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Via email: DGInquiry@esc.vic.gov.au

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Distributed Generation Inquiry Stage 2 Discussion Paper – The Network Value of Distributed Generation, June 2016

Jemena Electricity Networks Vic Ltd (**JEN**) welcomes the opportunity to respond to the Essential Services Commission's (the **Commission**) discussion paper on the network value of distributed generation (**DG**).

In February 2015, JEN responded to the Commission's proposed approach paper on the *Inquiry into true value of distributed generation,* December 2015. We reaffirm our key messages in that submission as they are very relevant to this stage 2 consultation on the network value of DG.

Inquiry into the 'true value' of DG

We consider the ongoing network operation and augmentation costs[1] (which is different to connection costs) driven by DG must be taken into consideration when determining the true value of DG. We find the Commission's approach does not take into account these costs. Hence, we consider the Commission's approach will not determine the true value of DG, but rather the network benefit produced by DG.

We understand the Commission is constrained by the Terms of Reference of the Inquiry which states the inquiry will not consider the policy and regulatory frameworks governing the costs of connecting DG.

It is important that the Commission highlight that the economic benefit it determines under the proposed approach is not the 'true value' as the costs have not been taken into account.

Cost of connecting DG and network value produced DG

The Commission recognises that network businesses make forecasts of aggregate connection associated to accommodate distributed generation in developing the 5-

[1] Operational and capital expenditures related to management of fault levels, two-way electricity flows and voltage regulation in areas of high DG penetration.

yearly regulatory price determination proposals, and these costs once approved by the AER are recovered from all electricity customers.[2]

Additionally the Commission notes that to the extent that these benefits are fully factored into the pricing decisions by the AER, they result in lower network prices paid by all consumers.[3]

It is noteworthy JEN included both the costs and benefits (including deferment of any network augmentation because of DG) in their five yearly regulatory determination proposals. In light of this—and the fact annual revenue requirements of the Victorian DNSPs are capped — any requirement to reward DGs would mean customer tariffs for all customers would increase by the amount payable to DGs.

Operation of the current regulatory framework

The Discussion Paper identifies the existing regulatory mechanisms relating to DG. The Commission proposes to examine and in particular explore the operation of theses mechanisms.[4] In particular the Commission notes:

> ***"Identification and realisation of value*** *– How does the regulatory framework facilitate the identification and realisation of the potential value of distributed generation?*
>
> ***Current allocation of any identified value*** *– To the extent that the framework identifies and realises the network value of distributed generation, how is that value allocated between the distributed generator, the network business, and consumers at large? Is this allocation appropriate? How should the monetary value of the benefits provided by distributed generation be allocated?*
>
> *The outcomes of this analysis will guide the Commission in its assessment of whether any reform to the current regulatory frameworks is necessary, and what the nature of that reform should be."*

We welcome the Commission's assessment approach as to whether any reform to the current regulatory frameworks is necessary.

Distorted DG investment signals will lead to inefficient outcomes to all consumers

JEN wish to emphasise that DG benefit to the distribution network is highly dependent on the time and location of the generation. In some parts of the network DGs cause reverse flows and create network issues with attendant network costs.

Our detailed responses including a number of questions in the discussion paper are set out in **Attachment 1**.

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[2] Essential Services Commission Victoria, Network Value of Distributed Generation, Stage 2 Discussion Paper, p 5.
[3] Ibid, p 14.
[4] Ibid, p XV.

If you have questions in relation to the submission, please contact me on (

Yours sincerely

Siva Moorthy
Manager Network Regulation

Attachment 1

Definition of distributed generation

The Commission notes that solar and wind are the most common forms of DG.[5] Both solar and wind DGs are less 'firm' relative to other DGs that are fuelled by natural gas, hydro etc. This is an important consideration in evaluating the network value.

Case study: Residential Battery storage trial results

"The trial found that distributed generation in the form of solar PV and a battery can decrease grid peak demand specifically during a typical peak period. The following figure shows results of average peak grid electricity demand across a day comparing a customer with and without distributed generation." [6]

The case study shows there was value to the network where the solar PV system is connected with a battery, but this benefit is dependent on the level of network capacity constraint. Another observation the case study provides is that without a battery, the customer's peak demands are very close when considered with and without solar PV—that is, the network benefit produced with solar PV DG is marginal.

Q3. On what basis should the network benefit from distributed generation be assessed – on the total output or on the total exports of the distributed generation system?

The Discussion Paper notes:

"Because the benefits of internal effects accrue directly to the investor, they are excluded from our analysis in this inquiry" [7]

Given the focus of the inquiry is on 'external effects', we believe network benefits should be assessed d on total exports of DG systems.

Q4. What do you see as the main differences between network-led and proponent-led DG in terms of the network benefits they deliver?

Network-led DG is normally deployed in areas where there is network constraint. It provides non-network solution to removing a specific network constraint. Proponent-led DG is generally connected broadly across the network with the initial focus on realising direct benefits ('internal effects'). Consequently some proponent-led DGs may produce network benefits and others may cause network issues (eg. reverse flows and voltage problems) with attendant network costs in rectifying the problems.

Q8. Beyond those identified in the paper, are there other examples of applied methodologies for calculating network benefit that the Commission should consider?

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[5] Ibid, p 9.
[6] Ibid, p 21.
[7] Ibid, p 11.

The Discussion Paper notes that under certain circumstances, DG can provide value to network businesses:

"***Reduced need to build or replace network capacity (capital expenditure (CAPEX) and replacement expenditure (REPEX)***

This may occur where distribution businesses avoid the need to invest in new equipment for the network. Similarly it may occur where distribution businesses avoid the need to replace like-for-like equipment in a network area.

Reduced need for operation and maintenance work (operational expenditure (OPEX))

This may occur where distributed generation provides network support that reduces the time and resources otherwise spent by a distribution business to manage a part of the network."[8]

JEN agrees that under certain circumstances, CAPEX may be deferred or reduced. However, our experience to date indicates that there has been no opportunity to reduce REPEX and OPEX.

Q16. Can you suggest or provide evidence that supports those environmental or social benefits attributed to distributed generation listed in this discussion paper?

DG connections do not reduce poles and wires and hence do not improve the general amenity. Poles and wires are required to connect the DGs to enable them to export and for network businesses to deliver electricity to customers.

[8] Ibid p 22.