customer perspective, these resources should be seen as how a particular technology type is used to meet customers' preferences, rather than simply just the technology itself. Consistent with our views on developing a principles-based methodology, DER should be defined as technology agnostic and maximise customers' utility while also maximising collective benefits. To this end, we consider DER should be clearly defined as:

> *Services provided to the electricity network by specific technologies or appliances, individually or collectively, which support the operation of the distribution network or provide value to distribution service end-users.*

In addition, the guidance note primarily focuses on solar photovoltaic (**PV**) systems but does not address what is required when DNSPs are seeking to integrate other DER technologies, such as customer batteries or electric vehicles (**EVs**). This was also highlighted during the AER's DER public forum on 5 August 2021. Because these different technologies are not delineated throughout the guidance note and explanatory statement, the different challenges and opportunities they present are not explicitly discussed. For example, facilitating increased solar PV export may generate wholesale market benefits in the middle of the day. In contrast, behind-the-meter customer batteries could be discharged later in the day, helping to reduce localised network demand peaks.

Finally, the guidance note and explanatory statement need to have clearer and more explicit links to the AEMC's access, pricing & incentive arrangements for DER final rule change (**DER rule change**)**.** For example, under the DER rule change, DNSPs will not be able to offer a static zero export limit to small customers who are seeking to connect DER to the network.[1] There may be some cases in specific areas of the network where our business-as-usual (**BAU**) counterfactual or base case option would be to offer a zero export limit due to network constraints. However, the DER rule change would not permit this scenario, which would make the BAU counterfactual scenario in any expenditure assessment non-credible or infeasible. Section 1.3.1 below outlines more discussion on the base case.

[1] AEMC, Access, pricing & incentive arrangements for DER final rule change, August 2021, p. 42.

1.2 Proportionality and top-down assessments

We acknowledge that there have been different approaches used to support DER integration investments during recent price resets. Overall, any approach needs to demonstrate a compliance or regulatory obligation or demonstrate net benefits to customers, and we acknowledge that a consistent methodology regarding this assessment framework is important. We also encourage the AER's final guidance note to consider how proposed DER investments fit into DNSPs' total expenditure forecasts, including the merit order of the programs and projects in their overall expenditure forecasts, consistent with the total capital and operating expenditure ex-ante assessment frameworks.

For example, in JEN's 2021–26 price reset, less than 4 per cent of its total capital expenditure forecast related to DER-related expenditure. As new programs transition into our BAU program, the proportion of incremental DER programs is likely to decline to an even smaller share of our total capital expenditure forecast. We agree that the proposed expenditure should be prudent, efficient and well-supported with economic analysis. However, we question the proportionality of highly complex modelling techniques for what may be fairly small incremental investments.

1.3 Business case

1.3.1 Base case

The presentation of the base case in the guidance note is at times inconsistent and difficult to follow. The callout box example only presents the cost side of the investment equation.[2] The benefits of each credible option—i.e. fewer export constraints—have not been presented in the cash flow analysis. In addition, it is unclear if the base case would include 'sunk' DER investments from previous regulatory periods.

For example, in the callout box example, the base case includes a new capital expenditure program (involving low-voltage (**LV**) line augmentation, circuit rearrangement and transformer replacement). However, this contradicts the base case definition defined in section 5 and the base case discussion in the explanatory note,[3] where the base case represents a BAU scenario. These significant capital expenditure works would not reflect BAU practice, as a capital expenditure program involving both augmentation expenditure and replacement expenditure works is proposed.[4] These capital expenditure works should be presented as an alternative option that is considered in the options analysis, while the counterfactual or base case scenario should reflect BAU network operations.

A clearer base case definition would be:

> *What are the expected export constraints assuming the network continues to operate under BAU conditions over the forecast regulatory period?*

This is a clear counterfactual that would also apply to other DER technologies, including batteries and EVs. It is also consistent with other investment approaches, particularly for other investment drivers, including replacement and augmentation expenditure.

1.3.2 Input assumptions

The guidance note states that as with other types of network expenditure, it is important that DNSPs select credible input assumptions in their proposals for DER integration expenditure.[5] It also notes that DNSPs should

[2] AER, Draft DER integration expenditure guidance note, July 2021, p. 17.

[3] AER, Draft DER integration expenditure guidance note, Explanatory statement, July 2021, p. 25.

[4] Minor ongoing operating expenditure maintenance costs could be considered under a BAU base case or counterfactual scenario.

[5] AER, Draft DER integration expenditure guidance note, July 2021, p. 9.

use assumptions and forecasts that are transparent and from a reputable and independent source, including material that the Australian Energy Market Operator (**AEMO**) publishes in developing the National Transmission Network Development Plan, Integrated System Plan or similar documents.[6]

We agree that where appropriate, DNSPs should rely on credible input assumptions from reputable and independent sources. However, we highlight that input data from AEMO is often aggregated and not granular enough to complete the type of detailed low-voltage (**LV**) distribution network analysis required by the guidance note.

1.3.3 Options analysis

The guidance note states that DNSPs' proposals for DER integration expenditure should demonstrate that they have considered all credible options and selected the option that addresses the identified need at the lowest cost over the life of the investment.[7] This would only apply if a specific regulatory or compliance obligation was applicable. In the absence of this obligation, the network should select the option that maximises net benefits to customers, not the lowest cost option.

1.4 Benefit streams

1.4.1 Avoided or deferred augmentation

The guidance note states that increased DER capacity may lead to avoided or deferred augmentation as it may reduce peak demand.[8] This may be true in some isolated instances and specific areas of the network (e.g. more commercial and industrial areas). However, in general, increased solar PV would generate more exported energy during the middle of the day, while network peaks are increasingly occurring later in the afternoon and into the early evening, when solar resources are lower.

Behind-the-meter customer batteries could soak up excess solar during the day and then discharge this energy during times of locational network peaks to avoid or defer future augmentation. However, capital and operating expenditure may be needed to facilitate this increase in DER hosting capacity or to address other DER requirements. Therefore, any current or forecast regulatory period expenditure is likely to offset any immaterial amounts of avoided or deferred augmentation expenditure in future regulatory periods.

1.4.2 Accounting for deferred expenditure

The guidance note states that augmentation and replacement expenditure forecasts should be adjusted accordingly if deferred augmentation or replacement investments are identified as benefits of proposed DER integration investments.[9] While we generally agree with accounting for these benefits if they are material, we highlight that this is likely to produce multiple iterations of augmentation and replacement expenditure forecasts depending on the different options analysed.

Our interpretation of this requirement is that the counterfactual scenario and all the considered options would have to include separate total augmentation and replacement expenditure forecasts, to fully understand the quantum of the deferred expenditure in each option. In essence, the augmentation and replacement expenditure forecasts submitted as part of the regulatory proposal would align with the forecasts presented in the preferred option, and these forecasts would be lower than the other options considered. In this way, the cost-benefit

6 AER, Draft DER integration expenditure guidance note, July 2021, p. 9.

7 AER, Draft DER integration expenditure guidance note, July 2021, p. 10.

8 AER, Draft DER integration expenditure guidance note, July 2021, p. 15.

9 AER, Draft DER integration expenditure guidance note, July 2021, p. 8.

analysis modelling would show that the preferred option has accounted for any deferred network investment. We request that the AER clarifies these points in its final DER integration expenditure guidance note.

1.4.3 Voltage compliance

Section 6 of the guidance note outlines the benefits related to DER integration expenditure, mainly wholesale market benefits and avoided network investment.[10] However, this section does not explicitly capture the costs and benefits associated with maintaining voltage compliance on the LV network. Voltage issues are expected to continue increasing as solar PV connections grow and other DER technologies begin to connect to the network in greater numbers.

1.5 Realising past benefits

The guidance note outlines that DNSPs should provide evidence of what previous DER integration investments have delivered for customers.[11] Estimating the benefits of past 'sunk' DER investments is likely to be very challenging. For example, a dynamic voltage management system (**DVMS**) installed in a previous period would reduce constrained exports over time, but these benefits would be difficult to quantify. This is because the performance would need to be compared against a BAU counterfactual that is inherently hypothetical, i.e. this BAU base case never eventuated because the investment option (installing a DVMS) was selected. We could calculate the volume of actually constrained exports over the previous regulatory period but would not have a reliable forecast of expected export constraints under the BAU base case scenario for comparison.

In addition, this requirement only captures the constrained export volumes—costs are not captured. To realise past benefits, expenditure assessments would also need to consider the actual benefits received as well as a forward-looking forecasting methodology. This would likely result in a range of different methodologies for proving the perceived realised benefits. This would create inconsistencies among DNSPs across different proposals, which the guidance note seeks to avoid.[12] Alternatively, CSIRO and CutlerMerz's value of DER (**VaDER**) methodology—adopted by the AER—would need to produce values for the actual benefits received by customers based on DNSP and possibly specific locations on each distribution network. This would be needed in addition to the forward-looking VaDER forecasting methodology.

10 AER, Draft DER integration expenditure guidance note, July 2021, p. 14.

11 AER, Draft DER integration expenditure guidance note, July 2021, p. 9.

12 AER, Draft DER integration expenditure guidance note, Explanatory statement, July 2021, p. 8.

2. Response to consultation questions

2.1 DER integration strategy

> **Question 1**
>
> Do you agree with the proposed guidance relating to how DNSPs should prepare a DER integration strategy?

JEN broadly supports the guidance note's requirements for DNSPs to develop a DER integration strategy (**DERIS**) in their regulatory proposals. We recently engaged with JEN customers via our People's Panel during our 2021-26 price reset. This engagement demonstrated that our customers are highly engaged and interested in DER-related issues, including matters such as constraining DER exports and investment trade-offs. An overall DERIS will be valuable in helping our customers to understand our broader DER integration strategy and ensure customers that we are proposing prudent and efficient investments.

The DER rule change also highlighted the importance of an overarching DERIS, including how network businesses have consulted with customers and incorporated feedback into their regulatory proposals. We agree that engaging with customers on dynamically changing DER issues is important, particularly in the lead up to and during a price reset. We would encourage the AER to ensure that any DERIS reporting requirements are not duplicated between its DER guidance note and the AEMC's recent DER rule change.

2.2 Business case format

> **Question 2**
>
> Should the format of the business case be prescriptive? If so, how?

JEN supports a principles-based approach to DER integration expenditure investments rather than an overly prescriptive approach. Investment proposals and assessments should be fit-for-purpose for each distribution network and their specific circumstances and undertaken on a case-by-case basis. Business cases will also vary depending on the type of DER that will be integrated into the network. Better methodologies for DER-related investment proposals and business cases can and will be developed over time, and therefore any guidance should be flexible enough to account for changing best practice approaches. This flexibility will help to serve the long-term interests of consumers.

2.2.1 Input assumptions

> **Question 3**
>
> Are there particular input assumptions that should be consistent for all DNSPs?

As noted above, JEN supports a principles-based approach to DER integration expenditure investments rather than an overly prescriptive approach. Given this, proposals and assessments should be fit-for-purpose for each

DNSP and their specific circumstances and assessments should be undertaken on a case-by-case basis using a sufficiently flexible framework built on sound principles.

Some input assumptions highlighted in the guidance note appear overly prescriptive. For example, the guidance note states that DNSPs should adopt a net present value (**NPV**) analysis period of 20 years when considering the costs and benefits of proposed investments, as this period aligns with other expenditure assessments.[13] It is unclear why this period has been determined as the only possible NPV analysis period, as expenditure proposals can be and often are analysed over varying periods depending on the investment. In addition, for each option considered, the asset lives may differ and output comparisons may not be valid if sufficient flexibility is not provided.

DNSPs should have the flexibility to determine their own cost-benefit analysis modelling approach, including any relevant analysis periods, with sufficient justification and support. While we agree that DER investments are inherently uncertain, uncertainty underpins most network investments and assets are still depreciated over very long useful lives. Long-term NPV analysis periods may not be appropriate for DER investments, but it is unclear why 20 years has been deemed more suitable than—for example—15 or 25 years.

2.2.2 Defining the base case

> **Question 4**
>
> In what ways could DNSPs justify their assumed export limit in the base case scenario?

DNSPs can justify their assumed export limits in the base case scenario by relying on actual network data and export constraint calculations from the current period. These export constraints will vary significantly based on network location and the types of customers connected to the network. As a Victorian DNSP, JEN has access to a significant amount of advanced metering infrastructure (**AMI**) data that can help to determine local LV network constraints and export limits. In addition, JEN's 2021-26 price reset included an allowance in the Future Grid program to improve the visibility of our LV network.[14] We will deploy these initiatives, which will enable us to realise the benefits of the program in the forecast regulatory period. Overall, any previous and upcoming investments will greatly assist JEN in assessing its export limit under a BAU base case scenario.

The AEMC's DER rule change also includes requirements and provides guidance regarding how DNSPs should consider base case scenarios, particularly regarding static zero export limits.[15] For example, as highlighted in section 1.1 above, DNSPs will not be able to offer a static zero export limit to small customers who are seeking to connect DER to the network.[16] There may be some cases in specific areas of the network where our BAU counterfactual or base case option would be to offer a zero export limit due to network constraints. However, the DER rule change would not permit this scenario, which would make the BAU counterfactual scenario in any expenditure assessment non-credible or infeasible.

As noted in section 1.2 above, DER investments should be considered within the context of DNSPs' total expenditure forecasts and treated with consistency where possible. For other expenditure drivers, DNSPs propose a range of supporting information and material to support their expenditure forecasts, e.g. justifying assumed capacity limits for zone substation augmentation projects or replacement strategies for major replacement expenditure programs. It is important to not lose this consistency across different expenditure drivers and to maintain the propose-respond regulatory model. Overall, any approach needs to show net

[13] AER, Draft DER integration expenditure guidance note, July 2021, p. 10.

[14] JEN, 2021-26 price reset, Attachment 5-04 Future Grid investment proposal, January 2020, p. 9.

[15] AEMC, Access, pricing & incentive arrangements for DER final rule change, August 2021, p. iv.

[16] AEMC, Access, pricing & incentive arrangements for DER final rule change, August 2021, p. 42.

benefits to customers and we acknowledge that a consistent methodology regarding this assessment framework is important.

> **Question 5**
>
> Are there particular examples where DER adoption forecasts may vary between the base case scenario and the investment case?

We agree that DER adoption forecasts may be the same across the base case and the options analysis in some instances. However, there may be examples where additional possible shared customer benefits and utility may be missed by holding DER adoption forecasts constant across these options.

The DER guidance note and CSIRO and CutlerMerz's VaDER methodology study seek to justify proposed network investments where net customer benefits can be demonstrated. However, keeping DER adoption forecasts fixed across the base case and the options considered may be leaving shared consumer benefits untapped.

If a business case can demonstrate that a certain level of network investment could increase DER adoption rates—and this investment has the highest expected net benefits to customers across a range of considered options—the regulatory framework and guidance note should be flexible enough to account for this and allow the investment proposal to be accepted.

2.2.3 Hosting capacity assessments

> **Question 6**
>
> Do you agree with the proposed criteria for undertaking hosting capacity assessments?

Please see our response to question 4.

> **Question 7**
>
> Are there other examples of approaches that DNSPs could adopt to assess network hosting capacity?

Assessing the intrinsic hosting capacity will vary among different DNSPs and also within localised areas of specific distribution networks. Therefore, it will not be possible for DNSPs to make broad claims about the intrinsic hosting capacity of their distribution networks. These limits will vary based on a range of network and environmental dynamics.

Therefore, DER-related investment proposals and assessments should be fit-for-purpose for each network and their specific circumstances and undertaken on a case-by-case basis. Business cases will also vary depending on the type of DER that will be integrated into the network. Better methodologies for DER-related investment proposals and business cases can and will be developed over time, and any guidance should be flexible enough to account for evolving best practice approaches. This flexibility will help to serve the long-term interests of consumers.

2.3 Quantifying DER benefits

Question 8

Do you agree that the total electricity system is the appropriate system boundary for considering DER costs and benefits?

We broadly agree, noting the concerns highlighted in section 1.4 above regarding some of the benefit stream calculations. In addition, the benefit streams section should more explicitly mention the shared benefits of all customers, because all customers are sharing the costs of these future investments. The system boundary definition should also include policy and legislative requirements that occur outside of the National Electricity Market (**NEM**), e.g. environmental benefits where requirements are prescribed by jurisdictional authorities (see section 2.3.3 below).

Question 9

Do you agree that the methodology used to quantify wholesale market benefits should balance shorthand and longhand approaches?

Yes, particularly on CSIRO and CutlerMerz's statement regarding investments that are relatively small such that the cost of the longhand approach is likely to materially erode the benefits.[17] Please also refer to our discussion regarding proportionality and top-down assessments in section 1.2 above.

The AEMC's DER rule change also requires the AER to develop a methodology for and to regularly calculate customer export curtailment values (**CECV**)**.**[18] This process will provide stakeholders with more clarity regarding how wholesale market benefits should be quantified in DER integration expenditure investment proposals.

2.3.1 Wholesale market benefits

Question 10

Do you know of other examples of electricity market models or analysis tools that could be used by DNSPs to quantify wholesale market benefits?

DNSPs could rely on relevant forecasts from AEMO or access a range of experienced consultants that provide expert services in the wholesale market, noting the concerns raised in section 1.3.2 regarding data granularity.

Question 11

Do you have views on the AER's initial analysis and whether this approach could be applied in practice?

As highlighted in section 1.2 above, such a detailed and complex modelling approach may not be proportional or fit-for-purpose for relatively small incremental DER integration investments. For example, modelling and forecasting avoided generation dispatch costs for half-hourly intervals over a 20-year analysis period would

[17] AER, Draft DER integration expenditure guidance note, Explanatory statement, July 2021, p. 41.

[18] AEMC, Access, pricing & incentive arrangements for DER final rule change, August 2021, p. 42.

require over 350,000[19] temporal inputs for multiple key input assumptions (cost, solar PV generation, displaced generation etc) per location or measurement point. This level of data analytics, modelling complexity and rigour may not be fit-for-purpose and is likely to be overly burdensome and unnecessary for small incremental DER integration investments. Engaging meaningfully with customers on modelling with this degree of complexity is also likely to be challenging.

Question 12

Do you agree with the proposed principles for quantifying wholesale market benefits? Are there other principles that we should consider?

DER-related investment proposals and assessments should be fit-for-purpose for each network and their specific circumstances and undertaken on a case-by-case basis. Business cases will also vary depending on the type of DER that will be integrated into the network. Better methodologies for DER-related investment proposals and business cases can and will be developed over time, and any guidance should be flexible enough to account for changing best practice approaches. This flexibility will help to serve the long-term interests of consumers.

2.3.2 Network benefits

Question 13

Do you agree with the proposed methods for quantifying network benefits?

Please see section 1.4 above for our discussion regarding quantifying network benefits.

In addition, other network investments may increase a network's intrinsic DER hosting capacity. For example, there may be augmentation expenditure projects that need to be undertaken due to capacity constraints and that are required separate from any DER investments. These investments would be economically justified and proceed on merit, while also providing an increase to the network's intrinsic DER hosting capacity. We request that the AER's final guidance note highlights these considerations and explicitly outlines whether the increase in DER hosting capacity can be considered as a network benefit in the augmentation expenditure business case.

2.3.3 Environmental benefits

Question 14

Do you agree with the proposed methods for quantifying environmental benefits?

Yes, we agree that capturing environmental costs in the wholesale market benefit calculations is a reasonable approach. We also agree that capturing any relevant jurisdictional requirements relating to environmental costs is reasonable.

[19] 24 x 2 x 365.25 x 20 = 350,640.

2.4 Change in DER investment

Question 15

Do you agree with the proposed method for quantifying changes in DER investment?

Please see our response to question 5.