

3 December 2019

Submissions  
Electricity Authority  
P O Box 10041  
Wellington 6143

By email: [Part6hosting.submissions@ea.govt.nz](mailto:Part6hosting.submissions@ea.govt.nz)

Dear Andy,

**Re: Consultation Paper-Integrating hosting capacity into small-scale distributed generation connections**

Pioneer Energy (Pioneer) welcomes the opportunity to make submissions on the Electricity Authority's (Authority) consultation paper to amend Part 6 of the Code to change eligibility for small-scale distributed generation connected under the Part 1A process.

To facilitate efficient, secure and reliable access to networks for distributed generation less than 10kW, the Authority is consulting on 3 changes to the Part 6 of the Code to:

- a) update references to the latest technical Standard AS 4777.1:2016
- b) ensure the inverter used has the power quality modes enabled for volt-var mode and volt-watt mode
- c) limit the maximum export by a small-scale distributed generation system to the network as specified in the network company's congestion management policy.

**a) update references to the latest technical Standard AS 4777.1:2016**

Pioneer agrees with this proposal.

**b) ensure the inverter used has the power quality modes enabled for volt-var mode and volt-watt mode**

Pioneer agrees that enabling cost-effective options that unlock additional or latent hosting capacity for distributed generation in distribution networks is in the long-term interests of consumers. We would expect network companies to be constantly looking for these opportunities, such as network alternatives.

As we understand it, the latest inverter standard requires two advanced power quality operational modes (volt-var mode and volt-watt mode or collectively referred to as volt response modes) to be installed. Requiring these modes to be 'turned on' appears to come at no extra cost to the consumer purchasing the inverter but provides benefits to the

network company “*providing beneficial low voltage regulation that act to curb excessively low and high local voltage conditions*”.<sup>1</sup> These benefits may be addressing issues in the distribution network that existed well before the distributed generation was installed.

Pioneer suggests the industry should be encouraged to have these modes enabled in all inverter installations – whether under Part 1A or Part 1.

**c) limit the maximum export by a solar pv system to the network as specified in the network company’s congestion management policy**

Pioneer strongly disagrees with the proposal that a network company has the power to arbitrarily limit the maximum export of a small-scale distributed generation system.

There are several reasons why Pioneer does not support this proposal, namely:

- The Authority’s consultation paper provides no information about the degree to which networks are currently subject to or expected to become subject to congestion in the next 12 months. That is, it is unknown what the size of the problem is that the Authority’s proposal seeks to address. Any Code amendment should be evidence based.
- Distributed generation should not be penalised or incur a cost for increased congestion on a distribution network, because:
  - the load on the network can be no more than it was before the small-scale distributed generation was installed, by definition
  - if all inverters had the volt response modes enabled there would be no impact on, and maybe an improvement in, the quality and reliability of power supply on the network (according to the consultation paper) – to the benefit of the network company without them having to spend a dollar
  - if congestion occurs it must be because the ratings are different in the network equipment for power flows in two directions – this is an issue with the investment made by the network company (and not the investor in the small-scale distributed system)
    - have network companies considered other ways to solve any issues with two way power flow? For example, is it less costly for a network company to encourage solar pv owners to install a battery than to invest in equipment with higher two way power flow capability?
  - in other jurisdictions, output from solar pv is being used to benefit all electricity consumers – this requires all industry participants to view new technologies, including solar pv, as a positive opportunity rather than a problem to be solved.
- Issues on the distribution network impact the transmission grid. However, Transpower’s analysis<sup>2</sup> identified distribution networks could host 9-10GW of solar pv (balanced with battery technology) by 2050. Transpower’s

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<sup>1</sup> Paragraph 2.31 of consultation paper

<sup>2</sup> <https://www.transpower.co.nz/sites/default/files/plain-page/attachments/Te%20Mauri%20Hiko%20%E2%80%93%20the%20sun%20rises%20-%20published.pdf> page 8

analysis supports the Authority's focus on having well-designed inverters installed.

**Myth: Our grid won't be able to handle all the distributed solar**

Some have interpreted the Green Grid analysis<sup>3</sup> to suggest New Zealand electricity distribution networks could host at most 2GW of distributed solar before voltage constraints became a barrier.

Our recent analysis has found new technology means this isn't the case. By exploiting the natural partnership between solar and battery technology (and the utilisation of inverter capabilities), anticipated voltage constraints in electricity networks could be managed to enable networks to host 9-10GW of solar.

Inverters will be critical to enable a smart, reliable and affordable grid, but this requires the right design and standards. Every solar installation comes with an inverter – if this is well-designed and correctly set-up it can support renewable generation on the grid and reliability for households through providing ancillary services and support. New Zealand needs to stay up to date with this fast-changing technology, for example by adopting the latest global standards.

Pioneer suggests the Authority's 'cost benefit' analysis in paragraphs 3.9 to 3.18 does not specifically address the proposal to limit the maximum output of any small-scale distributed generation. The random imposition of a solar pv export cap may seriously discriminate against those consumers making solar investments versus other consumers and market participants, when the export to grid reduces network and grid demands by definition. The Authority must consult on a comprehensive quantitative CBA before implementing this proposal.

We conclude this submission with an extract from Transpower's publication "*The sun rises on a solar energy future*" (January 2019)

As solar continues to fall in price, this economic imperative will continue to grow. With solar in a range of locations and as part of a diversified suite of generation capacity, solar can create a more robust and reliable generation profile to support the transformation of New Zealand's energy future and economy.

We would welcome the opportunity to discuss this submission with you in more detail.

Yours truly

A handwritten signature in blue ink, appearing to read 'Fraser Jonker', with a stylized flourish at the end.

Fraser Jonker  
**Chief Executive**