15 February 2016

Dr Ron Ben-David
Chairperson
Essential Services Commission
Level 37, 2 Lonsdale St
Melbourne, VIC 3000

By electronic lodgement

Dear Dr Ben-David

**INQUIRY INTO THE TRUE VALUE OF DISTRIBUTED GENERATION**

CitiPower and Powercor welcome the opportunity to respond to the Essential Services Commission of Victoria's (**ESCV**) proposed approach to its inquiry into the true value of distributed generation. As noted by the ESCV, determining the true value (or cost) of distributed generation is a complex issue.

We consider the existing regulatory regime already provides sufficient incentives to distributed generators, whether large or small, to balance the benefits they provide against the additional costs they impose on our network. In any event, should the ESCV seek to redistribute any costs and/or benefits from distributed generation, these should not result in further distortions to network charges, or levy additional administrative costs on customers. Similarly, any Victorian Government policies to incentivise distributed generation (for example, for perceived environmental benefits), should be transparently applied, and not enacted through network tariffs.

These views are discussed in detail below. Our responses to the specific questions set out in the ESCV's proposed approach paper are included as an appendix.

**Distributed generation imposes costs (and receives benefits) that are paid for by all of our customers**

Our distribution network was originally designed for one-way flow of electricity to the load customer. In contrast, distributed generators generally seek to export electricity to our grid, creating two-way flows of electricity. This requires increased capital and operating expenditure to ensure the safe and reliable operation of our network including, for example, expenditure to manage the following:

- increasing fault current from all forms of distributed generation, but particularly from gas turbines or gas co-generators; and
- increasing voltage variability, particularly from variable output generators such as solar photovoltaic (**PV**) installations.

Under Chapter 5A of the National Electricity Rules (**Rules**), which will apply in Victoria from 1 July 2016, distributed generators will notionally become liable to contribute to the costs of remedying network constraints that require augmentation beyond the first point of transformation in the network (e.g. which may include fault mitigation or voltage control works).[1] Our fault mitigation works on the CitiPower network, however, have typically occurred on our high voltage network, and thus, are not directly attributable to the low voltage connection of any specific distributed generator. Consequently, the costs of these works (i.e. deep augmentation) have been included in our regulatory asset base, and recovered from all customers.

[1] Under the ESCV's existing Electricity Industry Guideline no. 15, where the connection of a distributed generator requires augmentation beyond the first point of transformation in the network (i.e. deep augmentation), then distributed generators are not required to contribute to the costs of remedying that network constraint (which may include fault mitigation or voltage control works). Instead, distributed generators are only required to fund any shallow augmentation works.

Further, Powercor proposes to install 89 bi-directional regulators on rural long feeders with forecast high levels of solar PV penetration during the 2016–2020 regulatory control period. Without installing bi-directional regulators, reverse power flows on our feeders will result in voltage levels outside of compliance limits. The cost of these bi-directional regulators is proposed to be recovered from all customers, rather than by individual distributed generators connecting to the network through shallow or deep network augmentation contributions (which may make such connections uneconomic to the customer).

The Rules also explicitly preclude us from charging distributed generators for exporting electricity back into the grid. As our network provides the platform to allow distributed generators to trade their unused energy, this provides distributed generators with a further private benefit funded by our remaining customer base (i.e. they avoid any additional operating or maintenance costs incurred from feeding electricity back into our grid). Going forward, it may be more cost-reflective for distributors to charge distributed generators export tariffs to reflect the costs that they impose on the grid, acknowledging the service the grid provides to the generators.

Finally, distributed generators, particularly solar customers, may benefit at the expense of non-solar customers through their ability to select non-demand based network tariffs. Specifically, by using less electricity from the grid, solar customers will pay lower network charges in total than a non-solar customer irrespective of the extent to which their grid usage contributes to our network peak demand (noting peak demand is a key driver of our network costs).

**Deferred augmentation benefits from distributed generation are already reflected in our regulatory proposals**

We use demand forecasts to identify potential constraints on our network—that is, to forecast where demand will exceed the existing network capacity in a particular location. Where a future constraint is identified, and the least cost option to address that constraint is determined to be a network-based solution, these costs are included in our augmentation capital expenditure.

The demand forecasts used to determine our augmentation expenditure requirements for the 2016–2020 regulatory control period took into account predicted growth in distributed generation (including solar PV) on our network. Where growth in distributed generation has lowered our demand forecasts, such that network augmentation is no longer required to address a network constraint, then this benefit will already be reflected through lower tariffs to all of our customers over the 2016–2020 regulatory control period. In this context, all customers share in any benefits from distributed generation (and as noted previously, all customers also share the corresponding costs).

It should be recognised, however, that demand-driven augmentation is only a small component of our total capital expenditure forecast for the 2016–2020 regulatory control period. Further, as network-based augmentations are typically depreciated over a period of approximately 50 years, deferred augmentation has only a small impact on our future tariffs.

**Measuring the network value of distributed generation is complex**

In its proposed approach paper, the ESCV recognised that network benefits from distributed generation are dependent on the location of network assets and constraints, and the time of day of the relevant constraint. Further, the value to our network of distributed generation may change over time. For example, demand in a specific location may be seasonal and/or distributed generation may only defer network augmentation for a short period (after which a network solution is required). In these circumstances, any network benefits may be transient.

We consider that reflecting these complexities in any approach to redistribute any costs and/or benefits from distributed generation will be administratively burdensome, and of limited value to our customers.

**Public policy should be implemented transparently, as price distortions may lead to inefficient investment**

To ensure efficient investment in network infrastructure, only network costs should be reflected in network charges. In this context, should the Victorian Government develop policies to incentivise distributed generation (for example, for perceived environmental benefits), such policies should be transparently applied, and not enacted through network tariffs. To do otherwise may lead to inefficient investment decisions—in the extreme, it

may result in inefficient disconnection from the network, even when this is not in the long-term interests of consumers.

Similarly, feed-in tariff distortions may lead to the inefficient use of distributed generation. For example, distributed generators may have a choice of exporting electricity onto the grid, or using battery storage to avoid the cost of imported electricity. As the benefit of distributed generation is greater when electricity is stored and used at times when the cost of electricity supply is greatest, but customers only receive a feed-in-tariff when they export onto the grid, this may limit the use of battery storage even when it may be the best economic solution for society.

Further, if the ESCV considers public (private) benefits and costs may be reasonably aligned in total, but are allocated disproportionately at a social level (i.e. disadvantaged households are disproportionately impacted), policies to redress these concerns should not be hidden in network charges. Instead, they should be clearly set out in the State's budget.

In particular, recovering feed-in tariffs through network charges will place additional cost pressures on vulnerable customers—most notably, as these customers may have limited access to distributed generation (due to financial constraints, including not owning property).

These views are supported by statements made in the Queensland Productivity Commission's recently published draft report into electricity pricing. For example, in discussing feed-in-tariff costs that are recovered through network prices, the Queensland Productivity Commission highlighted that a number of submissions supported moving the costs of solar bonus schemes into the State budget. The Queensland Productivity Commission itself recognised that transferring policy costs into the State budget would provide greater transparency, and address equity concerns that arise from cross-subsidies.

**We support the ESCV's proposed approach to consider wholesale and network values in separate phases**

We support the ESCV's proposed approach to reviewing the energy and network value of distributed generation in separate phases, with separate timeframes. This approach appropriately reflects the complexity of the issues, as well as the overlay with the AEMC's rule change process for local generation network credits.

If you have any queries regarding this submission please do not hesitate to contact Jeff Anderson

Yours sincerely,

Renate Vogt

**Manager Regulation, CitiPower and Powercor**

## Appendix: response to ESCV questions

**Table 1 ESCV's approach**

| | Question | VPN response |
|---|---|---|
| 1 | Do you agree with how the Commission is proposing to define true value? If not, why not? Are there other definitions the Commission could use? | The true value of distributed generation should consider both the costs and benefits of distributed generation, including any administrative/transaction costs associated with valuing distributed generation. |
| 2 | Do you agree with the Commission's view that this inquiry is focussed on identifying the public benefit of distributed generation? If not, why not? | The inquiry should be symmetrical, and not just consider the extent to which public benefits are being provided by private investors. It is equally important to recognise the extent to which private costs are being borne by public customers.<br>For example, as set out in the body of our submission, under the existing regulatory framework our entire customer base shares in any benefits from lower forecast augmentation due to distributed generation. Our entire customer base, however, also bears the costs of adapting our network to manage bi-directional electricity flows (noting that these costs are imposed by distributed generators). |
| 3 | Do you agree with how the Commission is proposing to define public benefit as it relates to distributed generation? | We support the proposed separation of economic, environmental and social components. For the reasons set out in the body of our submission, however, we consider any policy considerations driven by environmental and social benefits should be transparently recovered and communicated to tax-payers. That is, they should not be hidden in and/or distort network charges, as this may lead to inefficient disconnection from the network (even when this is not in the long-term interests of consumers).<br>We also support the three principles outlined by the ESCV, although the challenge will be in balancing these competing objectives (e.g. any network value from distributed generation will be location specific, but developing methods to calculate any locational value may be complex to administer and communicate to customers). |

| | Question | VPN response |
|---|---|---|
| 4 | Is the Commission's understanding of how the costs, to network businesses and consumers, of connecting distributed generation are calculated and recovered correct? If not, why not? | Under Chapter 5A of the Rules, which will apply in Victoria from 1 July 2016, distributed generators will notionally become liable to contribute to the costs of remedying network constraints that require augmentation beyond the first point of transformation in the network (e.g. which may include fault mitigation or voltage control works).[2] Our fault mitigation works on the CitiPower network, however, have typically occurred on our high voltage network, and thus, are not directly attributable to the low voltage connection of any specific distributed generator. Consequently, the costs of these works (i.e. deep augmentation) have been included in our regulatory asset base, and recovered from all customers.<br><br>Further, Powercor proposes to install 89 bi-directional regulators on rural long feeders with forecast high levels of solar PV penetration during the 2016–2020 regulatory control period. Without installing bi-directional regulators, reverse power flows on our feeders will result in voltage levels outside of compliance limits. The cost of these bi-directional regulators is proposed to be recovered from all customers, rather than by individual distributed generators connecting to the network through shallow or deep network augmentation contributions (which may make such connections uneconomic to the customer).<br><br>The Rules also explicitly preclude us from charging distributed generators for exporting electricity back into the grid. As our network provides the platform to allow distributed generators to trade their unused energy, this provides distributed generators with a further private benefit funded by our remaining customer base (i.e. they avoid any additional operating or maintenance costs incurred from feeding electricity back into our grid). Going forward, it may be more cost-reflective for distributors to charge distributed generators export tariffs to reflect the costs that they impose on the grid, acknowledging the service the grid provides to the generators.<br><br>Finally, distributed generators, particularly solar customers, may benefit at the expense of non-solar customers through their ability to select non-demand based network tariffs. Specifically, by using less electricity from the grid, solar customers will pay lower network charges in total than a non-solar customer irrespective of the extent to which their grid usage contributes to our network peak demand (noting peak demand is a key driver of our network costs). |
| 5 | Do you agree with the Commission's proposed approach to the inquiry? If not, why not, and what alternative approach would you propose? | We support the ESCV's proposed approach to reviewing the energy and network value of distributed generation in separate phases, with separate timeframes. In particular, this approach appropriately reflects the complexity of the issues. |

[2] Under the ESCV's existing Electricity Industry Guideline no. 15, where the connection of a distributed generator requires augmentation beyond the first point of transformation in the network (i.e. deep augmentation), then distributed generators are not required to contribute to the costs of remedying that network constraint (which may include fault mitigation or voltage control works). Instead, distributed generators are only required to fund any shallow augmentation works.

**Table 2 Definition of distributed generation**

| | Question | VPN response |
|---|---|---|
| 6 | Do you agree with how the Commission is proposing to define distributed generation? If not, why not? | We support the ESCV's proposed approach. |
| 7 | Are there other definitions of distributed generation the commission could consider? | No comment. |

**Table 3 What values can be attributed to distributed generation**

| | Question | VPN response |
|---|---|---|
| 8 | Are there other public benefits that the electricity generated by a distributed generator provides? How can these identified benefits be quantified? | We use demand forecasts to identify potential constraints on our network—that is, to forecast where demand will exceed the existing network capacity in a particular location. Where a future constraint is identified, and the least cost option to address that constraint is determined to be a network-based solution, these costs are included in our augmentation capital expenditure.<br>The demand forecasts used to determine our augmentation expenditure requirements for the 2016–2020 regulatory control period took into account predicted growth in distributed generation (including solar PV) on our network. Where growth in distributed generation has lowered our demand forecasts such that network augmentation is no longer required to address a network constraint, therefore, then this benefit will be reflected through lower tariffs to all of our customers over the 2016–2020 regulatory control period. In this context, all customers share in any benefits from distributed generation (and as noted previously, all customers also share the corresponding costs).<br>It should be recognised, however, that demand-driven augmentation is only a small component of our total capital expenditure forecast for the 2016–2020 regulatory control period. In particular, as network-based augmentations are typically depreciated over a period of approximately 50 years, deferred augmentation has only a small impact on our future tariffs.<br>As recognised by the ESCV, any network value from a distributed generator will also be highly dependent on the location of the generator, and its ability to provide supply when network demand is high.<br>In regard to the benefits and costs set out in table 2.4 of the ESCV's proposed approach paper, we consider any benefits associated with downsizing of replacement expenditure are likely to be limited. For example, if a high voltage switch is to be replaced, it is preferable the switch is replaced to match the capacity of the nearby network, so that full network switching capability is available if a nearby fault occurs. Similarly, the existing incentive framework also ensures that any benefits from reduced operating expenditure are efficiently shared with customers.<br>For clarity, should the ESCV consider there are public benefits to customers through reduction in wholesale prices, we encourage the ESCV to consider requiring retail bills to separately identify the wholesale generation component on the bill separately from individual transmission, distribution and retail components. This would allow customers to identify these benefits over time. |

| | Question | VPN response |
|---|---|---|
| 9 | Are there any environmental or other public benefits that a distributed generator provides to the distribution network? How can these identified benefits be quantified? | To the extent that any environmental or social benefits can be attributed to distributed generation, these accrue to the wholesale electricity market (and not the distribution network). For example, avoided line losses are a market benefit, as distributed generation provides localised supply.<br>In any event, any policy considerations driven by environmental and social benefits should be transparently recovered and communicated to tax-payers. That is, they should not be hidden in electricity charges.<br>These views are supported by statements made in the Queensland Productivity Commission's recently published draft report into electricity pricing. For example, in discussing feed-in-tariff costs that are recovered through network prices, the Queensland Productivity Commission highlighted that a number of submissions supported moving the costs of solar bonus schemes into the State budget. The Queensland Productivity Commission itself also recognised that transferring policy costs into the State budget would provide greater transparency, and address equity concerns that arise from cross-subsidies. |

**Table 4 Regulatory framework**

| | Question | VPN response |
|---|---|---|
| 10 | Are there other aspects of the current regulatory framework outlined in this paper that the Commission should consider when evaluating the adequacy of the current Victorian policy and regulatory frameworks governing the remuneration of distributed generation? | Clause 6.1.4 of the Rules expressly prohibits distributors from charging distributed generators a fee the export of electricity generated by the user into the distribution network. This clause is relevant to the extent that private benefits are being funded by our entire customer base. |
| 11 | What is the impact of the current regulatory framework on the valuation of distributed generation in Victoria? In particular, what has been the scale and scope of support provided to distributed generators by: avoided TUOS payments, avoided DUOS payments, Network Support Payments, the Distribution Network Pricing and Assessment Framework, and the RIT-D? | We consider the existing regulatory regime already provides sufficient incentives to distributed generators, whether large or small, to balance the benefits they provide against the additional costs they impose on our network. For example:<br>• for Powercor, we made $7.73 million ($2015) in avoided TUOS payments between 2011–2014, and $0.04 million in network support payments; and<br>• for CitiPower, we made $0.53 million ($2015) in avoided TUOS payments between 2011–2014, and $0.16 million in network support payments.<br>Further detail regarding the process we undertake when considering non-network solutions, including the payment flows between parties, are set out in our Demand Side Engagement Strategy (available on our website). |

Table 5 Key issues for the inquiry

| | Question | VPN response |
|---|---|---|
| 12 | Do you agree with the Commission's proposal to develop a methodology for calculating the time-of-use benefit of the electricity produced by a distributed generator? If not, why not? | Notionally, distributed generators should only receive a benefit for the value they provide—this value will vary by location and time of the day. |
| 13 | Which of the two time-of-use options presented do you favour? | No comment (on the basis we understand the ESCV considers this an electricity market issue only). |
| 14 | Are there other time-of-use options that the Commission could consider? | No comment (on the basis we understand the ESCV considers this an electricity market issue only). |
| 15 | Are there other methodologies for calculating the locational benefit of distributed generation? | No single method for calculating locational benefits will be suitable for all distribution networks, and attempting to determine a single method will blunt the development of efficient price signals.<br>For example, any locational benefits will vary by the time of day and for different customer types. These factors will vary within and across distribution networks, and accordingly, any modelling would need to have regard to loading at the relevant zone substations, as well as the corresponding feeders. |
| 16 | Do you agree with the Commission's view that the environmental benefit of distributed generation may be sufficiently reflected in the payments available under the RET? If not, can you provide evidence to detail what environmental benefits of distributed generation are not already captured by the RET scheme and how they can be valued? | Any policy considerations driven by environmental and social benefits should be transparently recovered and communicated to tax-payers. That is, they should not be hidden in electricity charges. |
| 17 | Are there other methodologies that the Commission could consider for calculating the carbon benefit of distributed generation technologies that are not covered by the RET? | Any policy considerations driven by environmental and social benefits should be transparently recovered and communicated to tax-payers. That is, they should not be hidden in electricity charges. |
| 18 | Do you agree with the Commission's proposal to undertake further analysis into the economic benefit of distributed generation to distribution networks? If not, why not? | We consider the existing regulatory regime already provides sufficient incentives to distributed generators, whether large or small, to balance the benefits they provide against the additional costs they impose on our network. In any event, should the ESCV seek to redistribute any costs and/or benefits from distributed generation, these should not result in further distortions to network charges, or levy additional administrative costs on customers. |

| | Question | VPN response |
|---|---|---|
| 19 | Do you agree with the proposal to focus this analysis on the three pieces of analysis highlighted? If not, why not? | The ESCV should also have regard to the impact of the Victorian Government's policy announcement to limit the manner in which demand charges can be introduced by distributors (i.e. opt-in basis only). This policy promotes cross-subsidies from non-solar to solar customers. For example, if a solar customer can select a non-demand network tariff, they may pay lower network charges than a non-solar customer irrespective of the extent to which their grid usage contributes to our network peak demand (noting peak demand is a key driver of our network costs).<br>For clarity, we expect the ESCV will also have regard to submissions in response to the specific papers outlined. |
| 20 | Is there other analysis that might be helpful to the Commission in considering the economic benefit of distributed generation to distribution networks? | No comment. |