wellington electricity™

Submission on Voluntarily moving to a 10kW default export limit

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1 Submission and contact details

Consultation	Submission on Voluntarily moving to a 10kW default export limit
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2 Default DG export Limits

The Electricity Authority is monitoring EDBs that are voluntarily moving to a 10kW default export limit, as noted in the Minister's letter of expectation from October 2025. Wellington Electricity are not currently considering a default export limit of 10kW (or greater) for residential connections, and this submission outlines the valid reasons why this is not a practical solution on our network.

We are responsible for managing power quality and equity for all customers. This includes ensuring voltage remains within statutory limits, avoiding thermal overload, and maintaining network stability for the benefit of both DG and non-D-G customers. To do this transparently, we have a Congestion, Curtailment and Interruption Management Policy[1] that guides how hosting capacity is allocated, how limits are applied, and how fairness is maintained.

2.1 Wellington Network Modelling

Increasing the default export limit and lifting the system voltage to 10% would only allow another 10% of DG export before the network is constrained again, as shown in Table 2 below. As such, to manage power quality for all customers on a fair and equitable basis, at this stage, we are not considering voluntarily moving to a 10 kW (or greater) default export limit for residential connections (option c). Our concern is that, as distributed generation grows to 30%, so does the likelihood of constraints on feeders across the network. There needs to be agreement to lower from 10kW to 5kW as part of a 10kW agreement when congestion is signalled (as occurs in overseas jurisdictions currently).

Previous technical work undertaken on our network has shown that LV feeders start to experience significant constraints once DG penetration exceeds around 30% as shown in Table 1. At those levels,

[1] WELL Congestion, Curtailment and Interruption Policy https://www.welectricity.co.nz/assets/Docs/Congestion-Curtailment-and-Interruption-Management-Policy.doc

issues such as voltage rise, reverse power flows and feeder loading begin to affect not only DG customers but also the wider customer base, including non-DG consumers. The constraints are most noticeable at the end of feeders, whereas DG customers closest to the transformer see less constraint.

The tables below have been run through our LV modelling software to give a high-level impact of voltage limits and DG export limits under different scenarios.

Table 1

Current network voltage limits and DG export limit				
6% Voltage setting	**10% solar Penetration**	**20% solar penetration**	**30% solar penetration**	**40% solar penetration**
5kW	OK	OK	Constrained	Constrained

Table 2

Proposed network voltage limits and larger DG export limit (without controllability)				
10% Voltage setting	**10% solar Penetration**	**20% solar penetration**	**30% solar penetration**	**40% solar penetration**
10kW	OK	OK	Partial constraint	Constrained

Table 3

Proposed network voltage limits and current DG export limit (without controllability)				
10% Voltage setting	**10% solar Penetration**	**20% solar penetration**	**30% solar penetration**	**40% solar penetration**
5kW	OK	OK	OK	OK

2.2 First-Mover Advantage

Increasing the default export limit to 10 kW would cause feeders to hit these thresholds much sooner, reducing the number of customers who can connect and increasing the likelihood of avoidable network upgrades. These upgrades are paid for by all customers, however it is only 30% of customers with DG who are driving the need to invest, spreading this cost to all customers. This creates a cross-subsidy between DG and non-DG customers. Once the available capacity on the network is used, other

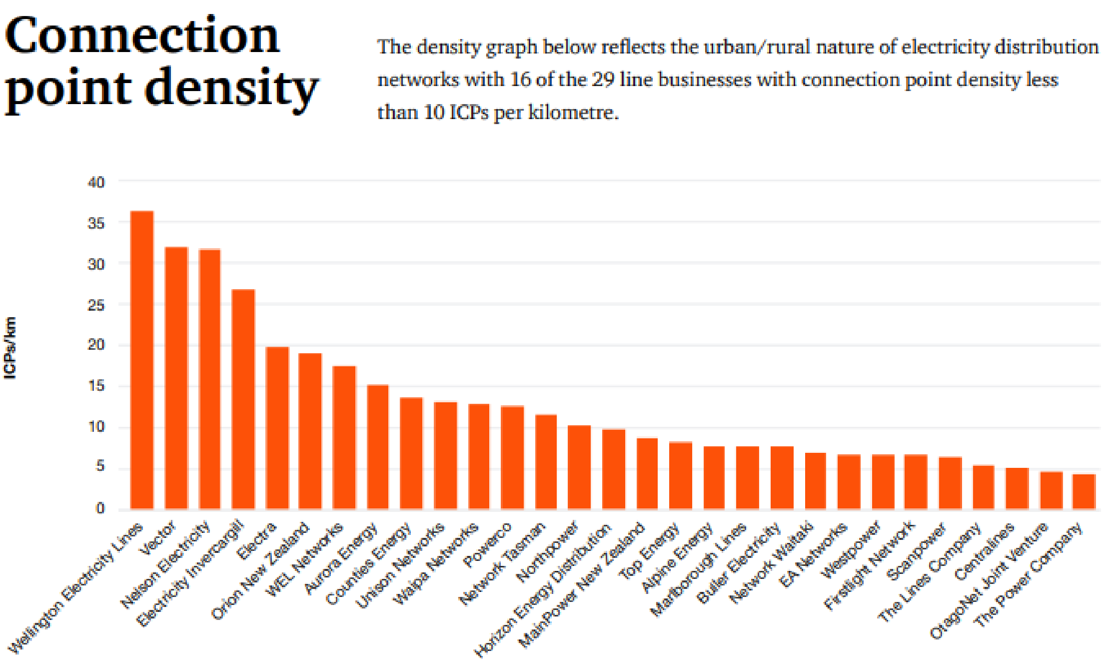
DG customers cannot connect and this creates an advantage for first-movers and results in unequal treatment of customers for network access over time.

A higher default export limit also reduces our ability to manage constraints consistently across the network. As constraints emerge earlier and more frequently, we would be forced into applying increasingly location specific export limits. These would be less predictable for customers and installers, and would add complexity to the connection process.

2.3 Network Density Impact

The impact of high default export limits is magnified in areas with high customer density, where more consumers share the same LV assets. The *2025 PwC ID* on connection point density demonstrates this — in denser urban areas (like Wellington), the effect of increasing export limits is disproportionately large, meaning feeders saturate more quickly and hosting capacity is consumed faster and impacting security of supply and reliability, noting that Wellington Electricity has the highest customer density of all EDBs and our network is designed to carry 4kW of after diversity max demand (ADMD).

Figure 1 – PWC 2025 Information disclosure compendium[2]



[2] PWC Information Disclosure Compendium 2025, https://www.pwc.co.nz/insights-and-publications/2025-publications/energy-compendium-2025.html

In Australia, higher export limits are made feasible by regulatory requirements for DER visibility and controllability due to inverters having an IP connection. Distribution businesses can signal for owners of inverters to reduce their output to manage the network congestion within acceptable limits. This could be through operating envelopes or congestion charges applying to non-compliance. Of course, outside of the envelope period, inverters can return to higher export limits.

This provides confidence that high nominal export limits will not compromise network performance. This capability does not currently exist in New Zealand. Visibility is limited, and EDBs have no ability to actively signal curtailment at the inverter output in real time (cloud connected), unless we continue to request Volt/Var settings for inverters to limit output on voltage rise. Without these tools as pre-requisites it would be difficult to manage the network when DG penetration increases.

For these reasons, the most practical way to manage hosting capacity within technical limits — while maintaining fairness and equity — is to dial down injection to a level that allows multiple installations to share the same feeder. To accommodate more customers and avoid a situation where early adopters consume a disproportionate share of hosting capacity, this may require individual installations to be limited to around 5 kW by default during periods of congestion, but able to move to 10kW when DG can be self-consumed within the feeder. Self-consumption of DG at the feeder level will require a change in behaviour where battery, EV and electric hot water cylinders are recharged at midday (solar peak times) so that constraints can be managed.

Network congestion pricing is the likely tool to manage high solar periods. This approach provides the best balance between enabling customer choice, maintaining equitable access to hosting capacity, and ensuring the network remains safe, reliable, and compliant for all customers.

2.4 Volt/Var Settings

The rapid growth of solar generation on distribution networks is creating a shift in system dynamics where active power is increasingly abundant, but reactive power (Vars) is becoming insufficient to maintain stable voltages across networks. Most solar inverters contribute very little reactive support. As solar exports rise and reverse power flows become more common, distribution lines can begin absorbing rather than supplying Vars. This makes voltage regulation more challenging, and it was one of the conditions believed to have contributed to the system stress experienced during the 2025 Iberian Peninsula blackout, where high renewable output coincided with limited reactive reserves and created voltage stability vulnerabilities.

Robust Volt/Var settings before increasing DG limits is a prudent, least regret approach. Standardising the ability to control inverters ensures that solar supports system stability. Most modern inverters already possess the functionality, so enabling these settings early avoids the need for costly retrofits when rooftop solar penetration has already saturated the network. Implementing these controls provides immediate voltage stability benefits, prepares the system for larger solar injections, and supports a smoother, safer transition toward hosting more DG on the network.

3 Conclusion

In summary, there is more to consider when raising DG export limits to 10kW on a distribution network which is densely populated. Moving to 10kW would congest the network and require retrospective action to manage the constraint through inverter setting reduction, which needs to be considered ahead of making the change in injection levels.